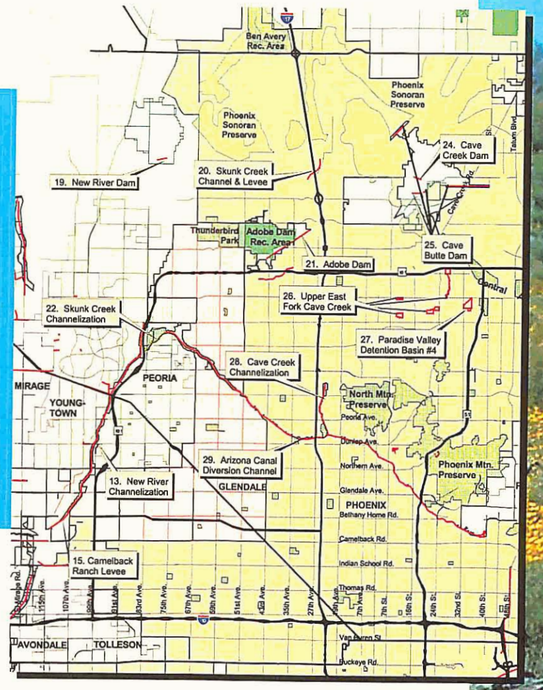

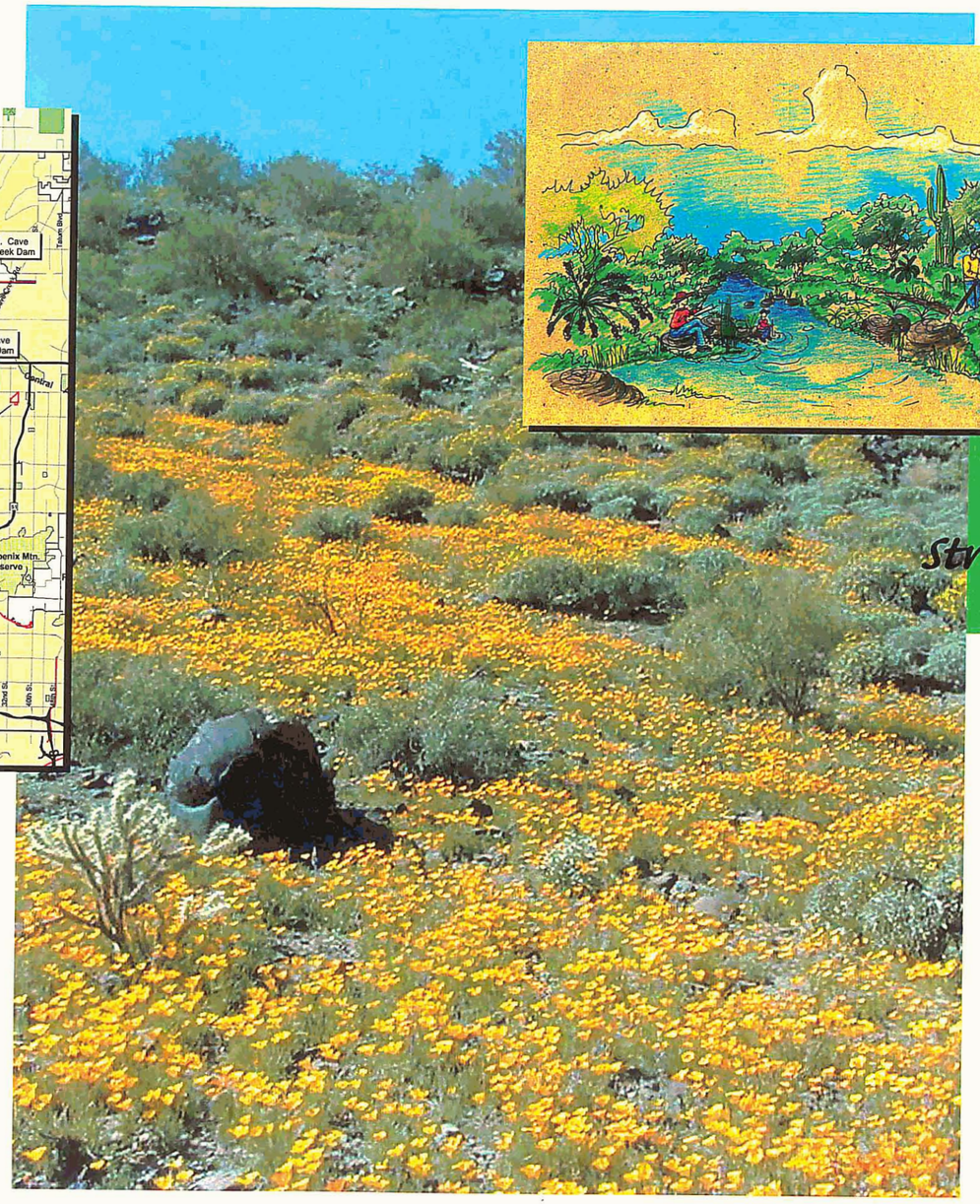

NORTH VALLEY Flood Control Structures Analysis

Flood Control

Existing Facilities
Landscape Aesthetics &
Multi-Use Opportunities
Assessment

Contract: FCDI999-CO5I
Assignment #3

Prepared for:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Prepared by:

Carter Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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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June 1, 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 set-backs 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 North 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 thirteen structures, which are identified on the North Valley Structures Location Map, include the following:

Structure Map Number[2]	Structure Name[2]
13	New River Channelization (1993)*
15	Camelback Ranch Levee (1999)*
19	New River Dam & Levee(1985)
20	Skunk Creek Channel and Levee (1991)
21	Adobe Dam (1984)
22	Skunk Creek Channelization (1991)
24	Cave Creek Dam*
25	Cave Butte Dam (1980)*
26	Upper East Fork Cave Creek (1996)*
27	Paradise Valley Detention Basin #4 *
28	Cave Creek Channelization (1991)
29	Arizona Canal Diversion Channel (1994)

**Of the thirteen structures, three were combined with adjacent structures for a total of ten structures. New River Channelization and Camelback Ranch Levee were combined as well as Cave Creek Dam and Cave Butte Dam. Upper East Fork Cave Creek and Paradise Valley Detention Basin #4 were also combined.*

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

Study Overview

This analysis is the second 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
- 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.

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 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 modulate the outline.
3 The side slopes of the structure are varied to simulate the natural terrain.
4 The structure is deigned to blend into the contour of the natural terrain.
5 There is on-site screening with trees and shrubs used to obscure structure.
6 There is off-site screening used with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.
8 The disturbed areas are graded and replanted to match surrounding area.
9 There are plantings used to provide erosion control and protect visual qualities.
10 The plantings used will not cause an impedance to design function.
11 The structure is re-seeded to enhance the growth of vegetation.
12 The structure and maintenance roads are kept free of weeds and debris.

Additional Criteria for Existing Aesthetic Features

13 There are riparian corridor or desert wash 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 within this zone to preserve.
18 There are panoramic views from the structure or zone.
19 There is a meandering low-flow feature modeled on riparian washes.
20 The structure or zone has naturally 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 There is a need for additional aesthetic and landscape retrofit treatments.
33 There are opportunities for aesthetic and landscape retrofit treatments.

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 zone 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 retrofits due to site size.
42 There are no constraints to public multi-use retrofits due to structural hazards.
43 There are no constraints to multi-use retrofits due to existing slopes.
44 There are no constraints to multi-use retrofits 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 Regional 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 and 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 or desert wash areas.
60 There are opportunities for recharge basins or 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 Element
2	Slightly Conforming Element
3	Moderately Conforming Element
4	Predominantly Conforming Existing Element
5	Fully Conforming 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 (where available)
9. Site Evaluation Criteria

Landscape Aesthetic and Multi-Use Treatment Recommendations

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

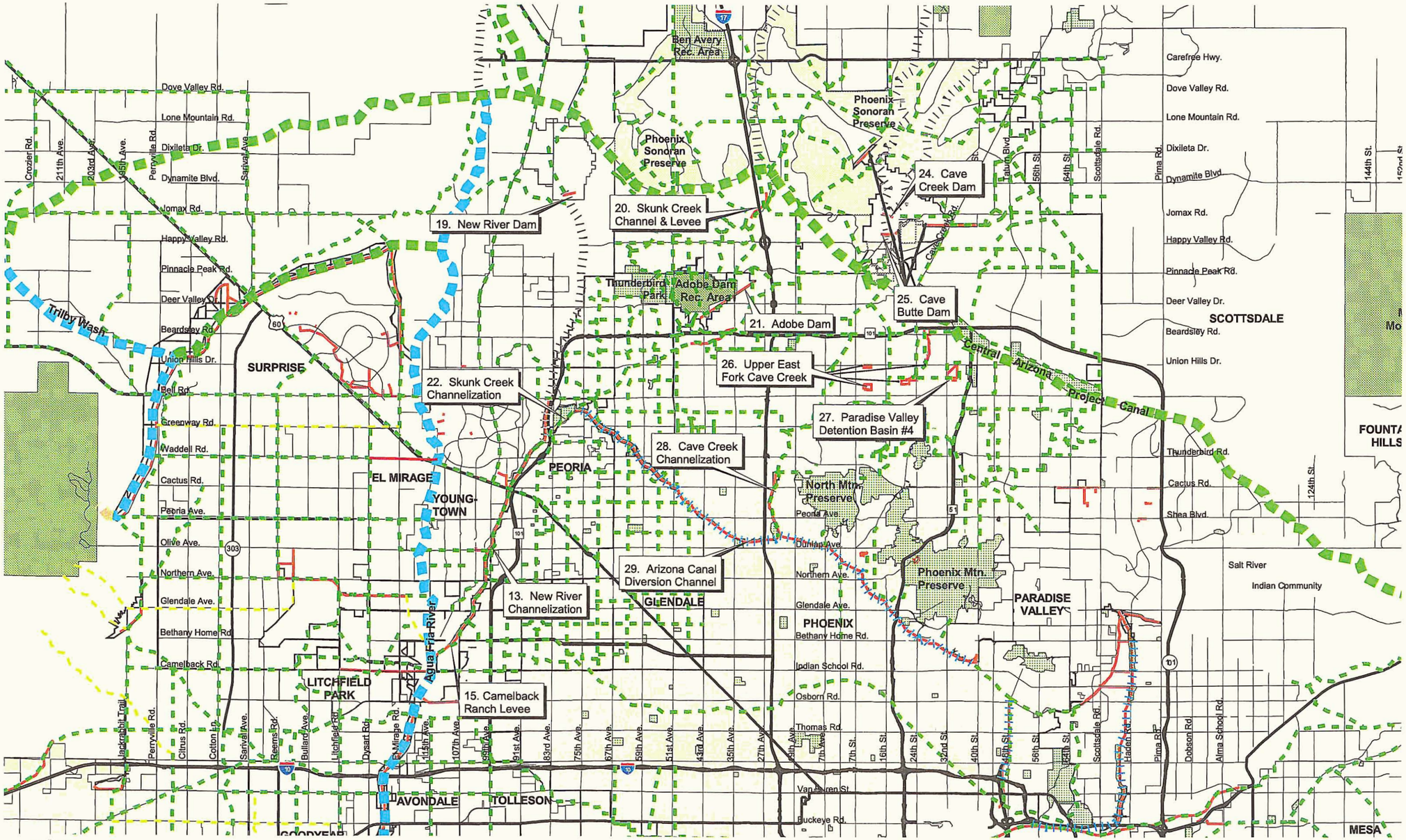
1. Aesthetic Treatment Retrofit Opportunities
2. Landscaping Treatment Retrofit Opportunities
3. Multi-Use Treatment Retrofit Opportunities
4. Land Acquisition Opportunities for Landscape Aesthetics and Multi-use

Cross Section sketches are provided to communicate the treatment opportunities. 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 Retrofit 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 ArcView database for the project, and reflect typical unit costs for public works projects of similar nature and magnitude. The estimates follow the identified zone formats and break down areas of costs into four categories. The Aesthetic Treatment Retrofit Opportunities focuses primarily on earthwork required to aesthetically renovate zones. The Landscaping Treatment Retrofit Opportunities focus solely upon estimated planting and irrigation costs per each zone. The Multi-Use Treatment Retrofit Opportunities category of the cost estimate for each zone focuses on recreational amenities costs. Each site contains a cumulative cost range from low to high and coordinates with the Landscape Aesthetic and Multi-Use Treatment Recommendations portion of the Executive Summary. Lastly, any identified opportunities for land purchase are included under the heading Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments, where applicable. It was the intent of the cost estimates to give an estimated general range of cost per site. The cost estimates are not intended for literal translation of probable cost as there are factors influencing cost beyond the range of the information included in the Executive Summary.



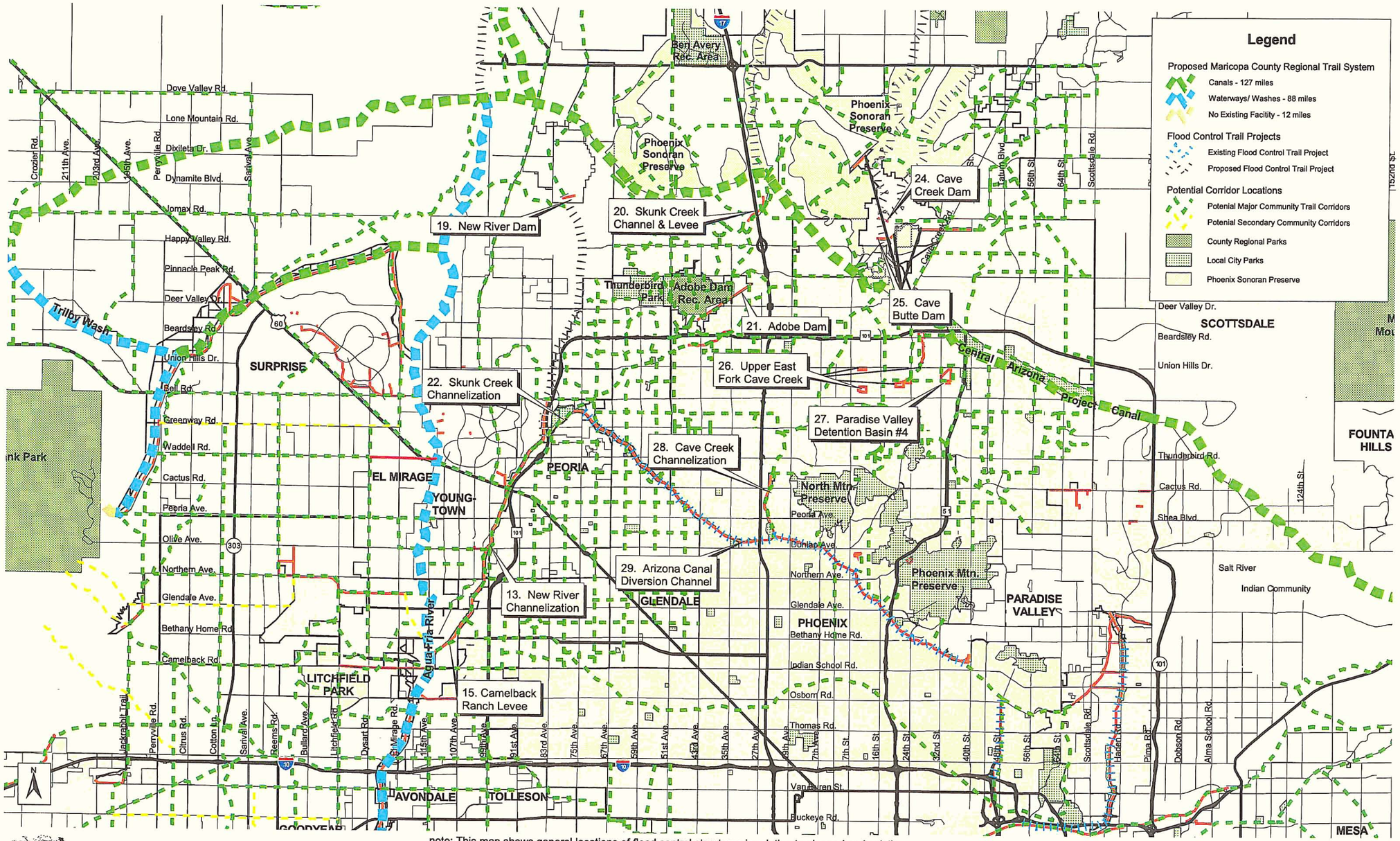
note: This map shows general locations of flood control structures included in this report.

Location Map

North Valley Structures

FLOOD CONTROL DISTRICT of Maricopa County

Carter Burgess



note: This map shows general locations of flood control structures in relation to planned and existing trail systems such as the proposed Maricopa County Regional Trail System and existing and proposed Maricopa County flood control district trail projects. The map also shows potential trail connections to county and city parks and reserves.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter:Burgess

Location Map

Potential Trail Corridors

Adobe Dam

Facility Location, Description and Zone Delineation

Adobe Dam is located north of Scatter Wash and handles flows from Skunk Creek. Just south of the dam structure, Scatter Wash and Skunk Creek combine and flow into the New River. The property is located northwest of the intersection of Loop 101 and Interstate 17. The property is bordered by the cities of Glendale and Phoenix. Based on the current land holdings of the Flood Control District, the property is defined as the dam structure, area north of the dam and spillway, which includes a portion of the Adobe Recreational Area and a remnant of property across Pinnacle Peak Road. The property also includes a portion of Hedgepeth Hills, property south of the dam that extends to Loop 101, and land north of the structure that controls incoming flow from Skunk Creek.

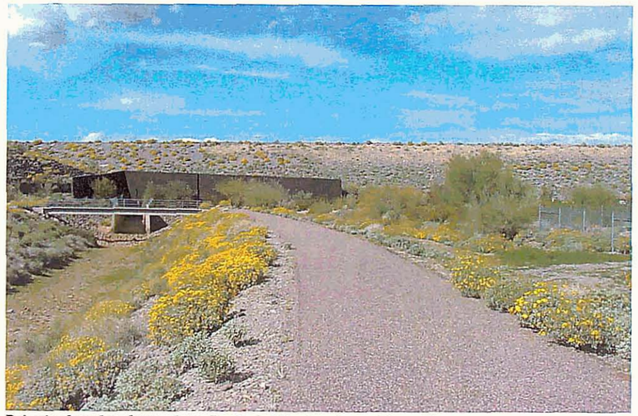
Site visits by Carter and Burgess identified five zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Impoundment Area Open Space*, which is an area located north of the dam structure that is currently undeveloped. *Zone Two* is the *Impoundment Area with Multi-uses* and is also an area north of the dam structure where there are developed recreational amenities. The amenities include a sports complex with ball fields, two "go kart" racing courses, model plane runway, children's railroad center, and an ultra light flight park, see photo below right. This zone also includes Adobe Recreation Area, which contains two golf courses, the 500 Club and Adobe Dam Golf Club and is located adjacent to the impoundment area. *Zone Three*, the *Dam and Emergency Spillway Structures,* include the dam structure, which is of earthen construction and protects a community directly to the south and a restricted access emergency spillway; see photo below center. The hills to the west of the impoundment area are identified as *Zone Four*, the *Foothills Area*. *Zone Five* was designated the *Rock Art Center Area* because of the presence of Native American "rock art" located on the hillsides and the Arizona State University Rock Art Center that was established to preserve and study the markings. This zone also includes the principal outlet channel, see photo bottom left.

See Site Map for zone locations.

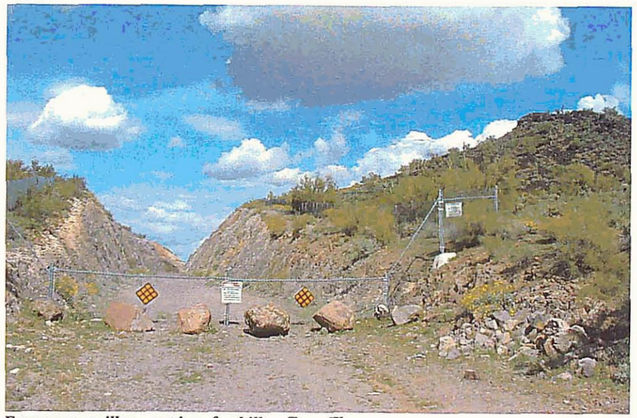
Potential Significance to Provide Regional, Community or Local Open Space Amenities

The property was categorized by Carter and Burgess as being significant because the Adobe Dam and Recreation area located within the property limits currently contains unique outdoor recreation unavailable anywhere else regionally. The site is large and also considered very significant because of its connectivity potential to Skunk Creek wash; an important north to south corridor similar to the New River, Agua Fria, and Cave Creek corridors. Additional connection point opportunities include the Skunk Creek channel, which allows connection to and from destinations outside the county to the north and connections to New River in the south. Additionally, Adobe Dam is located just a few miles south of the proposed Maricopa County Regional Trail System portion of the Central Arizona Project Canal.

See Potential Corridor Locations Map for identified connection opportunities.

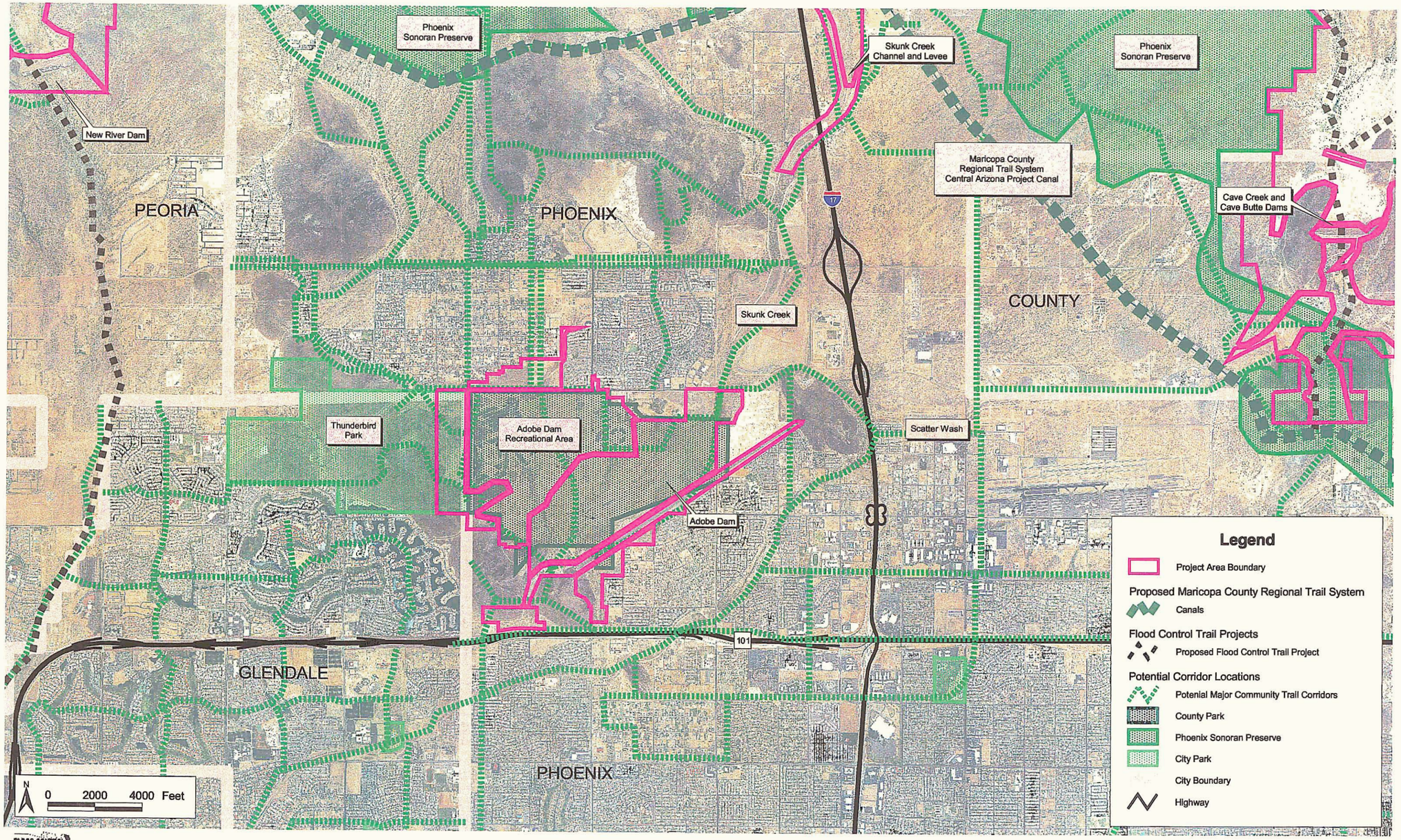


Principal outlet channel om Rock Art Center Area - Zone Five



Emergency spillway cut into foothills – Zone Three

"Go Kart" racing recreational use in impoundment area – Zone Two

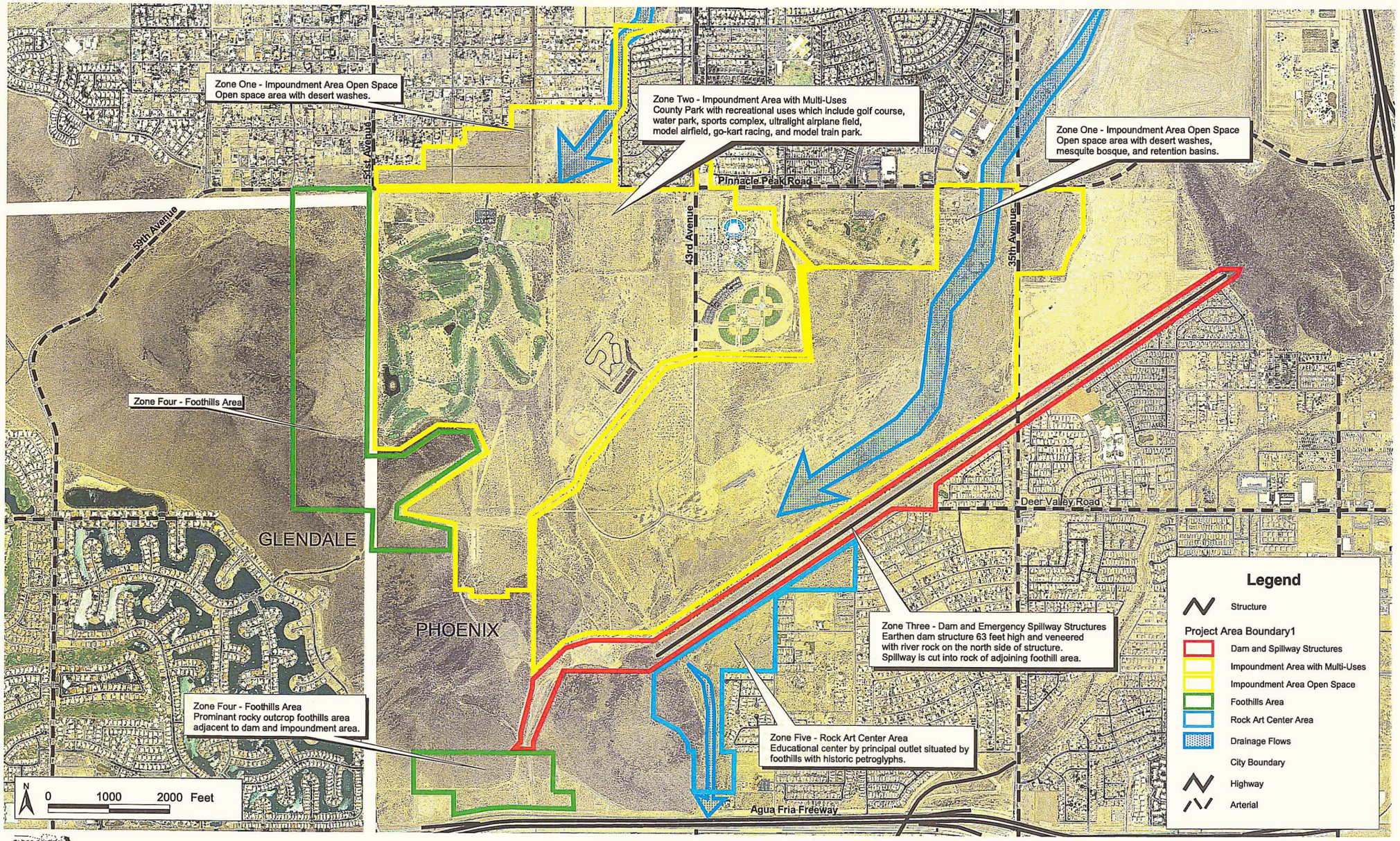


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter&Burgess

Potential Corridor Locations Map

Adobe Dam



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter Burgess

Site Map

Adobe Dam

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing an evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One – Impoundment Area Open Space

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

- The impoundment area side slopes are varied to simulate natural terrain.
- The impoundment area is designed to blend into the contour of the natural terrain.
- Plantings are used to provide erosion control and protect visual qualities.

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

- There is no off-site screening with plantings or earthwork buffers used.
- The disturbed areas have not been graded and replanted to match the surrounding area.
- The impoundment area is not kept free of weeds and debris.

Zone Two – Impoundment Area with Multi-Uses

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

- The impoundment area side slopes are varied to simulate natural terrain.
- There are plantings used to provide erosion control and protect visual qualities.
- The plantings used will not cause an impedance to design function.

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

- The disturbed areas have not been graded and replanted to match the surrounding area.
- The impoundment area is not kept free of weeds and debris.

See photos bottom left and center.

Zone Three – Dam and Emergency Spillway Structures

The dam and emergency spillway structures conform to aesthetic policy for the following reasons:

- The structures and maintenance roads are kept free of weeds and debris.
- The plantings used will not cause an impedance to design function.

The dam and emergency spillway structures do not conform to policy for the following reasons:

- The alignment of the structures does not meander to vary from a straight line.
- The structures are not designed to blend into the contour of the natural terrain.
- The side slopes of the structures are not varied to simulate natural terrain.
- On-site trees and shrubs are not used to blend the structure.

Zone Four - Foothills Area

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

- The foothills area meanders to vary from a straight line.
- The foothills area side slopes are varied to simulate natural terrain.
- There is off-site screening with plantings or earthwork buffers are used.
- The foothills area is reseeded to enhance the growth of vegetation.
- The foothills area is kept free of weeds and debris.

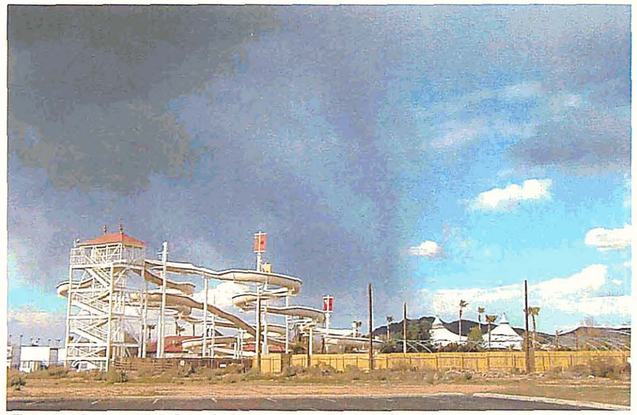
The foothills area does not conform to policy for the following reasons:

- There are disturbed areas are not graded or replanted to match surrounding area.

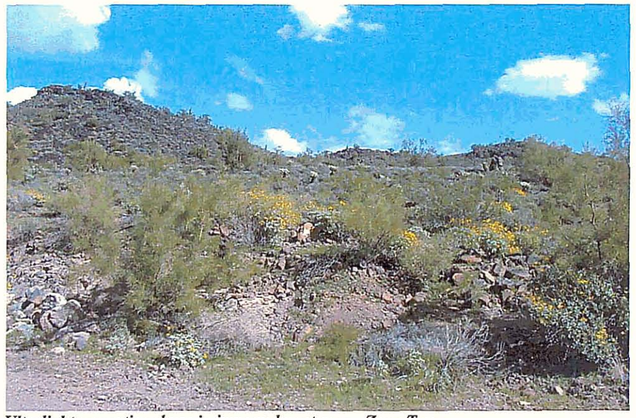
Zone Five - Rock Art Center Area

The Rock Art Center area conforms to aesthetic policy for the following reasons:

- The area meanders to vary from a straight line.
- The area blends into the contour of the natural terrain.
- There is on-site screening provided by the existing plants and landforms, and veneering from the indigenous rock.
- There are existing plantings that provide erosion control and protect visual qualities.
- The existing plantings do not cause an impedance to design function.
- The area is kept free of weeds and debris.



Water Park recreational use in impoundment area – Zone Two



Ultralight recreational use in impoundment area - Zone Two

Dam structure from impoundment area side, foothills – Zone Four

The Rock Art Center area does not conform to policy for the following reasons:

- The profile or height of the principal outlet channel does not vary to modulate the outline.
- The side slopes of the principal outlet channel do not vary to simulate the natural terrain.

Surrounding Site Character

Zone One – Impoundment Area Open Space

This zone located on both the north and south sides of the impoundment area with multi-uses zone. There are two segments of zone one. The first segment is located north of Pinnacle Peak Road and is encompassed by residential development. The residential area to the north consists of small, older homes on large lots. Some of the homes are not very well kept. The residential area to the east consists of newer homes that are oriented away from the open space. The second segment of the impoundment area open space is located just north of the dam and south of the impoundment area with multi-uses zone. In this area, the dam structure has the greatest visual impact on the zone because of its massive scale. Some of the recreational uses in zone two such as the water park and lights for ball fields are visible from this zone. Because of the height of the dam structure, residential development to the south is not visible from this zone.

Zone Two – Impoundment Area with Multi-Uses

This large zone is situated in the center of the site and is buffered by zones one, three, four and five. To the west and southwest, the Foothills zone is visible, although, the dam structure to the southeast is much more visible because of its immense scale and uniform height. Zone one, the impoundment area open space, negatively impacts this zone in areas where there is unmitigated disturbance and debris. The surrounding residential areas are not visible from this zone.

Zone Three – Dam and Emergency Spillway Structures

Because of the dam structure's height, all of the surrounding land uses are visible from this zone. The residential area developed just to the south of the dam consists of newer housing that is oriented away from the dam. See photos bottom middle and right. Just beyond the residential area, Scatter Wash is visible as it winds its way through the neighborhood. Even though the Agua Fria Freeway has sound barrier walls constructed on either side of it, freeway noise is still audible from the top of the dam structure. The freeway is also visible from this zone. The division between the foothills zone and this zone is very apparent because of the contrast between the undisturbed rocky hillside and the uniform shape of the dam structure. The impoundment area is visible from this zone, especially the larger recreation uses such as the baseball fields and the water park.

Zone Four – Foothills Area

Two similar areas were included in this zone. Both are located to the west of the dam structure. The northern most area is located directly to the west of zone two, the impoundment area with multi-uses. The golf course and other recreational facilities located in the impoundment area are very visible from the hillside of the zone as is the residential area to the north across Pinnacle Peak Road. See photo bottom left. Because this zone includes the area from the base of the slope to the ridge of the hill, the residential development to the southwest is not generally visible from the foothills. The southern most area included in this zone is located between the dam and emergency spillway structures and the Agua Fria Freeway. The freeway is very visible and audible from this zone and it blocks views of the residential development on the other side.

Zone Five - Rock Art Center Area

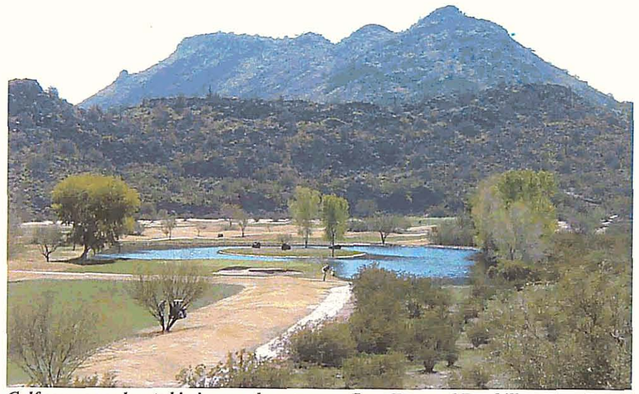
The adjacent dam structure visually dominates this zone because of its large scale and uniform height. The Agua Fria freeway to the south is not visible or audible from most of this zone because it is buffered by hills. Residential developments consisting of both newer single-family homes and older single-family homes on large hillside lots are visible to the southeast.

See the Site Analysis Map for land uses and zone locations.

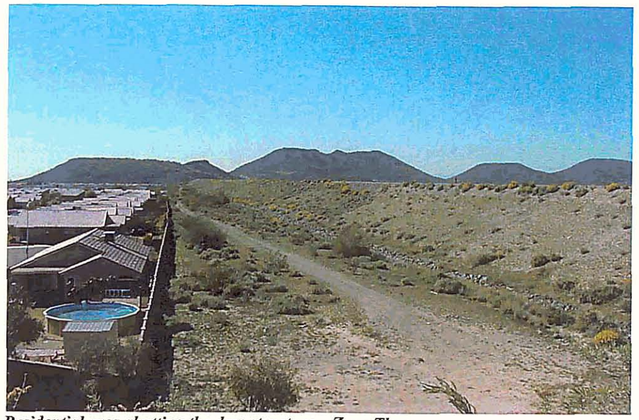
Site Impressions

Zone One – Impoundment Area Open Space

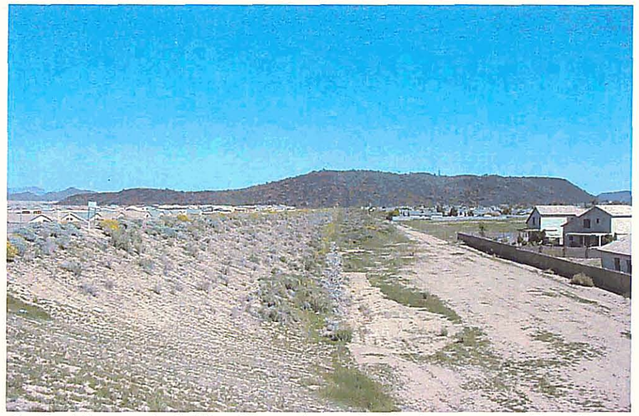
Because of its fairly undisturbed condition, the open space of the impoundment area provides a sense of nature within the fabric of the urban environment. While vegetation and natural land contours in this zone have been disturbed by unmonitored vehicle use, the lowland vegetation, enormous dam structure and remnant mesquite bosque screen the surroundings and provide respite from the city. The developed areas within the impoundment area are located far enough away that they do not intrude upon the feeling of being "out in nature". The zone



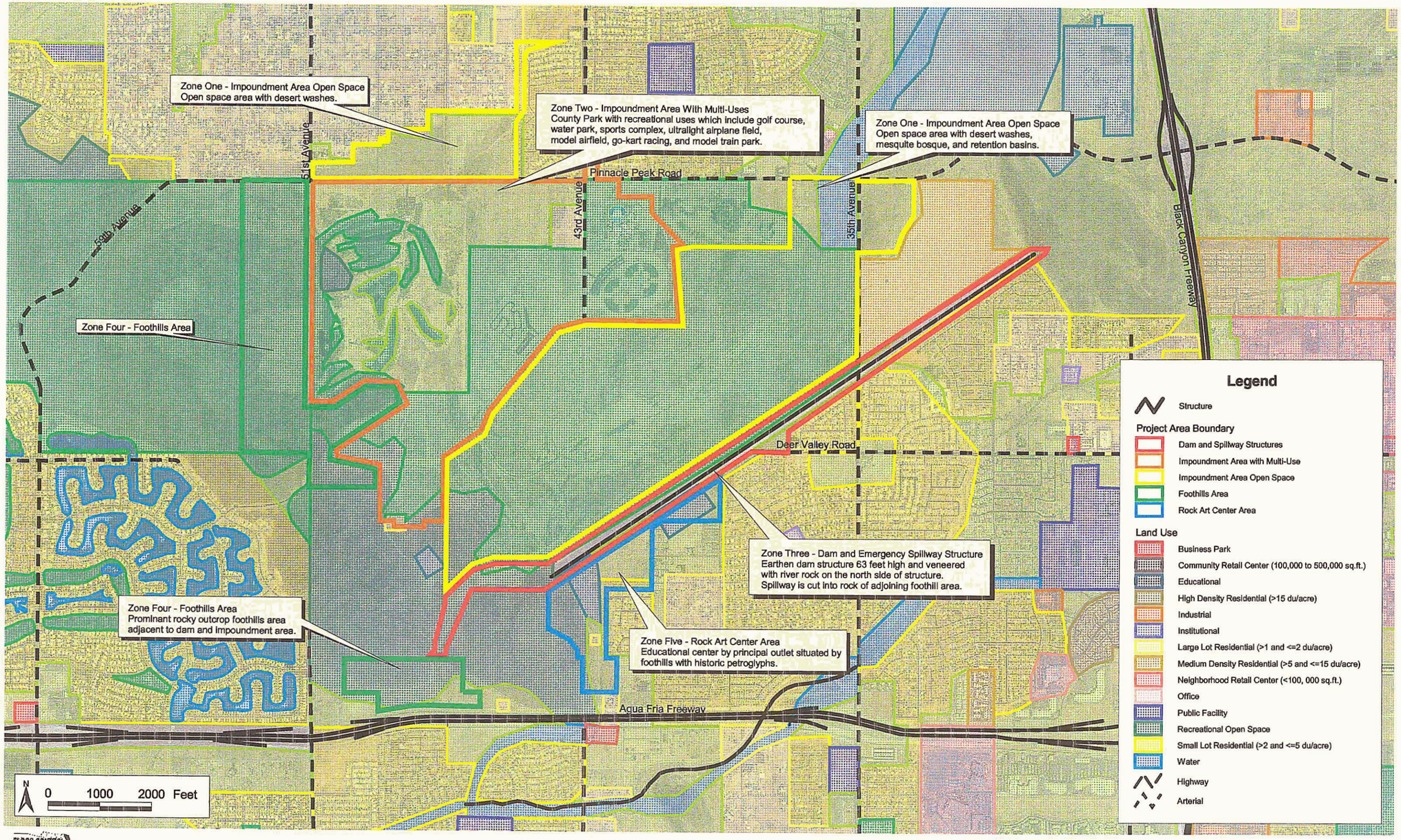
Golf course use located in impoundment area – Zone Two, and Foothills – Zone Four



Residential area abutting the dam structure – Zone Three



Residential area on both sides of the northern end of the dam structure – Zone Three



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CarterBurgess

Site Analysis Map

Adobe Dam

is fairly flat and contains typical desert vegetation such as creosote, brittlebush and bursage. The mesquite bosque, located in the southern end of the zone is thick and lush and an enjoyable place to experience because it is such a contrast from the rest of the site.

Zone Two – Impoundment Area with Multi-Uses

This zone focuses upon the recreational opportunities, which include public facilities as well as private facilities that have been developed adjacent to the impoundment area. The zone has an "amusement park" quality as a result of the variety of recreational facilities. These include a very noticeable Waterworld water play park with vertical slides that tower into the sky and Phoenix and Arizona Kart Racing from which the buzzing sound of go carts can be heard for quite a distance. The other recreational opportunities include the Arizona Model Pilots Society's model airplane park, the Victory Lane Sports Complex with softball and baseball fields, the 500 Club Golf Course, McGill Ultra-Light Flight Park, and Saguaro Center Railroad Park for children. The recreational uses seem to have evolved haphazardly and do not seem to have followed a land use plan as evidenced by the lack of connections, buffers and circulation between amenities. The zone is accessed via 43rd Avenue off of Pinnacle Peak Road and a dirt road partially circulates through the developed portion of the site. The road unfortunately allows unmonitored access to the more vegetated portion of the site. In addition to the existing recreational amenities, the City of Phoenix is planning a small park on the south side of Pinnacle Peak Road just east of 35th Avenue. There is also an animal shelter planned for the south side of Pinnacle Peak Road just west of 43rd Avenue.

Zone Three - Dam and Emergency Spillway Structures

The dam structure is massive in scale when compared to human size. The uniform shape of the landform strongly contrasts the foothills located at each end. There is some re-growth of vegetation along the southern side slope of the dam but not enough quantity to mask the size of the structure. The north side slope is veneered with rock that does not appear like naturally occurring rock. The height and length of the Dam makes it very visible, even as far away as Loop 101 and Interstate 17. The emergency spillway structure is a large "V" shape cut into rock. Public access through the area is prohibited and fenced off with chain link. The cuts into the hillside were not made in such a manner as to mimic a naturally formed canyon.

Zone Four - Foothills Area

The Hedgepeth Hills rise to rounded peaks. The hills are volcanic in origin and have rocky black slopes. Desert vegetation, such as palo verde trees and creosote, grow in crevices between the rocks. The zone is undeveloped with the exception of the winding hillside trails that offer great views of the site, the surrounding area and the city beyond.

Zone Five - Rock Art Center Area

The Deer Valley Rock Art Center is located in zone five at the southern tip of the dam and spans the principal outlet channel. The building is almost black in color to match the adjacent volcanic rock hillside. Because of its color and location over the channel, the building is quite visually striking. The center is operated by Arizona State University's Department of Anthropology and functions as a learning center about petroglyphs left by ancient native peoples. The petroglyph site is listed on the National Register of Historic Places. The center is open to the public and for a donation visitors are provided a guide with petroglyph locations and history. The center seemed to have few visitors perhaps because the building is accessed off of a small residential street and is difficult to find. The principal outlet channel, also included in this zone, is visible underneath the Rock Art Center building. The channel is concrete lined from the dam to the Rock Art Center building then the channel is comprised of compacted earth. The portion of the channel, which is earthen, has become naturally re-vegetated but still contrasts strongly with the undisturbed slopes surrounding it. The earthen channel continues southerly around the base of the Hedgepeth Hills where it joins Scatter Wash and flows towards Skunk Creek.

Opportunities and Constraints for Retrofit Treatments

Zone One – Impoundment Area Open Space

Damage from off-road vehicle use is viewed as both a constraint and an opportunity in this zone. While impacts from vehicle damage are prevalent in several areas, the disturbed areas could create an opportunity for a re-vegetation project. The already disturbed areas could also be developed into additional recreation amenities. The existence of the mesquite bosque located in this zone is seen as an opportunity to preserve riparian desert land and even expand it further with the addition of a wetlands or lake. This area could also benefit from clearly marked circulation routes with barriers restricting off-road use as well as a vegetative buffer that insulates it from the recreational use areas. Adjacent zones influence the opportunities and constraints for this zone and the dam structure is a good example of this. Although the dam structure is viewed as a constraint because it visually dominates the site, this zone does benefit from the dam. The dam creates a riparian habitat and buffers the zone from the rest of the city to create an oasis effect. The dam structure's existence creates an opportunity to aesthetically retrofit the structure so that it has a more naturalistic appearance and blends more harmoniously with the impoundment area and surrounding zones.

Zone Two – Impoundment Area with Multi-Uses

The reality that the recreational amenities are located within an impoundment area creates a constraint as to the types of recreational uses that can be constructed. Additional types of recreational uses will need to be tailored to fit a site that has the potential to contain floodwaters. Additionally, since the site does not seem to have been consciously planned, the site will require creative solutions to redevelop the edges between one type of recreation and another to create a cohesive whole with a logical circulation route. Because of the unique types of recreation currently offered, the zone has an opportunity to develop additional recreation opportunities that are good companion activities, which build upon the "theme park" character. Since the site is located close to a freeway interchange and has potential trail connections that link it to other open space recreation, the possibilities for additional recreation facilities is viewed as a development opportunity.

Zone Three - Dam and Emergency Spillway Structures

Because of the large scale required to fulfill its function as floodwater control, the dam is beyond human scale. The size and uniform slopes were viewed as a constraint to retrofit opportunities because a structure of that scale cannot be easily masked or blended into the surroundings with plant material. More extensive retrofit efforts such as earthwork to aesthetically blend the dam structure into the natural landforms could be cost prohibitive, although there could be additional benefits other than aesthetic of costly earthwork. The retrofit project could also be valuable as an example of retrofitting methods and an opportunity for the Flood Control District to portray their environmental sensitivity to the public and lead the charge for more sensitive design of these types of drainage structures.

Zone Four - Foothills Area

Damage caused by multiple trail paths has created both a constraint and an opportunity for this zone. The hillside slopes do restrain access for re-vegetation of the scars left by trails but also create an opportunity to recreate the original, natural character of the zone. Adjacent zones would also benefit from trail consolidation and re-vegetation as the hillsides are visible from many vantage points on the site. While the Hedgepeth Hills foothills area is fairly well connected to the rest of the community via access off of Deer Valley Road, there is an opportunity to provide a more clear connection to off-site recreation areas to the west, such as Thunderbird Park.

Zone Five - Rock Art Center Area

The existence of petroglyphs is viewed as an opportunity to preserve a piece of history and enable greater public knowledge about the center and site. With greater connectivity, the potential for the Deer Valley Rock Art Center is immense. Increasing public awareness about the ancient site could inspire development of related centers for study of other topics such as Sonoran native species and desert climate ecosystems. Providing a stronger link between the Rock Art Center and the other developed amenities would generate additional revenue for the center and enable it to communicate to a broader, perhaps even regional audience. In addition, providing a corridor link with a pedestrian bridge over the freeway would connect neighborhoods to the south with the regional park.

Landscape Aesthetics and Multi-Use Treatment Recommendations

See concept graphic on page 19. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One – Impoundment Area Open Space

The conceptual design solution seeks to expand upon the existing uses while providing clear access routes to the developed recreation amenities and protecting existing undisturbed riparian areas. The cross sections illustrate more specifically the existing conditions and potential retrofit opportunities for the site. With the exception of the existing mesquite bosque, which is to be preserved, the undeveloped and disturbed portion of the impoundment area is in need of restoration and re-development. Since uncontrolled access has already resulted in a degraded landscape, the potential to re-contour the area and develop additional specialized recreation was created. The open space area immediately behind the dam structure would incorporate a system of riparian washes with naturalistic rock drop structures to contain a lake area and associated fly-fishing park. This area would further enhance and increase the area of the mesquite bosque. To provide revenue to construct the park and lake facilities, sand and gravel mining operations could be established for a limited time. The void left after mining operations would then be used for the lake area and the site would be landscaped with a blend of native trees and shrubs with native grass areas at lake access points. This portion of the site would be linked to the other zones via a tram loop. The intent is that kids and adults alike could spend the day enjoying a vast array of recreational opportunities without the need of a car.

Aesthetic Treatment Retrofit Opportunities:

Re-contour of impoundment area basin to mimic natural desert washes and lake.
Berming to discourage undesirable vehicle access.

Landscaping Treatment Retrofit Opportunities:

Tree, shrub, and appropriate grasses to mimic desert riparian wash vegetation to promote urban wildlife.
Limited landscape irrigation of key areas.

Multi-Use Treatment Retrofit Opportunities:

Lake constructed with rock drop structures that are also utilized as access points.
Constructed soft surface trail system with directional signage.
Soft surface parking area for fly-fishing park.
Portion of tram loop.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments:

None identified.

Zone Two – Impoundment Area with Multi-Uses

Since this area had an existing "amusement park" character, additional related recreational opportunities were proposed for the multi-use impoundment area. They include batting cages adjacent to the existing sports complex, Multi-use fields that also act as retention to slow flows from upstream, a BMX course just north of the existing go cart racing tracks, a dog park with obedience training facility adjacent to the planned animal shelter, and paintball recreational facility. The additional recreation facilities are to be operated by private parties with lease agreements with the Flood Control District. The concept also proposes integrating the different recreational uses with appropriate buffers and a tram connection loop adjacent to a vehicle route loop.

Aesthetic Treatment Retrofit Opportunities:

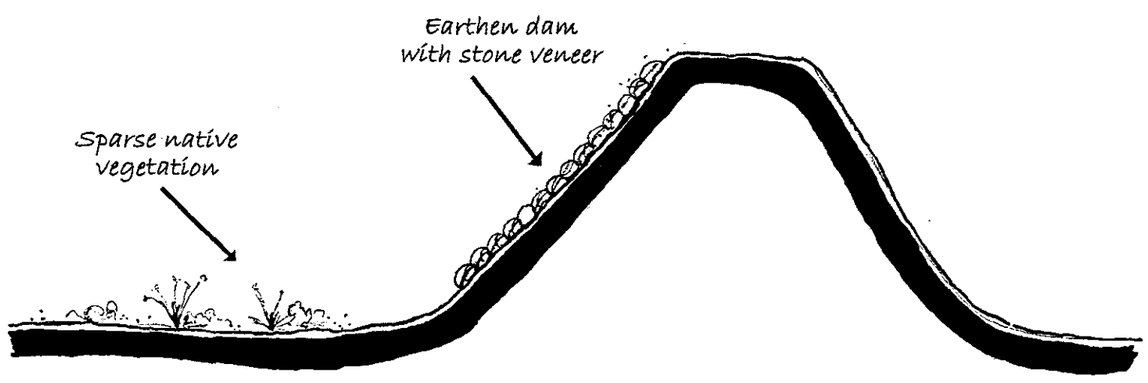
Re-contour some areas between existing amenities to create additional buffers.

Landscaping Treatment Retrofit Opportunities:

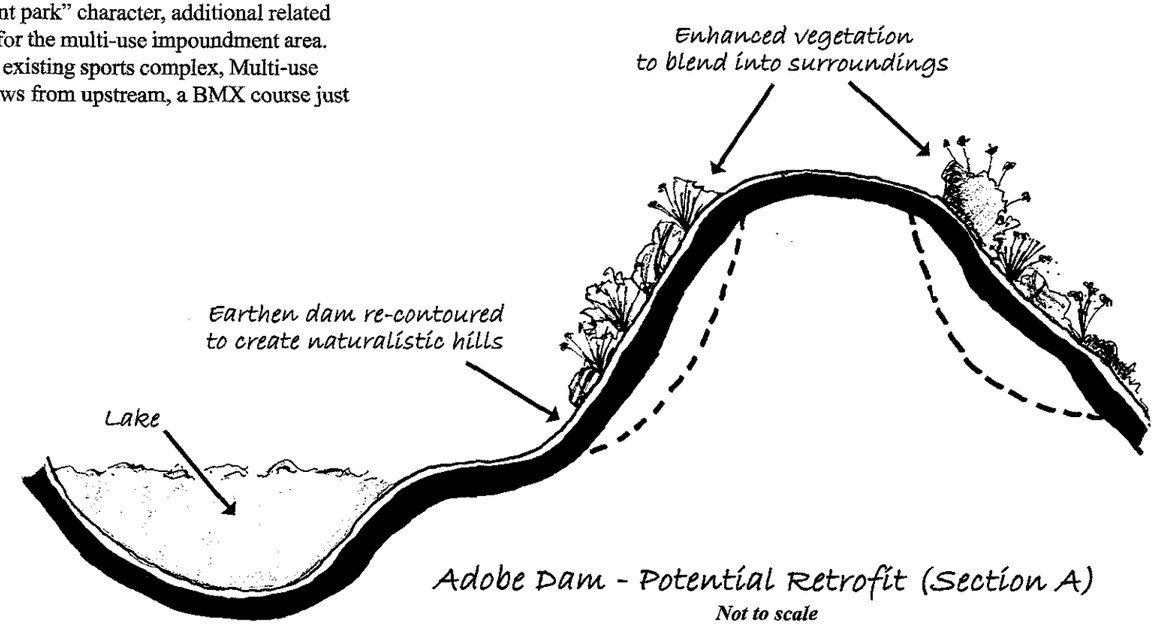
Tree and shrub plantings as appropriate to provide both visual buffers between recreational uses and shade for trails linking amenities.
Planting of roadside areas, entryways and key focal areas.

Multi-Use Treatment Retrofit Opportunities:

Developed recreation facilities to be provided by developer.
Constructed soft surface trail system with directional signage.
Soft surface parking area for the tram station.
Paved road loop and access point for the ultra light flight park.



Adobe Dam - Existing Conditions (Section A)
Not to scale



Adobe Dam - Potential Retrofit (Section A)
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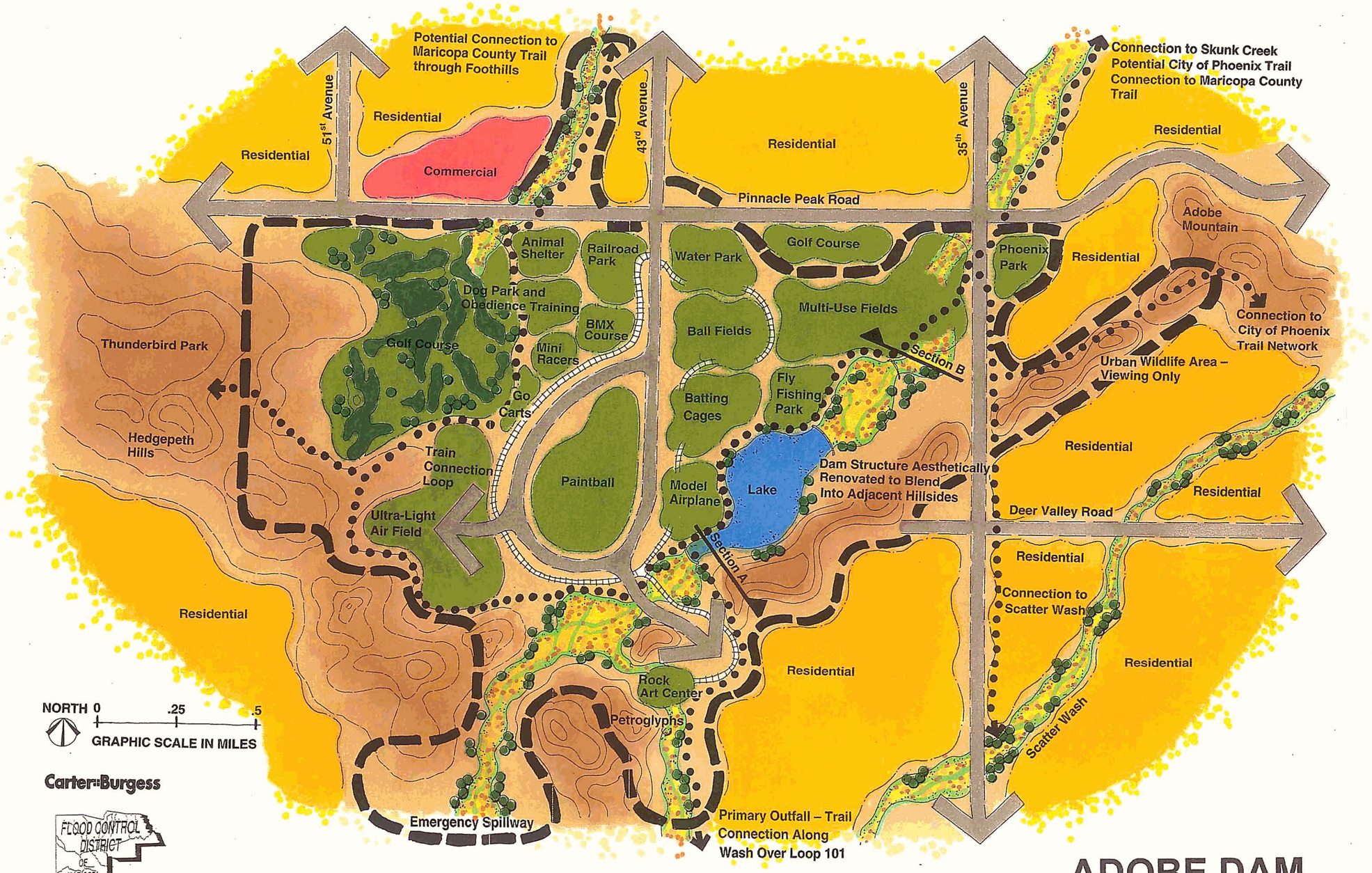


ADOBE DAM CONCEPT

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments:

None identified.

Zone Three - Dam and Emergency Spillway Structures

Because the dam structure is such a visual contrast to the hills surrounding it, the concept proposes to construct an earthen overburden to blend it into the native landforms adjacent to each end. The dam would not be realigned; it would achieve a naturalistic form by irregular placement of overburden with pockets of indigenous rock and vegetation. The northern end of the dam would become a wildlife viewing refuge. The concept proposes that the emergency spillway is treated to blend with the undisturbed hillside with a staining and rock aging treatment. The restricted access point is to receive a new fence and landscaping to better blend into the surrounding native landscape and will maintain its prohibited public access.

Aesthetic Treatment Retrofit Opportunities:

Irregular rock and earth placement on the top and both sides of the dam structure for its full length.
Aesthetic treatment of the rock walls along either side of the emergency spillway structure to age the disturbance and make it appear more natural.
Re-alignment of maintenance road to meander along top and edges.

Landscaping Treatment Retrofit Opportunities:

Tree and shrub plantings on both sides of the structure to provide partial screening.
Limited landscape irrigation of key areas.

Multi-Use Treatment Retrofit Opportunities:

Soft surface trail to viewing point at north end of structure.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments:

None identified.

Zone Four - Foothills Area

The concept proposes that both portions of the foothills area within the property boundary are to be preserved. Trails for consolidation need identification and clearly marked approved pathways need to be provided. The closed trail ways are to be re-graded and re-vegetated to match undisturbed areas. Preserved trail connections are to link the Rock Art Center with the rest of the recreational amenities and link the site at a coordinated point with off-site recreational areas such as, Thunderbird Park.

Aesthetic Treatment Retrofit Opportunities:

Earthwork to re-contour closed trails.

Landscaping Treatment Retrofit Opportunities:

Tree and shrub plantings along trails to provide shade.
Native plantings to mask closed trail areas.
Limited landscape irrigation of key areas.

Multi-Use Treatment Retrofit Opportunities:

Soft surface trail connections to Thunderbird Park and the rest of the site's amenities.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments:

None identified.

Zone Five - Rock Art Center Area

Greater accessibility is proposed for the Rock Art Center. A tram loop would link the Center with the rest of the recreational site and foster increased use and donation revenue. An enhanced landscape would buffer the tram loop from the adjacent residential area.

Aesthetic Treatment Retrofit Opportunities:

Minor earthwork shaping in disturbed areas.

Landscaping Treatment Retrofit Opportunities:

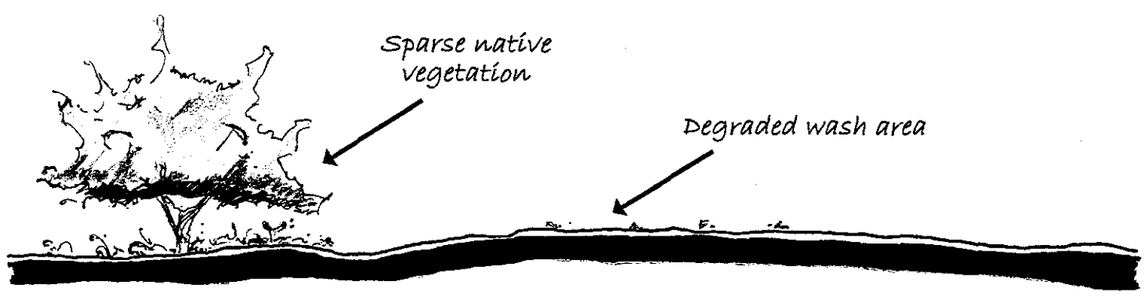
Tree and shrub plantings along trails to provide shade.
Native plantings in disturbed areas.
Native plantings to provide a buffer for residential areas.
Limited irrigation of key areas.

Multi-Use Treatment Retrofit Opportunities:

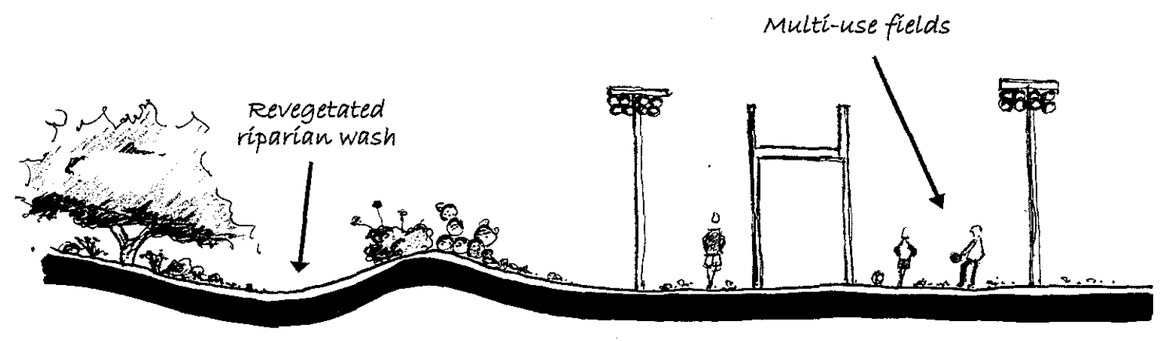
Soft surface trail connections to the rest of the site.
Tram connection to the rest of the site.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments:

None identified.



Adobe Dam - Existing Conditions (Section B)
Not to scale



Adobe Dam - Potential Retrofit (Section B)
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Hydrologic Engineering Synopsis of Structure

Project Title: Adobe Dam

Location: T4N, R2E, Section, 8, 9, 10, 14, 15, 21, and 22

Access structure from 41st Avenue north of Beardsley Road

Authorization: Flood Control Act of 1965 (Public Law 89-198, 89th Congress)

Federal Sponsor: Corps of Engineers

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: Adobe Dam will collect runoff water from the watershed with the main source of water being Skunk Creek. The impounded water will be released through the ungated outlet into the Skunk Creek Channel.

Project Features:

Type of structure Zoned earth-fill

Top of structure elevation 1,403.0

Length of structure 11,220 lf

Maximum height 63 feet

Top crest width 20 feet with 12 feet paved

Spillway capacity 18,776 acre feet

Drainage area 89.6 square miles

Elevation Varies from 1403.0 to 1404.83

Maximum water surface elevation 1,397.5 elevation

Freeboard 5.88 feet

Drawdown Time 122 hours (5.08 days)

Principal outlet discharge rate 1,890 cfs

Principal outlet structure 5.9 x 8.85 feet conduit w/headwalls and flared wing walls. Conduit is 290 feet long.

Level of protection standard project flood with peak inflow of 66,000 cfs

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone One - Impoundment Area Open Space		
	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 this zone meanders, this is an open space area.
2	The profile or height of the structure varies to modulate the outline.	5	The height or profile of this zone varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes of this zone are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	5	Although disturbed, this zone blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	This zone has revegetated and remaining natural vegetation provides on-site screening.
6	There is 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 existing natural veneering or plating with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas have been moderately graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The existing plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	4	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	This zone has not been reseeded, but has naturally revegetated.
12	The structure and maintenance roads are kept free of weeds and debris.	3	This zone and maintenance roads have some weeds and debris.
	Conformance Average	**3.83**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are the desert wash corridor features of the Skunk Creek to preserve.
14	There are landscape or natural features to preserve.	5	The zone consists of natural desert washes, basins and vegetation.
15	There are wildlife habitat areas to preserve.	5	There are wildlife habitats by the natural washes and tree bosques to preserve.
16	There are undisturbed open space elements to preserve.	5	There are undisturbed tree bosques to preserve.
17	There are scenic corridors within this zone to preserve.	5	The area is consists of native landforms and vegetation, and is a scenic corridor.
18	There are panoramic views from the structure or zone.	4	There are panoramic views from this zone of the adjacent foothills.
19	There is a meandering low-flow feature modeled on riparian washes.	5	This zone has a existing low-flow features modeled on riparian washes.
20	The structure or zone has naturally revegetated.	5	This zone has naturally revegetated.
21	The existing plantings match the community character.	5	This zone consists of native desert vegetation and matches the 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 facility structures blend into the surroundings.	2	The adjacent principle outlet structure does not blend into the surroundings.
24	The adjacent properties positively impact the site.	5	The adjacent properties are residential and foothill area, and are positive features.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	4	There are several water recharge or basin areas.
27	The structure does not have negative on-site visual problems.	3	There are many disturbed areas from flood control excavations and off-road use.
28	There are no overhead electrical lines or utility towers.	3	There are some overhead electrical lines.
29	There are not multiple maintenance roads within the zone	1	There are multiple maintenance roads within this 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 the multi-use site that requires buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	4	The disturbed areas need revegetation and screening between uses.
33	There are opportunities for aesthetic and landscape retrofit treatments.	4	There are large open space areas available for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.95**	
	Conformance and Aesthetic Features Average	**3.89**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Impoundment Area Open Space		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	There are existing natural wash features that are beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing low impact multi-uses - the model airplane field.
36	The zone is currently accessible for multi-use.	5	The Adobe Dam Recreational Area is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Multi-use trails and other features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Trails and low-impact features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	1	There is space to meander the maintenance roads and others should be closed and restored.
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 retrofits due to site size.	5	There are no constraints to multi-use due to site size, this zone is large.
42	There are no constraints to multi-use retrofits 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 retrofits due to existing slopes.	5	There are no constraints to multi-use due to existing slopes, this zone has gentle slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There is no constraint to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**4.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to Thunderbird Park, Sonoran Preserve, Skunk Creek, Scatter Wash.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection along Skunk Creek to the Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	This site is a recreational area and is adjacent to Thunderbird Park.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are currently no adjacent commercial areas.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas along Pinnacle Peak Road.
53	Site property could be sold to allow for special use commercial areas.	5	Some property could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	2	The adjacent land has been developed, but this zone has space to provide buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	Thunderbird Park, Skunk Creek and the desert washes and have positive natural features.
56	Adjacent land needs design guidelines for future development.	5	Most land is developed, the parcel by 47th Ave. and Pinnacle Peak needs guidelines.
57	There are opportunities for large-scale regional park facilities.	5	The zone is currently part of a large regional park facility.
58	There are opportunities for small-scale local park facilities.	5	This zone is could accommodate additional park facilities.
59	There are opportunities for riparian or desert wash areas.	5	There are existing desert wash areas and opportunities to enhance these features.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for ponding areas within this large area.
61	There are opportunities for multi-use trails.	5	There are opportunities for additional multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.61**	
	Existing and Future Multi-Use Average	**4.58**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**4.24**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Two - Impoundment Area with Multi-Uses		
	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 of the impoundment area meanders, this is an open space area.
2	The profile or height of the structure varies to modulate the outline.	4	The height or profile of this zone varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	4	The side slopes of this zone are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	4	Although disturbed, this zone blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	This zone has revegetated and remaining natural vegetation provides on-site screening.
6	There is off-site screening with plantings or earthwork buffers are used.	4	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 existing natural veneering with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are moderately graded and replanted to match the surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The existing plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	4	This zone has not been reseeded, but has naturally revegetated.
12	The structure and maintenance roads are kept free of weeds and debris.	3	This zone and maintenance roads have some weeds and debris.
	Conformance Average	**3.92**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are the desert wash corridor features of the Skunk Creek to preserve.
14	There are landscape or natural features to preserve.	5	The zone consists of natural washes, basins and vegetation.
15	There are wildlife habitat areas to preserve.	5	There are wildlife habitats by the natural washes to preserve.
16	There are undisturbed open space elements to preserve.	5	There are some undisturbed areas adjacent to the golf course to preserve.
17	There are scenic corridors within this zone to preserve.	5	The zone is consists of native landforms and vegetation.
18	There are panoramic views from the structure or zone.	5	There are panoramic views from this zone of the adjacent foothills.
19	There is a meandering low-flow feature modeled on riparian washes.	3	There are some existing meandering low-flow features.
20	The structure or zone has naturally revegetated.	3	Some of the impoundment area has naturally revegetated.
21	The existing plantings match the community character.	5	This zone consists of native desert vegetation and matches the 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 facility structures blend into the surroundings.	5	There are no attendant flood control facilities structures.
24	The adjacent properties positively impact the site.	5	The adjacent properties are residential and foothill area, and are positive elements.
25	There is existing on-site irrigation.	3	There is existing on-site irrigation in landscaped areas around the recreational uses.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	The recreational use areas need some additional landscape screening.
28	There are no overhead electrical lines or utility towers.	1	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	1	There are multiple maintenance roads within this site.
30	There are no intersecting arterial streets.	4	There are no intersecting arterial streets, 43rd Avenue accesses the site.
31	There are no noise impacts that need buffering.	3	There is some noise from the existing multi-uses that require buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	The disturbed areas need revegetation and screening between uses.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are open space areas available for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.90**	
	Conformance and Aesthetic Features Average	**3.91**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam		
	Zone Two - Impoundment Area with Multi-Uses	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	There are existing natural wash features that are beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-use features - sports complex, water park, airfield, golf course.
36	The zone is currently accessible for multi-use.	5	The Adobe Dam Recreational Area is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional recreational features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional recreational features could be added without compromising public safety
39	There is space to meander the maintenance road(s).	3	There is only one access/ maintenance road, 43rd Avenue.
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 retrofits due to site size.	5	This is an existing recreational area and there are no constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits 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 retrofits due to existing slopes.	5	There are no constraints to multi-use due to existing slopes, this zone has gentle slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There is no constraint to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**4.82**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to Thunderbird Park, Sonoran Preserve, Skunk Creek, Scatter Wash.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection along Skunk Creek to the Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	This site is a recreational area and is adjacent to Thunderbird Park.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are currently no adjacent commercial areas.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas along Pinnacle Peak Road.
53	Site property could be sold to allow for special use commercial areas.	4	Some property along the arterials could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	2	The adjacent land has been developed, and this zone has space to provide buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	Thunderbird Park, Skunk Creek and the desert washes and have positive natural features.
56	Adjacent land needs design guidelines for future development.	5	Most land is developed, the parcel by 47th Ave. and Pinnacle Peak needs guidelines.
57	There are opportunities for large-scale regional park facilities.	5	The zone is currently part of a regional park facility.
58	There are opportunities for small-scale local park facilities.	5	This zone is could accommodate additional local park facilities.
59	There are opportunities for riparian or desert wash areas.	5	There are existing desert wash areas and opportunities to enhance these features.
60	There are opportunities for recharge basins or ponding areas.	5	There are some opportunities for recharge basins or ponding areas by the golf course.
61	There are opportunities for multi-use trails.	5	There are opportunities for additional multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.56**	
	Existing and Future Multi-Use Average	**4.69**	

Site Criteria

#	Structure - Adobe Dam	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Dam and Emergency Spillway Structures		**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 dam and emergency spillway structures does not vary.
2	The profile or height of the structure varies to modulate the outline.	1	The height or profile of the dam and emergency spillway structures does not vary.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the dam and emergency spillway structures are not varied.
4	The structure is designed to blend into the contour of the natural terrain.	1	The dam and emergency spillway structures do not blend into the surrounding foothills.
5	There is on-site screening with trees and shrubs used to blend the structure.	2	There is no on-site screening with trees, and there are limited shrubs on the dam structure.
6	There is 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	The dam is plated with river rock, but it does not match the indigenous rock character.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are moderately graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	3	The existing plants provide erosion control, but only partially enhance visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	The dam is moderately reseeded, but there are unvegetated areas.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.33**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian or 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the adjacent foothills, open spaces, and residential areas.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	2	The dam and emergency spillway structure have slightly revegetated.
21	The existing plantings match the community character.	3	The existing plantings on the dam match the desert shrub character.
22	The structure's size and scale are proportional to its surroundings.	2	The structure's size and scale are proportional to the foothills but not the residential area.
23	The attendant flood control facility structures blend into the surroundings.	3	The attendant principal outlet structure does not blend into the surroundings.
24	The adjacent properties positively impact the site.	4	The adjacent properties are the foothill and residential areas, and are positive elements.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The dam and spillway structures have very little aesthetic or landscape treatments.
28	There are no overhead electrical lines or utility towers.	4	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	1	There are multiple roads by the dam, one on top the structure and two along the sides.
30	There are no intersecting arterial streets.	2	There is a major arterial, 35th Avenue that crosses over the dam.
31	There are no noise impacts that need buffering.	2	There is some noise from the arterial road that requires buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Overbuilding and landscape treatments will blend the structures into their surroundings.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are open space areas south of the structures for landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.29**	
	Conformance and Aesthetic Features Average	**2.31**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Three - Dam and Emergency Spillway Structures		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features that are beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	The dam and emergency spillway structures are not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Trails and connection 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 to the dam, but the spillway is not a safe area.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road on top of the dam.
40	There are no physical constraints to accessing the site.	1	The slopes of the dam and spillway area constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	1	There are constraints to multi-use, there is limited available land south of the dam.
42	There are no constraints to multi-use retrofits due to structural hazards.	3	The dam has no constraints to multi-use, the spillway area has rock slides.
43	There are no constraints to multi-use retrofits due to existing slopes.	1	There are constraints to multi-use, the dam and spillway structures have steep slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**2.09**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to Thunderbird Park, Sonoran Preserve, Skunk Creek, Scatter Wash.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection along Skunk Creek to the Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	This site is a recreational area and is adjacent to Thunderbird Park.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are currently no adjacent commercial areas.
52	There are opportunities for special use commercial areas.	5	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	5	This zone has no additional property to be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	2	The adjacent land is developed, there is no land to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	Thunderbird Park, Skunk Creek and the desert washes and have positive natural features.
56	Adjacent land needs design guidelines for future development.	5	Most of the adjacent land is developed and there is no need for design guidelines.
57	There are opportunities for large-scale regional park facilities.	3	There are no opportunities for large-scale regional park facilities.
58	There are opportunities for small-scale local park facilities.	1	There are no opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails to cross over the dam.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails to cross over the dam.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**2.96**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.64**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Foothills Area		**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 this zone meanders, this is an open space area with natural landforms.
2	The profile or height of the structure varies to modulate the outline.	5	The height or profile of this zone varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes of this zone are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	5	The foothills area blends into the contour of the natural terrain
5	There is on-site screening with trees and shrubs used to blend the structure.	5	The foothills area has on-site screening from existing vegetation.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is off-site screening from existing plantings and landforms.
7	There is veneering or plating of the structure with indigenous rock.	1	There is existing natural veneering or plating with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	Disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	The existing plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	5	This zone has not been reseeded, but has naturally revegetated.
12	The structure and maintenance roads are kept free of weeds and debris.	4	This zone and maintenance roads have some weeds and debris.
	Conformance Average	**3.50**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are desert wash features to preserve.
14	There are landscape or natural features to preserve.	5	There is desert upland vegetation and natural landforms to preserve.
15	There are wildlife habitat areas to preserve.	5	There are wildlife habitat areas in the foothills to preserve.
16	There are undisturbed open space elements to preserve.	5	There are undisturbed open space elements in the foothills to preserve.
17	There are scenic corridors within this zone to preserve.	5	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views from the foothills to open space areas.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	3	The area has existing native vegetation.
21	The existing plantings match the community character.	1	This zone consists of native desert vegetation and matches the 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 facility structures blend into the surroundings.	1	There is no attendant flood control facility in this area.
24	The adjacent properties positively impact the site.	5	The adjacent properties are residential and foothill area, and are positive features.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	There area some disturbed areas from off-road use.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	2	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.	5	There is noise from the freeway that needs noise buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	The disturbed areas need revegetation and screening.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are large open space areas available for landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.71**	
	Conformance and Aesthetic Features Average	**3.61**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Four - Foothills Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	There are existing natural environments that are beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are some existing multi-use features, there are trails through the foothills.
36	The zone is currently accessible for multi-use.	5	The foothills area is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Multi-use trails and other features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Trails and low-impact features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	4	The existing maintenance road meanders.
40	There are no physical constraints to accessing the site.	3	The foothills are a physical constraint to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are no constraints to multi-use retrofits, but there are limited areas for retrofits.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are constraints to multi-use retrofits, some of the existing slopes are very steep.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.27**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to Thunderbird Park, Sonoran Preserve, Skunk Creek, Scatter Wash.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection along Skunk Creek to the Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	The nearby zone is a recreational area and this site is adjacent to Thunderbird Park.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are currently no adjacent commercial areas.
52	There are opportunities for special use commercial areas.	5	There are some opportunities for special use areas along Pinnacle Peak Road.
53	Site property could be sold to allow for special use commercial areas.	5	There is no site property that could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	2	The adjacent land has been developed, and this zone has space to provide buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	Thunderbird Park, Skunk Creek and the desert washes and have positive natural features.
56	Adjacent land needs design guidelines for future development.	5	Most land is developed, the parcel by 47th Ave. and Pinnacle Peak needs guidelines.
57	There are opportunities for large-scale regional park facilities.	5	This zone is currently part of a large regional park facility.
58	There are opportunities for small-scale local park facilities.	5	This zone is could accommodate additional local park facilities.
59	There are opportunities for riparian or desert wash areas.	4	There are opportunities for additional desert wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for additional multi-use trails in the area.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in the area.
	Future Multi-Use Features Average	**4.33**	
	Existing and Future Multi-Use Average	**4.30**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.96**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Five - Rock Art Center Area		
	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 this zone meanders, this is an open space area with natural landforms.
2	The profile or height of the structure varies to modulate the outline.	5	The height or profile of this zone varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes of this zone are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	5	This zone is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	The rock art center area has on-site screening from the existing vegetation.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is off-site screening from the existing vegetation and landforms.
7	There is veneering or plating of the structure with indigenous rock.	5	There is existing natural veneering or plating with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	4	The existing plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	4	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	5	This zone has not been reseeded, but has naturally revegetated.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**4.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are desert wash feature to preserve.
14	There are landscape or natural features to preserve.	5	There are archeological artifacts, desert vegetation and natural landforms to preserve.
15	There are wildlife habitat areas to preserve.	5	There are wildlife habitat areas in the foothills to preserve.
16	There are undisturbed open space elements to preserve.	5	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	5	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	3	There are views from the foothills to the surrounding residential areas.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature, the principal outlet structure is uniform.
20	The structure or zone has naturally revegetated.	4	The area has existing native vegetation.
21	The existing plantings match the community character.	5	This zone consists of native desert vegetation and matches the 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 facility structures blend into the surroundings.	2	The principal outlet structure does not blend into the surroundings.
24	The adjacent properties positively impact the site.	4	The adjacent properties are foothills and residential areas, and are positive features.
25	There is existing on-site irrigation.	4	There is existing on-site irrigation by the rock art center.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	4	The principal outlet structure contrasts with the natural features of this zone.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	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.	5	There are noise impacts from the freeway that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	This zone needs screening and the principal outlet structure needs modifying.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is space available for retrofit treatments for the screening and the outlet structure.
	Existing Aesthetic Features Average	**4.19**	
	Conformance and Aesthetic Features Average	**4.39**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Adobe Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Five - Rock Art Center Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	The native vegetation and landforms are beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are the existing multi-use features of the rock area center.
36	The zone is currently accessible for multi-use.	5	The rock art center area is currently accessible for limited use of the facility for a fee.
37	Multi-use features could be added without impeding design function.	5	Multi-use trails and low-impact features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Trails and low-impact features could be added without compromising public 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 no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are some constraints to multi-use, and there are limited areas for retrofits.
42	There are no constraints to multi-use retrofits due to structural hazards.	3	There are some constraints to public multi-use due to the hazard.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are some constraints to multi-use, some of the existing slopes are very steep.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**3.82**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to Thunderbird Park, Sonoran Preserve, Skunk Creek, Scatter Wash.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection along Skunk Creek to the Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	The nearby zone is a recreational area and this site is adjacent to Thunderbird Park.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are no possible connections, because there are no local commercial areas.
52	There are opportunities for special use commercial areas.	5	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	5	There is no site property that could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	Thunderbird Park, Skunk Creek and the desert washes and have positive natural features.
56	Adjacent land needs design guidelines for future development.	3	The adjacent land is mostly developed, but would benefit from enhanced connections.
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.	5	This zone could accommodate additional local park facilities.
59	There are opportunities for riparian or desert wash areas.	4	There are some opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for additional multi-use trails in the area.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in the area.
	Future Multi-Use Features Average	**4.06**	
	Existing and Future Multi-Use Average	**3.94**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**4.16**	

Arizona Canal Diversion Channel (ACDC)

Facility Location, Description and Zone Delineation

The channel study area begins at the intake near Camelback Road and 40th Street in the City of Phoenix near the Town of Paradise Valley and transverses the valley flowing towards the northwest. The diversion channel terminates at and empties storm water into Skunk Creek just south of the intersection of Bell Road and 75th Avenue. The Arizona Canal Diversion Channel (ACDC) is approximately 17 miles long and functions as a runoff collector from the Phoenix Mountain Preserve, Dreamy Draw, and Cave Creek Wash. For the majority of the channel study area, the channel runs in parallel with the Arizona Canal with a varied width of open space area between the channel and the Arizona Canal. Site visits by Carter and Burgess identified seven zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Retention Basins and Sports Fields*, an area located at the eastern end of the channel study area. *Zone Two* is the *Covered Box Channel Area*, an area between 36th Street and 24th Street where the channel is covered and functions as a linear park corridor, see photo, bottom left. *Zone Three*, the *Linear Park Corridor*, frames the channel area and includes the portion of land between the channel and the Arizona Canal, see photos, bottom center and right. Two open concrete channel types were identified, the first as *Zone Four*, the *Concrete Lined Box Channel*. *Zone Five* was identified as the second channel type, the *Concrete Lined Trapezoid Channel*. *Zone Six* is the *Earthen Channel and Community Linear Park Corridor*, an area between 51st Avenue and 75th Avenue where the channel becomes a grass-lined linear park corridor. *Zone Seven*, the *Open Space Areas*, are fragment patches of mostly undeveloped open space that are located at random intervals along the linear park corridor.

See Site Map for zone locations.

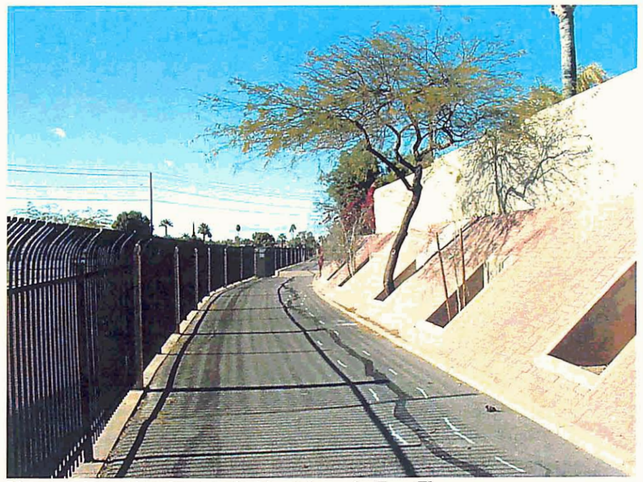
Potential Significance to Provide Regional, Community or Local Open Space Amenities

Carter and Burgess identified the Arizona Canal Diversion Channel (ACDC) as one of the most significant recreational open space corridors in the valley because it provides the largest east-west open space corridor link through the cities of Phoenix and Glendale with the most extensively developed recreational corridor and landscape features. The ACDC provides a major open space link to the West Valley Recreation Corridor and a potential link to Indian Bend Wash. The site also has future potential to serve as a regional open space link throughout Phoenix and to North Mountain Preserve. Additionally, the northwest end of the ACDC offers connections northward to Skunk Creek and Adobe Dam Recreational Area.

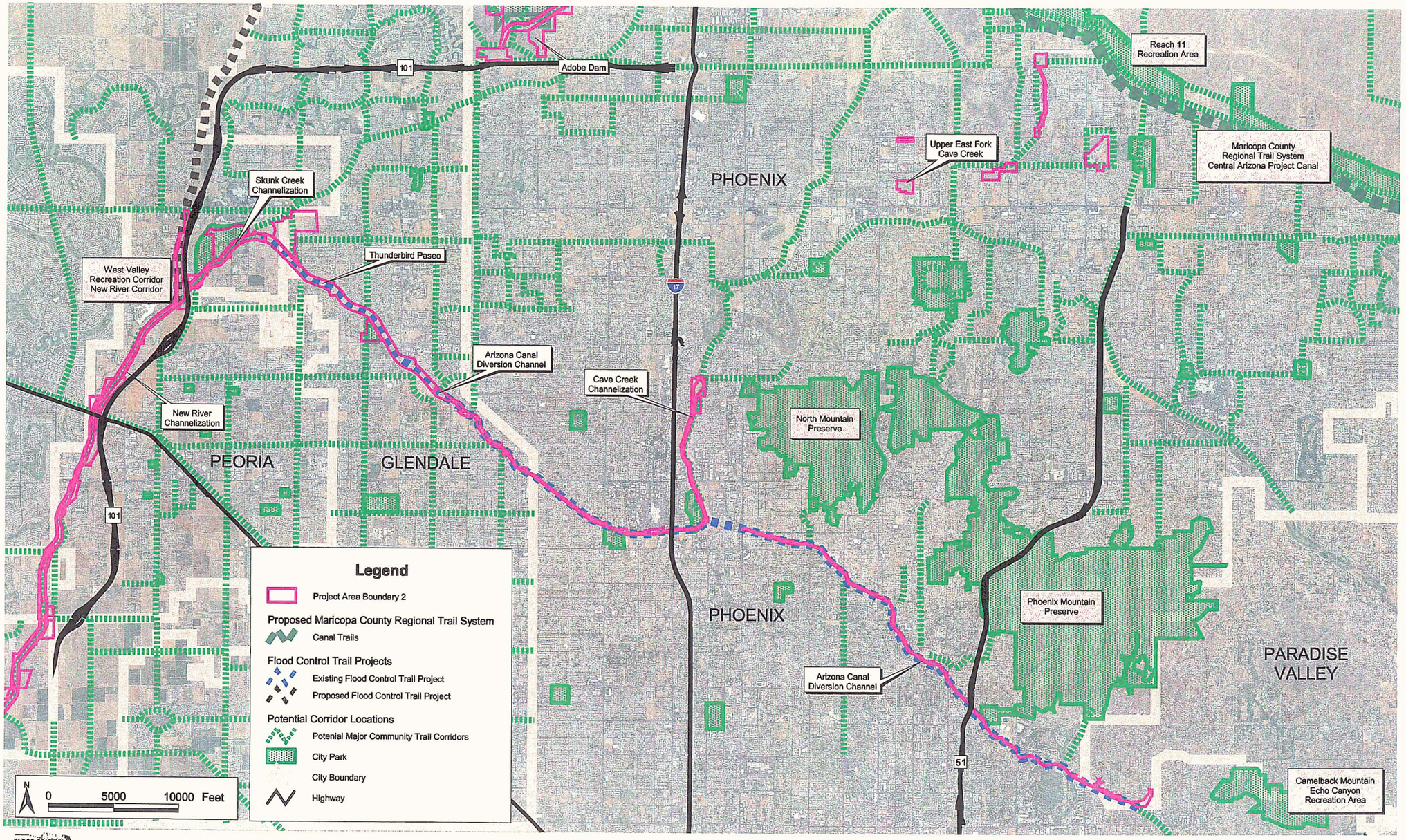
See Potential Corridor Locations Map for identified connection opportunities.

Arizona Canal and covered portion of the box channel – Zone Two

Linear park corridor along south side of channel – Zone Three



Linear park corridor along north side of channel – Zone Three



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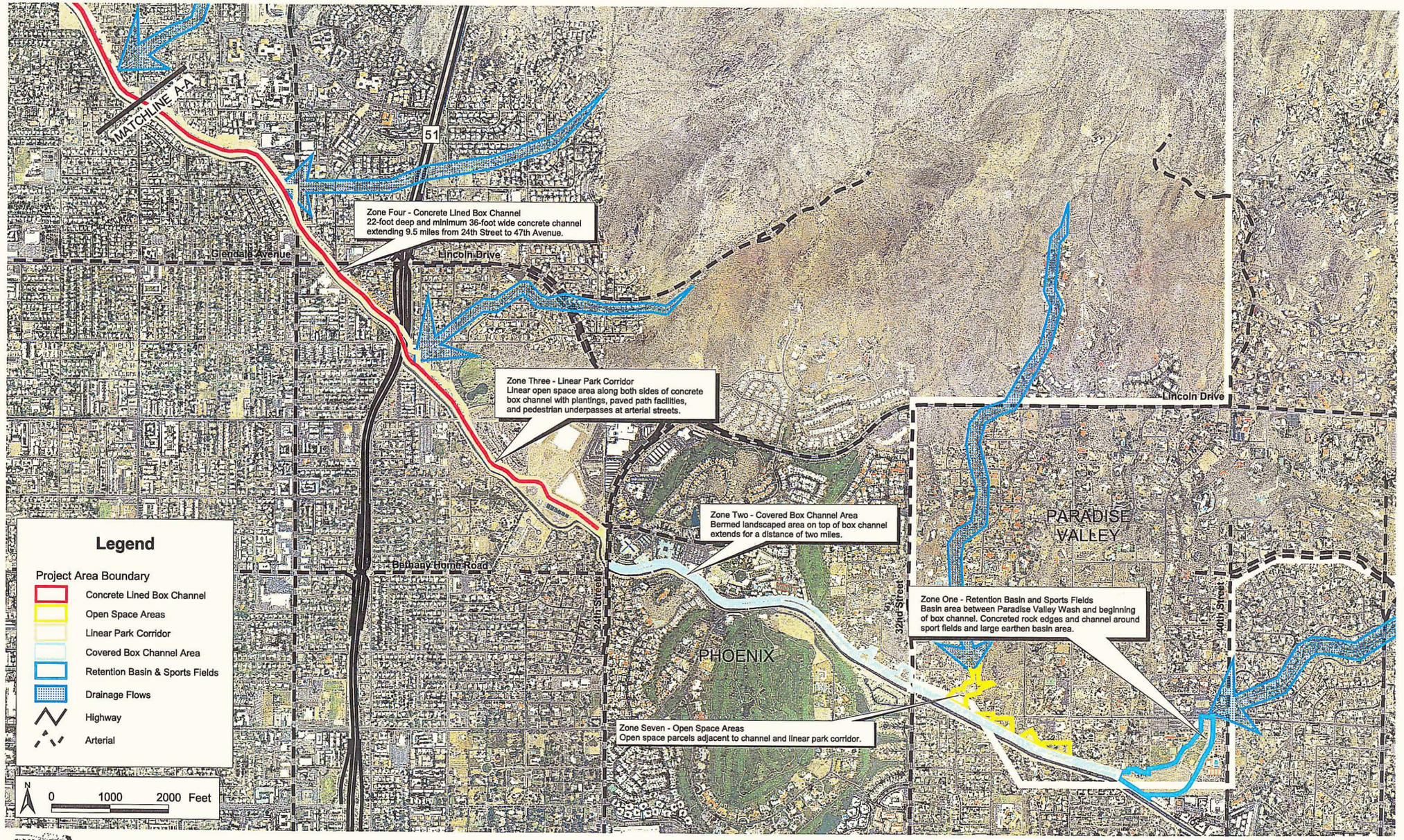
Potential Corridor Locations Map

Arizona Canal Diversion Channel



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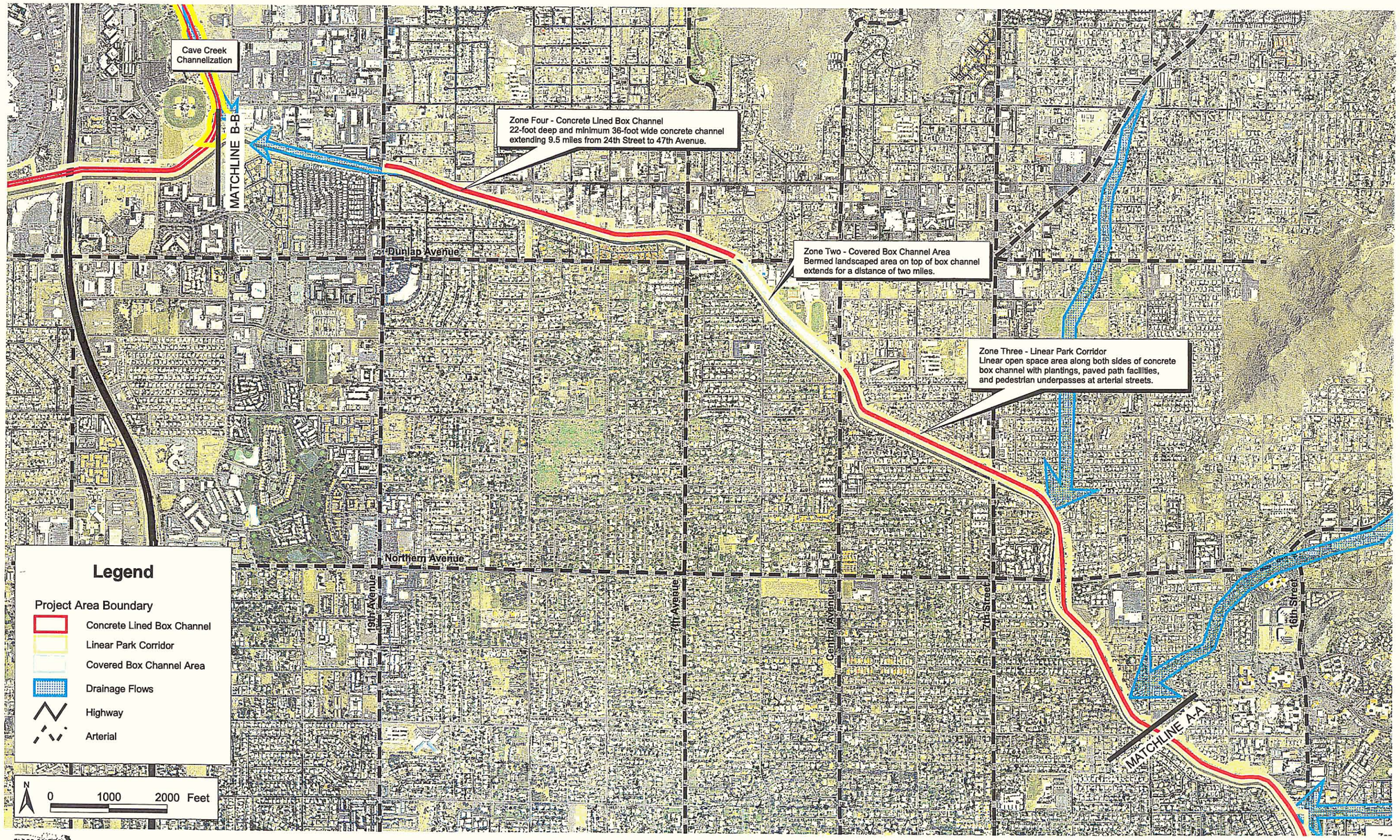
Site Map 1 of 4

Arizona Canal Diversion Channel



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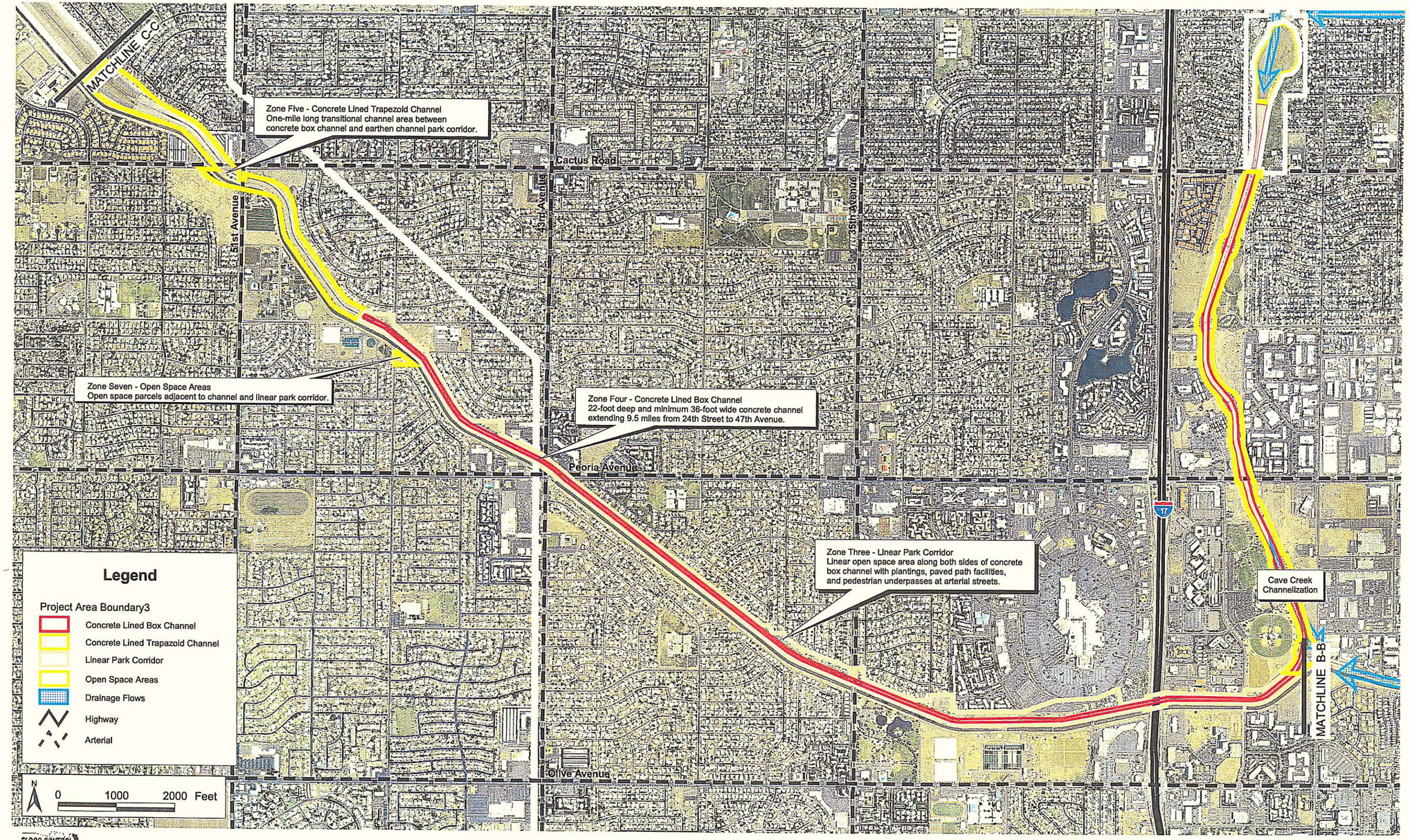
Site Map 2 of 4

Arizona Canal Diversion Channel



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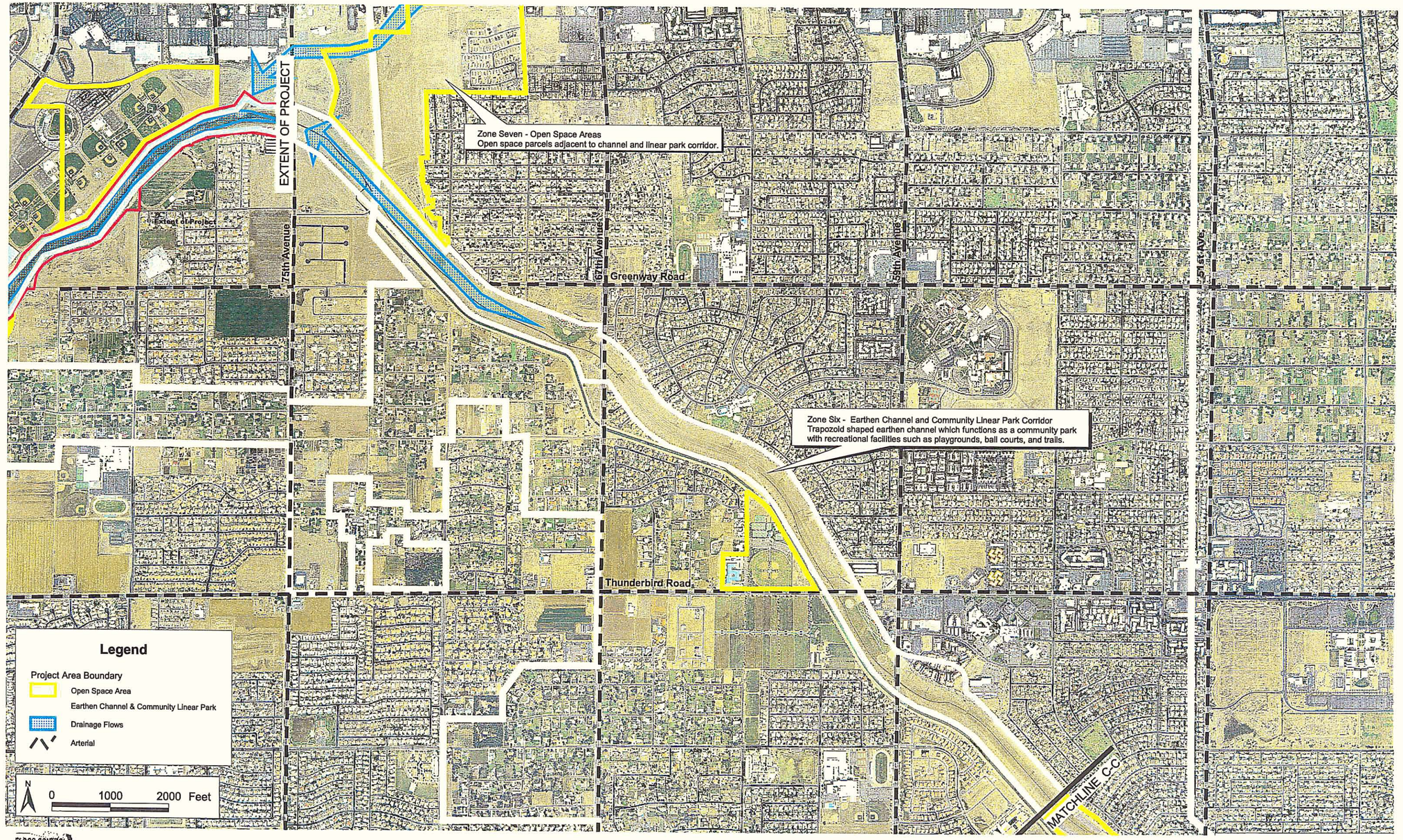
Site Map 3 of 4

Arizona Canal Diversion Channel



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Site Map 4 of 4

Arizona Canal Diversion Channel

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing an evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One - Retention Basin and Sports Fields

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

- The alignment of the basin meanders to vary from a straight line.
- The profile or height of the basin varies to modulate the outline.
- The disturbed areas are graded and replanted to match the surrounding area.
- There are plantings used to provide erosion control and protect visual qualities.

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

- The side slopes of the basin are not varied to simulate the natural terrain.
- There is no off-site screening with plantings or earthwork buffers used.

Zone Two - Covered Box Channel Area

The covered channel area conforms to aesthetic policy for the following reasons:

- The covered channel area is designed to blend into the contour of the natural terrain.
- There is on-site screening with trees and shrubs to blend the structure.
- There is off-site screening with plantings or earthwork buffers are used.
- There are plantings used to provide erosion control and protect visual qualities.
- The disturbed areas are graded and replanted to match the surrounding area.
- The covered channel area is kept free of weeds and debris.

Zone Three - Linear Park Corridor

The linear park corridor conforms to aesthetic policy for the following reasons:

- There is on-site screening with trees and shrubs used to blend the structure.
- There is off-site screening with plantings or earthwork buffers are used.
- There are plantings used to provide erosion control and protect visual qualities.
- The corridor and maintenance roads are kept free of weeds and debris.
- There are plantings used that will not cause an impedance to design function.

The linear park corridor does not conform to policy for the following reasons:

- The profile or height of the corridor does not vary to modulate the outline.
- The side slopes of the corridor are not varied to simulate the natural terrain.

See photos, bottom left and center.

Zone Four - Concrete Lined Box Channel

The concrete lined box channel conforms to aesthetic policy for the following reasons:

- There is off-site screening with plantings or earthwork buffers are used.
- The channel is kept free of weeds and debris.

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

- The profile or height of the channel does not vary to modulate the outline.
- The side slopes of the channel are not varied to simulate the natural terrain.
- The channel is not designed to blend into the contour of the natural terrain.
- There is no on-site screening with trees and shrubs used to blend the channel.
- There are no plantings used to provide erosion control and protect visual qualities.
- There is no veneering or plating of the channel with indigenous rock.

See photo, bottom right.

Zone Five - Concrete Lined Trapezoid Channel

The concrete trapezoid channel conforms to aesthetic policy for the following reasons:

- There is off-site screening with plantings for earthwork buffers are used.

Space between Arizona Canal and diversion channel – Zone Three

Art elements along the linear park corridor – Zone Three

Concrete lined box channel – Zone Four

- The channel is kept free of weeds and debris.

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

- The profile or height of the channel does not vary to modulate the outline.
- The side slopes of the channel do not vary to simulate natural terrain.
- The structure is not designed to blend into the contour of the natural terrain
- There are no plantings used to provide erosion control and protect visual qualities.

Zone Six - Earthen Channel and Community Linear Park Corridor

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

- There is on-site screening with trees and shrubs used to blend the corridor.
- There are plantings used that will not cause an impedance to the design function.
- The channel and maintenance roads are kept free of weeds and debris.

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

- The profile or height of the channel does not vary to modulate the outline.
- The side slopes of the channel are not varied to simulate the natural terrain.

See photo, bottom center.

Zone Seven - Open Space Areas

The open space areas conform to aesthetic policy for the following reasons:

- There are plantings used that will not cause an impedance to design function.
- The open space areas are kept free of weeds and debris.
- There is on-site screening with trees and shrubs used to blend the areas.
- There is veneering or plating of the areas with indigenous rock.

The open space areas do not conform to policy for the following reasons:

- The areas are not reseeded to enhance the growth of vegetation.

See photo, bottom right.

Surrounding Site Character

Zone One - Retention Basin and Sports Fields

Phoenix Country Day School is located just to the north of the site and the school utilizes both sports fields in the basin and the fields on their property. While there are commercial buildings on the south side of the basin, very well kept single-family homes of various ages primarily encompass the basin and area beyond. The homes address the adjacent streets near the park, but are not oriented towards the basin. The Phoenix Mountain Preserve, which includes Squaw Peak Recreation Area, is located just over a mile to the north and is visible from the basin perimeter. Camelback Mountain, Squaw Peak and Echo Canyon Recreation Area are located nearby and are visible from almost all portions of the site. See photo, bottom left.

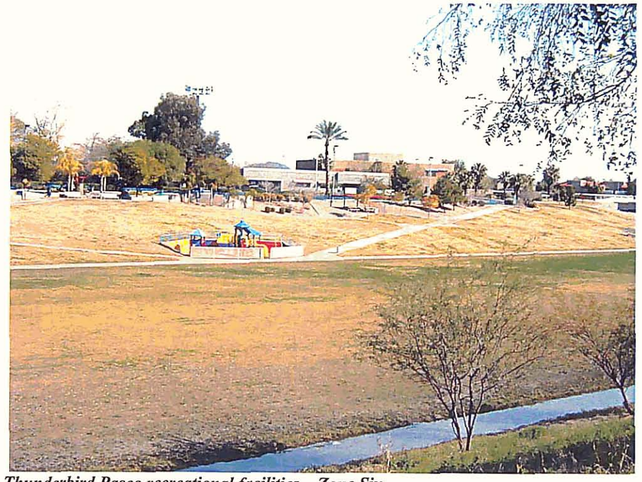
Zone Two - Covered Box Channel Area

There are two segments of the covered box channel area. Both segments are surrounded primarily by single-family residential developments and homes are oriented away from the channel. The first segment begins just past the intake point near the retention basin and continues through mostly residential areas, then daylights at 24th Street, north of Camelback Road. This segment also passes through the Arizona Biltmore Country Club. The second covered segment begins at Central Avenue one-half mile north of Northern Avenue and extends to Dunlap and Fourth Avenues. This segment is an extension of Sunnyslope High School sport fields and the surrounding area is primarily residential neighborhoods. Both segments have mountain areas visible from them. From the first segment, Squaw Peak is visible and from the second segment, North Mountain Preserve is the dominant visual backdrop.

Zone Three - Linear Park Corridor

While the linear park corridor abuts an incredible variety of developments such as Metro Center Shopping Mall and several City of Phoenix parks, residential development is the predominant adjacent land use. The character of the residential developments varies from newer single-family homes to older multi-family housing complexes, but none of the residential development is oriented towards

Retention basin and sports fields – Zone One



Thunderbird Paseo recreational facilities – Zone Six

Thunderbird Paseo earthen channel and open space area – Zone Seven

the corridor and most developments have walls that prohibit access to the park corridor. Although there is often not a physical connection to the site, Camelback Mountain, Phoenix Mountain Preserve, and North Mountain Preserve are all visually connected to the site because of their close vicinity and height. The adjacent concrete lined trapezoid and box channels visually dominate this zone because of their uniform shape, wide width relative to the corridor width, reflection off of the concrete and their huge scale.

Zone Four - Concrete Lined Box Channel

The box channel is located parallel to the linear park corridor. It has all of the same adjacent land uses and character as the park corridor, but views are limited to areas at pedestrian bridge crossings because the safety fence along both sides of the channel blocks views to opposite sides beyond the channel.

Zone Five - Concrete Lined Trapezoid Channel

The concrete lined trapezoid channel is also located parallel to the linear park corridor. It has all of the same adjacent land uses and character as the park corridor, with the exception of a water treatment plant and industrial area located near 51st Avenue. This zone is more visually influenced by the surrounding land use character because the water treatment plant and other industrial properties occupy large lots with large buildings that are very visible from the channel edges. The safety fence along both sides of the trapezoid channel also block views to opposite sides beyond the channel and the width of the channel compounds the lack of visibility.

Zone Six - Earthen Channel and Community Linear Park Corridor

This area, known as Thunderbird Paseo Park, is also bounded by single-family residential development on both sides. In addition, there are a myriad of schools for all grade levels from primary education to Arizona State University's West Campus and the American Graduate School of International Management located nearby. Some of the homes located along this zone are oriented towards the earthen channel. While mountain areas such as North Mountain Park are visible at points along the channel, the surrounding single-family homes dominate views towards the north and south. Although Skunk Creek is located just to the northwest of this zone, it is not visible until the end of the project study area near 75th Avenue.

Zone Seven - Open Space Areas

Several open space areas were identified along the site and share similar surrounding land use characteristics. Most areas are located at major road intersections and are surrounded on three sides by single-family residential developments and on one side by commercial development. Whether the adjacent development is commercial or residential, the development is not oriented towards the open space areas. An exception to the surrounding character of the open space is the large parcel of land located at the northwestern end of the site. This parcel is bordered by Skunk Creek to the northwest and older single-family homes to the east. There is also new single-family residential development occurring just south of the area beyond the earthen channel and linear park corridor. Both new and older residential developments are not oriented towards the open space areas and there are walls that partition the space from development.

See the Site Analysis Map for land uses and zone locations.

Site Impressions

Zone One - Retention Basin and Sports Fields

Besides the uniform slope of the basin, the sports and play fields located at Phoenix Country Day School and the basin are visually well integrated and well used by the school and surrounding neighborhoods. The school campus is situated outside of the basin edge and surrounds the basin area on two sides. The basin and school fields are located at different elevations. The sides of the upper basin are uniform in shape and have river rock set in concrete along the edges, and the sides of the lower basin are earthen with some planted areas. At the western end of the basin, there is a large concrete structure that carries overflow water out of the basin and into the diversion channel. The concrete structure is not masked from view with planting material or earth mounds and is very visible from the rest of the basin and sports field area.

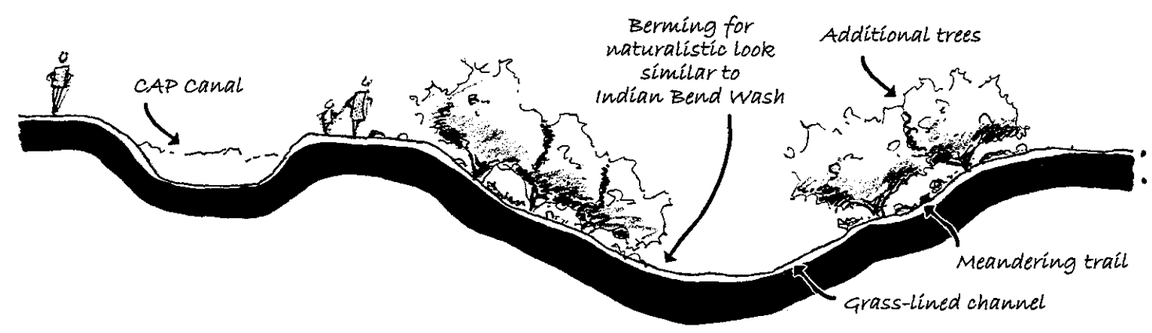
Zone Two - Covered Box Channel Area

This zone was selected by Carter and Burgess as one of the nicest portions of the site because it currently contains shade, a path connection, a few seating areas, and plantings for textural and color variety. It is in very little need of alteration and is well used. This zone is a good example of a structure providing a recreational corridor link and linear greenway while still performing designed flood control duties.

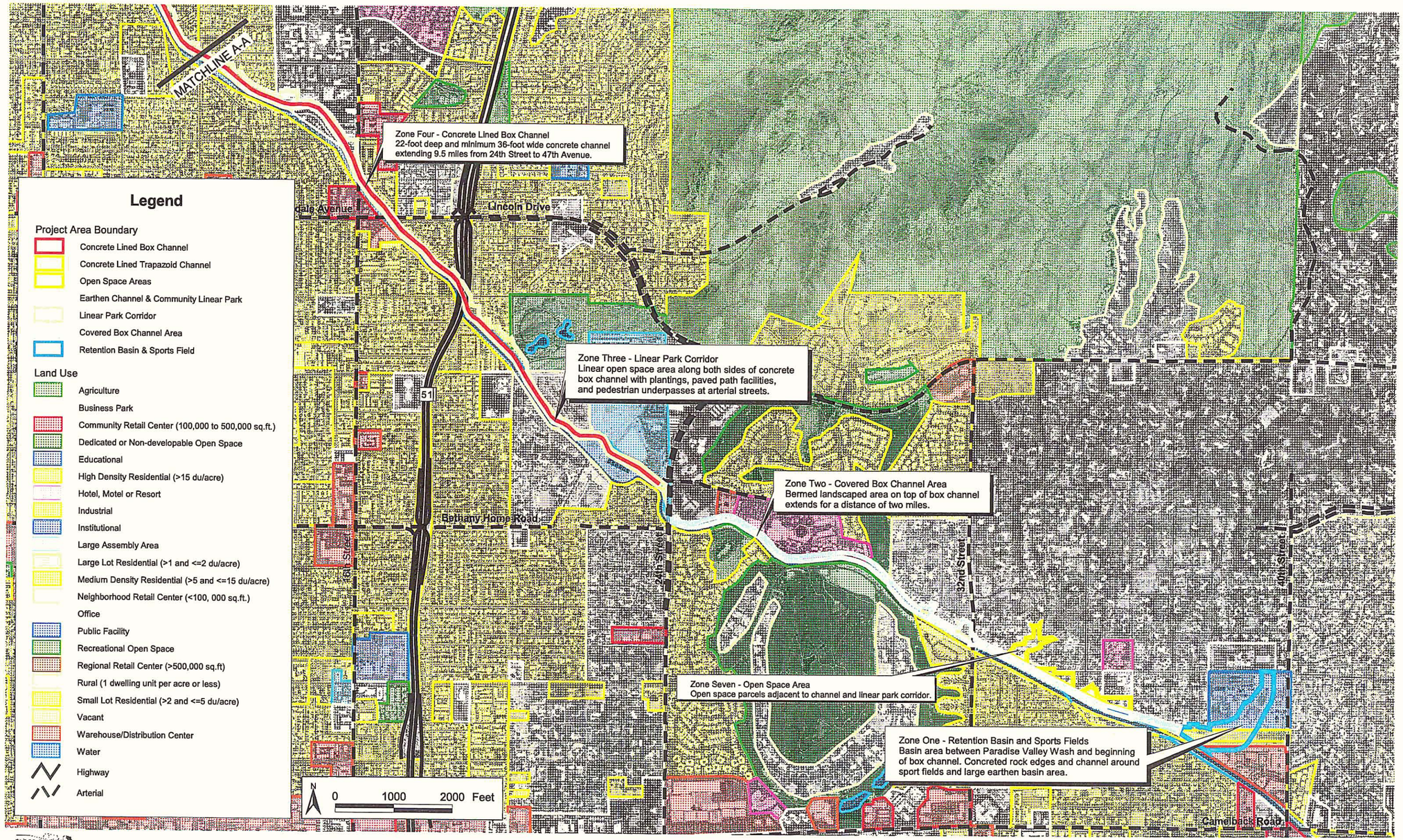
Zone Three - Linear Park Corridor

This east-west corridor is well used at all times of the day. There are plantings, soft and hard surface trails and seating sparsely located along the park corridor. Art elements have been incorporated into the park at several locations and they add interest to the site. The space between adjacent development and the north side of the channel is narrow, but because the channel has high safety fencing along it and the adjacent development is often walled and oriented away from the channel, the space visually seems additionally narrow. The southern side, between the channel and the Arizona Canal is physically wider than the north side but still seems visually narrow as well. Most of the area between the channel and

Arizona Canal Diversion Channel (Sheet 1) - Existing Conditions (Section A)
Not to scale



Arizona Canal Diversion Channel (Sheet 1) - Potential Retrofit (Section A)
Not to scale



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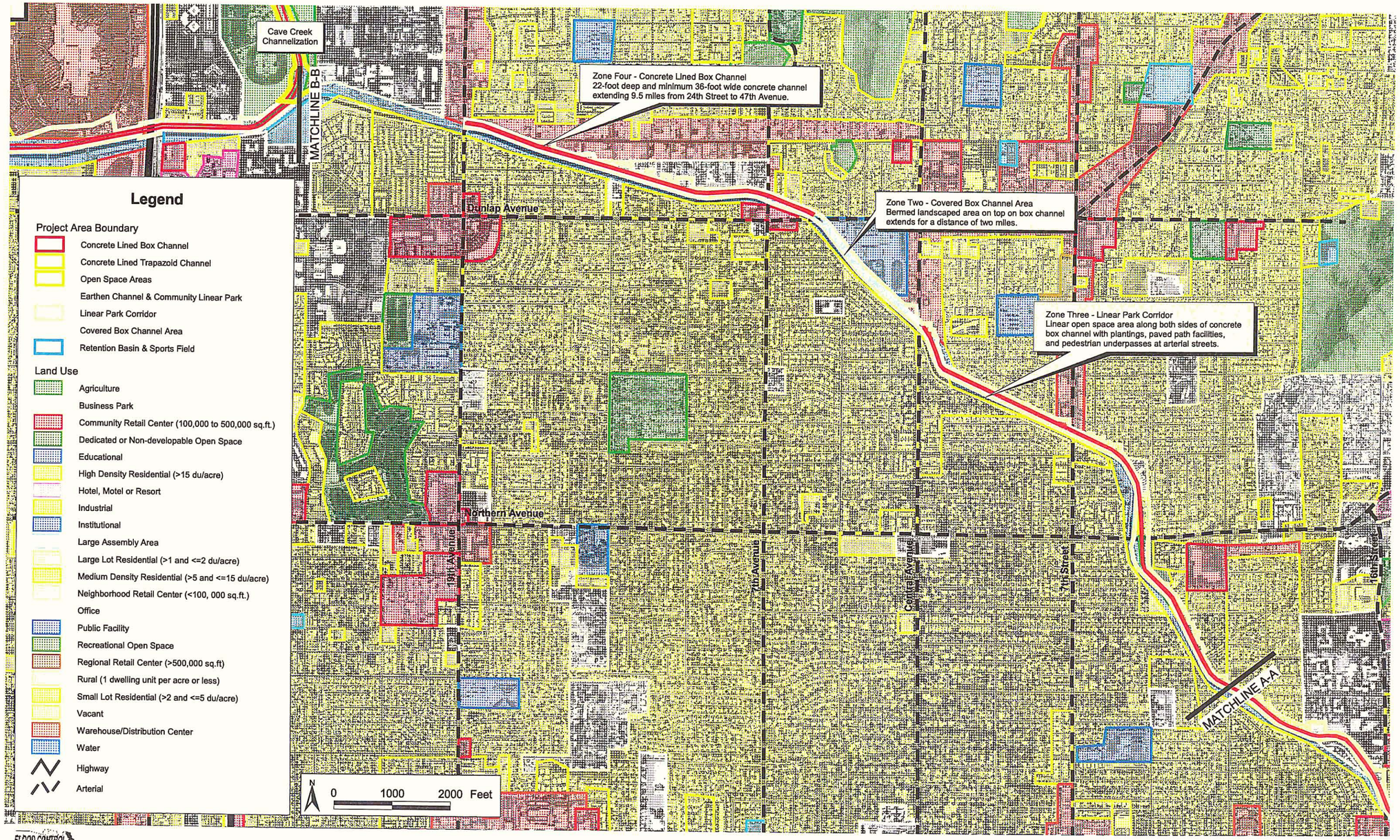
Site Analysis Map 1 of 4

Arizona Canal Diversion Channel



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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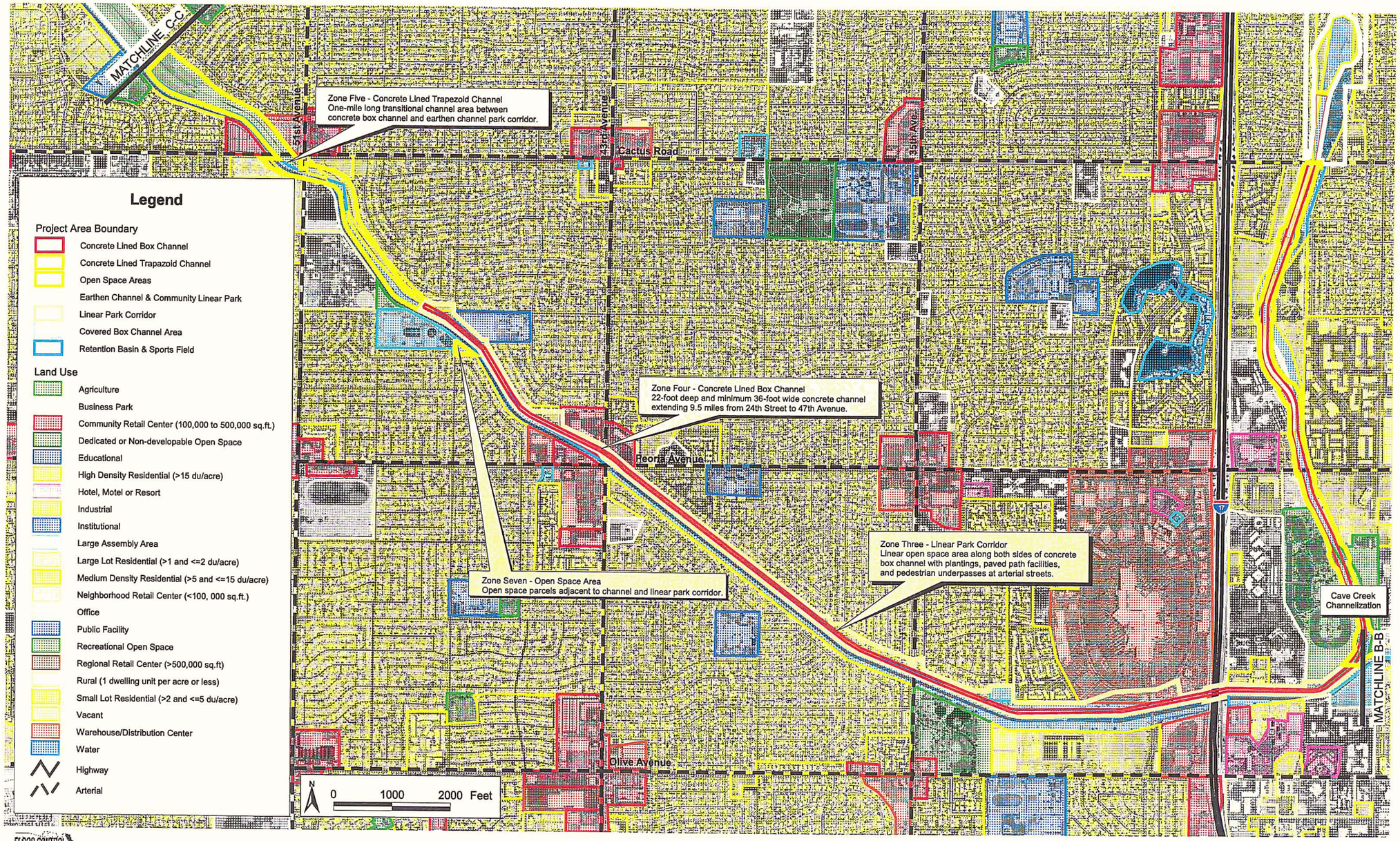
Site Analysis Map 2 of 4

Arizona Canal Diversion Channel



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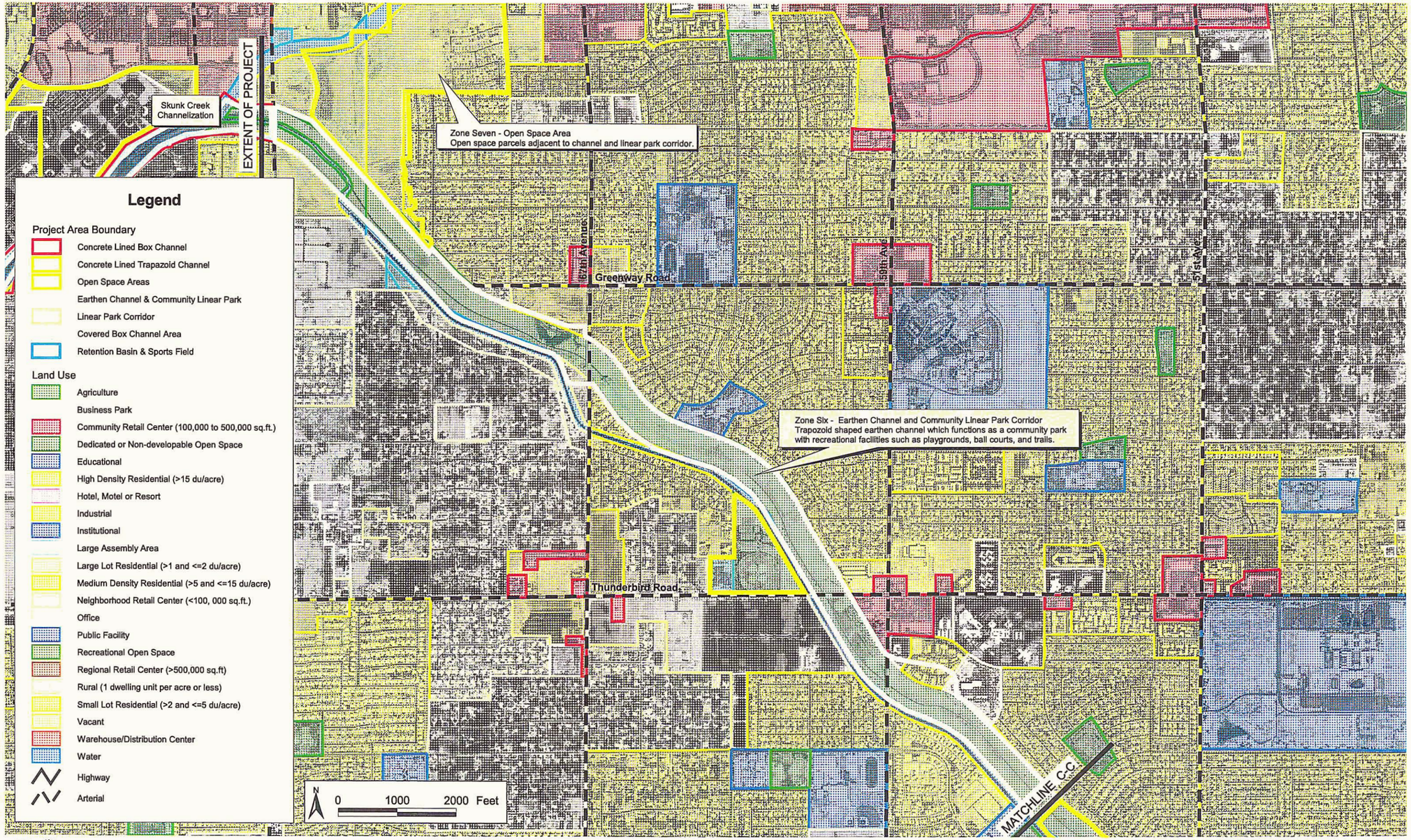
Site Analysis Map 3 of 4

Arizona Canal Diversion Channel



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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Site Analysis Map 4 of 4

Arizona Canal Diversion Channel

the Arizona Canal is unimproved and serves as Salt River Project (SRP) maintenance vehicle access.

Zone Four - Concrete Lined Box Channel

The channel appears to be well designed for flood control functions within a narrow space. Since the box channel shape has less horizontal space requirements than the trapezoid shape, Carter and Burgess preferred this type of concrete channel shape. Although the safety fence utilized is considerably more attractive and costly than chain link fence, the color of the fence strongly contrasts the channel and park corridor background. The height of the fence, when combined with the walls dividing the adjacent development from the site and lack of connections beyond the site, creates a feeling of isolation. There are also few bridges over the box channel, which also contributes to the feeling of isolation and even entrapment. The concrete lined box channel visually dominates the site because it is of such a large scale that it is impossible to mask it with planting alone. The fence pickets, because they are closely spaced, do obscure views of the channel somewhat and act as a visual buffer. But, even though the safety fencing was provided discourage access, there is graffiti and painted-over graffiti visible in many areas. Because the channel was constructed of a light color concrete with a relatively smooth finish, it reflects heat and light onto the linear park corridor.

Zone Five - Concrete Lined Trapezoid Channel

The trapezoidal channel also appears to be well designed to handle storm water flows within a relatively narrow space and generally has similar visual characteristics. But, since the trapezoid shape of the channel is wider because the side slopes angle outwards, the structure seems to visually dominate the site more than the box channel shape. Amenities, such as art elements and seating, are placed less frequently in the linear park corridor along this portion of the site as along the box channel portion. This observation contributes to the lack of visual variety, because this shape of channel is more difficult to mask or integrate into the natural surroundings. Lastly, there are fewer crossings over the channel presumably because the bridges would have further to span and would be more costly.

Zone Six - Earthen Channel and Community Linear Park Corridor

Although this zone is more visually pleasing than the previous zone because the channel is lined with turf and there is less reflection and heat from concrete surfaces, its shape contrasts the surroundings and its function as channel is not masked in any way. The width of the channel seems abundant enough to provide a variety of amenities and to alter the side slopes to increase visual variety. This portion of the site is similar to the scale of Indian Bend Wash but without the variety of contour character and recreational amenities. There are recreational amenities located along the corridor such as a "Frisbee" golf course, playground equipment and park facilities such as restrooms. The bottom of the channel consists of grass and a low flow concrete channel centered throughout the entire length of the zone. There is also a concrete path along the embankment through the zone that is highly used by joggers and bicyclists.

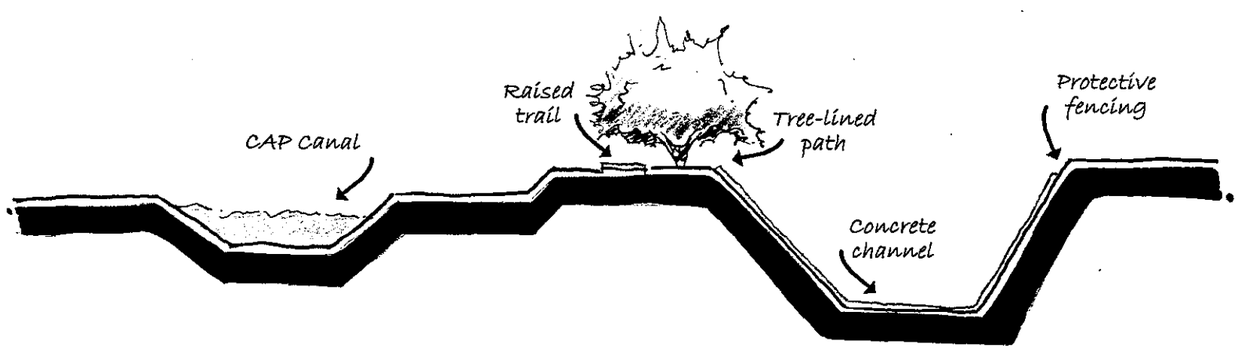
Zone Seven - Open Space Areas

The open space areas are undeveloped portions of land located adjacent to the channel. The character of each open space area does vary from section to section but the areas have similar visual characteristics and common surrounding land uses. The areas do vary in size and shape but most are located near street intersections and next to small commercial developments. The largest section of open space area is located at the northwest end of the site. This area, as with other smaller areas, has been cleared for development. There is generally no landscape in these areas with the exception of weeds and naturalized invader species but the sites do provide a buffer between residential developments and the channel. The recreational uses observed were minimal since most of the areas were so small, but one area had been adapted by the neighborhood kids as a BMX bike track and consisted of earth mounds and plywood ramps.

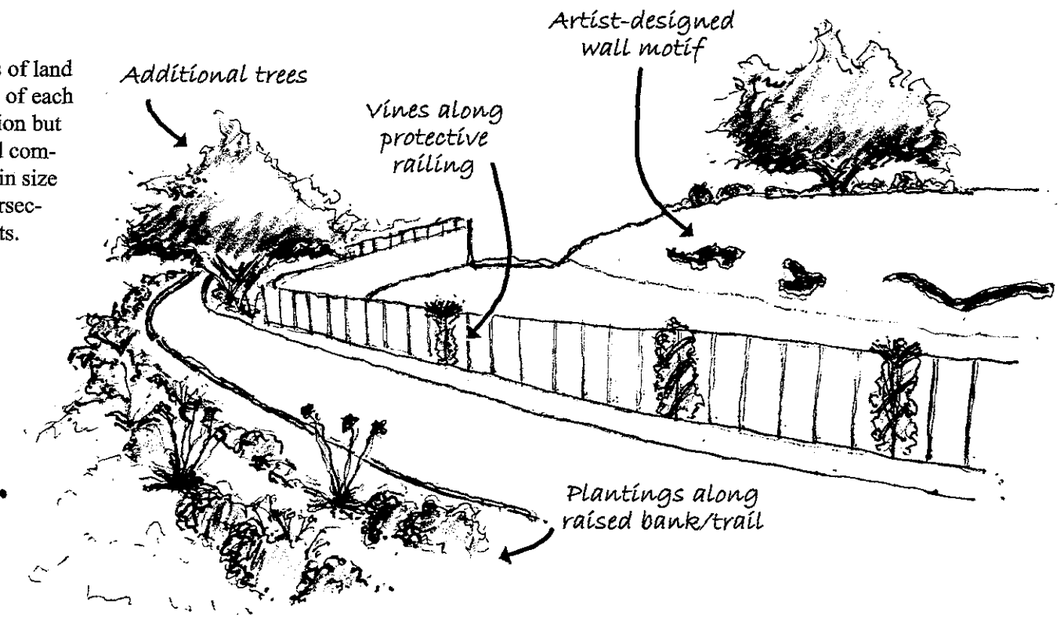
Opportunities and Constraints for Retrofit Treatments

Zone One - Retention Basin and Sports Fields

The surrounding amenities such as the sports fields and school were viewed as opportunities to create additional sports fields. There is also an opportunity to provide a more clear connection to Camelback Mountain Recreation Area and to mask the intake area located at the southwest corner of the basin. The predomi-



Arizona Canal Diversion Channel - Existing Conditions (Section B)
Not to scale



Arizona Canal Diversion Channel - Potential Retrofit (Section B)
Not to scale

nant constraint to retrofitting with additional sports fields is that the retrofit must not hinder the flood control functions of the basin. Construction costs were also identified as a constraint.

Zone Two - Covered Box Channel Area

Because the covered box channel area is currently in good condition, there are few opportunities for aesthetic enhancement with the exception of the addition of plant material, specifically trees for shade, directional signage and seating areas at regular intervals for rest nodes. Connectivity, because the site is surrounded by private development that is often walled, is constrained and there is an opportunity to provide additional connection points along this portion of the channel. Carter and Burgess also identified this section of the site as an opportunity for the Flood Control District to use as a model for future channel design. The only identified constraint to retrofit efforts, particularly providing additional off-site connections, is the feasibility of coordinating access with adjacent private landowners.

Zone Three - Linear Park Corridor

The narrow space that the corridor occupies, specifically on the north side of the channel, is viewed as a constraint to retrofit opportunities without purchase of additional land to widen the corridor. There is, however, an opportunity on the south side of the channel to partner and coordinate with SRP to add landscape and other trail amenities in the space between the channel and the Arizona Canal. Both sides of the channel, regardless of width, would benefit from additional landscape treatments to combat glare and heat emanating from the adjacent concrete channel and regularly placed rest nodes. This section of the site also suffers from poor connectivity and would benefit from additional access points. The constraint to providing additional connections to the site, as with the covered box channel area, is the feasibility of providing access through adjacent landowners' property. The prominent constraint to widening the park corridor on either side of the channel is the incredible cost for purchase of already developed land and the cost of realigning the SRP canal to the south.

Zone Four - Concrete Lined Box Channel

There is an opportunity to provide additional crossings over bridges placed at regular intervals. There is also an opportunity to aesthetically treat the sides and bottom of the channel to reduce heat and glare and to create visual interest. Lastly, there is an opportunity to paint portions of the safety fencing, remove sections to allow viewing of the channel, or to remove sections along the top to soften the fence and blend it with the surroundings. Retrofit constraints include selection of channel aesthetic treatments that will endure fast flowing floodwaters and construction costs. Retrofitting the fence by removing sections is constrained by the fence's designed function to protect the public. Any removal of the fence must not compromise public safety.

Zone Five - Concrete Lined Trapezoid Channel

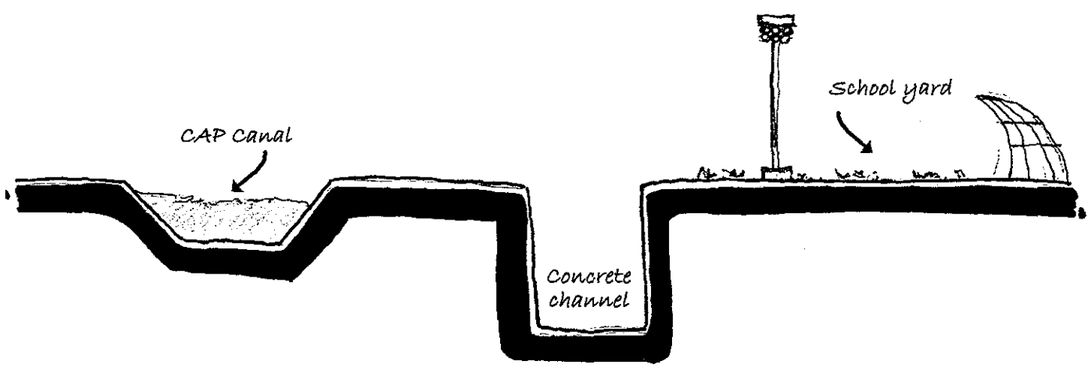
The opportunities and constraints for the trapezoid channel are very similar to the opportunities and constraints for the box channel with the exception of bridge crossing connections over the channel. Because the trapezoid channel is wider than the box channel, pedestrian crossings over the channel will need to be longer and hence, more costly.

Zone Six - Earthen Channel and Community Linear Park Corridor

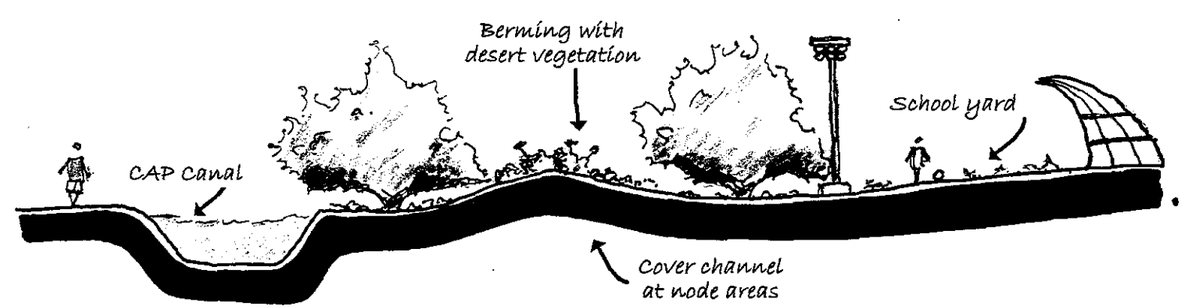
There is an opportunity to meander the low flow channel and provide earth mounds for visual variety. Re-contouring the channel embankments would create areas for additional landscaping as well. There is also an opportunity to construct recreational amenities such as sports fields in the channel bottom. Although there are several existing connection points to the site, there are opportunities to provide additional connection points through partnerships with local communities and governments. Two prominent constraints were identified for this zone, the first was construction cost because of the huge scale of the site and the second was re-contouring the channel embankments in an aesthetic manner that did not hinder the channel's designed function.

Zone Seven - Open Space Areas

Opportunities for enhancement of the smaller open space areas along the channel route are development of the sections as project gateways and connection points to the linear park corridor. Limitations to development of these areas is determined by their location at logical access points along the channel that coordinate with bridge crossings and other trail connections. Open space areas identified as not contributing to connectivity would be leased or sold for commercial use or used as landscape buffers between residential areas and the channel. Based on site visit data, the large open space area located at the northwest end of the site is currently under construction as a single-family residential development and opportunities for this development include design of a trail connection to Scatter Wash. While construction has already begun and the opportunity of designing a development that is oriented towards the channel has been lost, there is an opportunity to develop design guidelines for other new development that stipulates how the development addresses the site in order to provide a more visually integrated landscape.



Arizona Canal Diversion Channel (Sheet 3) - Existing Conditions (Section C)
Not to scale



Arizona Canal Diversion Channel (Sheet 3) - Potential Retrofit (Section C)
Not to scale

Landscape Aesthetic and Multi-Use Treatment Recommendations

See concept graphics on pages 49-52. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One - Retention Basin and Sports Fields

The enhancements outlined in the concept are considered fairly minor with the exception of the intake channel south of the basin. The concept proposes addition of earth mounds to visually mask the basin's uniform side slopes. It also proposes removal of portions of the river rock set in concrete to allow space for landscaping and mounding. The concept also proposes additional planting particularly for the area in front of the intake channel and boulders to visually mask it from the rest of the site. Planting is to be placed generally around perimeter edges to allow for development of additional sports fields.

Aesthetic Treatment Retrofit Opportunities

Re-contour of basin sides and bottom edges to form naturalistic mounding.
Removal of portions of river rock set in concrete.
Create a more naturalistic looking drop structure at the intake channel with the use of boulders or stone veneering.

Landscaping Treatment Retrofit Opportunities

Tree and shrub plantings primarily along the perimeter of the basin and the area in front of the intake channel.
Turf in the basin bottom for a multi-use play field.
Turf irrigation ties to existing system.
Addition of trees and shrubs along perimeter and near intake channel.
Tree and shrub drip irrigation ties to existing system.

Multi-Use Treatment Retrofit Opportunities

Multi-use play field area located in the basin bottom.
Looped concrete path.
Site furnishings such as seating, trash receptacles, and directional signage.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two - Covered Box Channel Area

Because this portion of the site is in such good condition, the design concept recommendations are the most minor. Additional planting is proposed to provide shade and textural variety. This area is also to have additional seating and directional signage. Purchase of adjoining land is not necessary along this segment of the channel because views are not constrained since the channel "borrows views" from the Biltmore Country Club and seems amply wide.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

Additional landscaping to provide areas for shade along the corridor.
Additional tree and shrub irrigation that connects to existing irrigation system.

Multi-Use Treatment Retrofit Opportunities

Additional seating and directional/interpretive signage.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Three - Linear Park Corridor

North of the channel, the concept proposes the addition of plant material for shade and textural variety and to counteract reflected light and heat emanating from the channel. The south side of the channel is to be enhanced through a cooperative effort between the Flood Control District and SRP. This area would also receive additional landscape, seating, and art elements that compliment the existing art. The art elements would be informative regarding water use and storm water collection in the valley and would convey information about both the Flood Control District's and the Salt River Project's directives. The concept does not propose the purchase of additional property to widen the corridor because both sides of the site are developed extensively and the land purchase or canal relocation costs would be unrealistically high. The concept instead focuses upon ways to enhance the site through addition of shade, amenities and providing greater connectivity through coordination and cooperation with adjacent cities and landowners.

Aesthetic Treatment Retrofit Opportunities

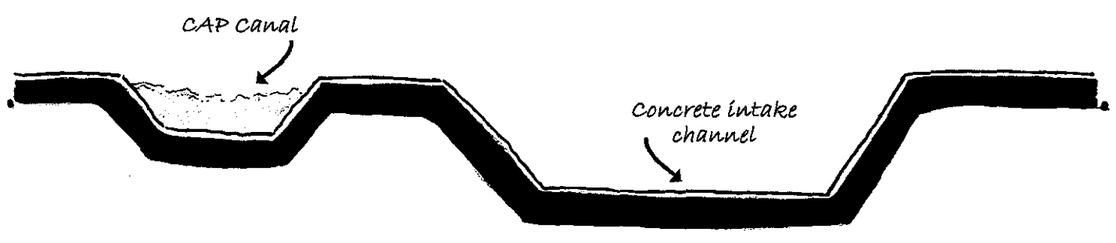
None identified.

Landscaping Treatment Retrofit Opportunities

Additional landscaping along the path to provide buffering and shade.
Additional tree and shrub irrigation that connects to existing irrigation system.

Multi-Use Treatment Retrofit Opportunities

Seating and interpretive art elements at node areas.



Arizona Canal Diversion Channel (Sheet 4) - Existing Conditions (Section D)
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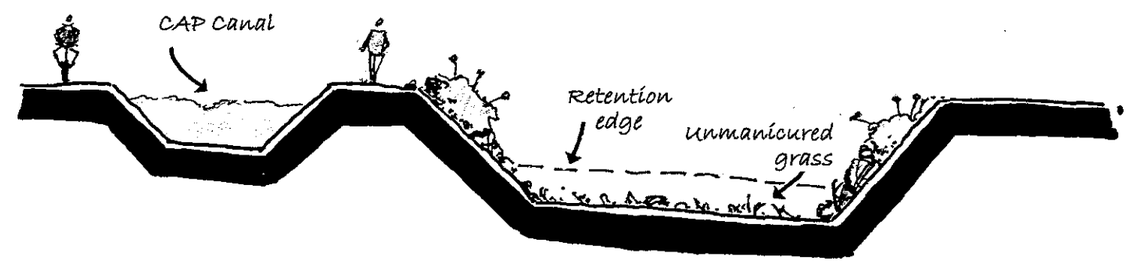


Arizona Canal Diversion Channel (Sheet 4) - Potential Retrofit (Section D)
Not to scale

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Concrete Lined Box Channel

The concept proposes utilizing the box channel itself as an art element. Sides of the channel would be embellished with a variety of artist designed patterns, textures and colors. Architectural concrete forms would be introduced into the channel bottom that would manipulate water flows in entertaining ways. Areas of the safety fencing would be lowered or cut out to allow views into the channel. Most of the safety fencing would be painted to blend with the surroundings or coordinate with adjacent channel art treatments. Access points over the channel would be provided by artist designed pedestrian bridges and through covering the box channel in selected areas. The covered channel areas would function as both crossing points over the channel and rest node areas with interactive art elements.

Aesthetic Treatment Retrofit Opportunities

Artist designed treatment of channel.
Bridge crossings over the channel.
Covered box channel crossings with node areas.

Landscaping Treatment Retrofit Opportunities

Provide appropriate trees and shrubs at covered portions of the channel.
Irrigation connects to existing irrigation system located along the linear park corridor.

Multi-Use Treatment Retrofit Opportunities

Art treatments and interactive "water play" features.
Multi-Use pathway connections over the covered box channel nodes.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Five - Concrete Lined Trapezoid Channel

The concrete trapezoid channel is to receive essentially the same treatments as the box channel with the exception of bridge crossing construction. Because this shape channel is wider than the box channel, the concept solely uses covered channel areas to provide crossing points and to help visually break up the uniform width of the channel. This zone is well suited for artistic treatments because the tilted side walls of the channel are very visible from the linear corridor.

Aesthetic Treatment Retrofit Opportunities

Artist designed treatment of channel.
Covered box channel crossings with node areas.

Landscaping Treatment Retrofit Opportunities

Provide appropriate trees and shrubs at covered portions of the channel.
Irrigation connects to existing irrigation system located along the linear park corridor.

Multi-Use Treatment Retrofit Opportunities

Art treatments and interactive "water play" features.
Multi-Use pathway connections over the covered box channel nodes.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Six - Earthen Channel and Community Linear Park Corridor

The uniformity of the immense corridor space led to the concept of breaking up the corridor visually with earth mounding and meandering the low flow channel. Turf would continue to line the channel and tree groupings would be added to also help break up the space and to provide shade. Pockets of shrub areas would be constructed along the higher portions of the channel embankment. The concept also proposes adding passive and active recreational amenities such as water play areas and a variety of sports fields and courts to create a regional recreation destination spot.

Aesthetic Treatment Retrofit Opportunities

Relocation of the low flow channel from the center to meander back and forth along the bottom of the channel.
Earth mounding in selected areas

Landscaping Treatment Retrofit Opportunities

Additional tree planting in turf areas to provide shade.
Tree and shrub planting along edges of the channel.
Additional irrigation connects to existing irrigation system.

Multi-Use Treatment Retrofit Opportunities

Open play fields in the channel basin.
Multi-use sport courts adjacent to the channel basin.
Concrete loop pathway throughout the site.
Additional play areas and play equipment including water play facility.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Seven - Open Space Areas

The smaller open space areas located near proposed channel nodes and crossings and major road intersections are to become gateway features for the site. The gateways would communicate information about the types of recreational amenities available for use and directional signage. The larger gateway areas would provide limited parking areas. Open space areas that do not provide access opportunities will be utilized as landscape buffers or would be sold.

Aesthetic Treatment Retrofit Opportunities

Earthwork mounding to provide buffering.

Landscaping Treatment Retrofit Opportunities

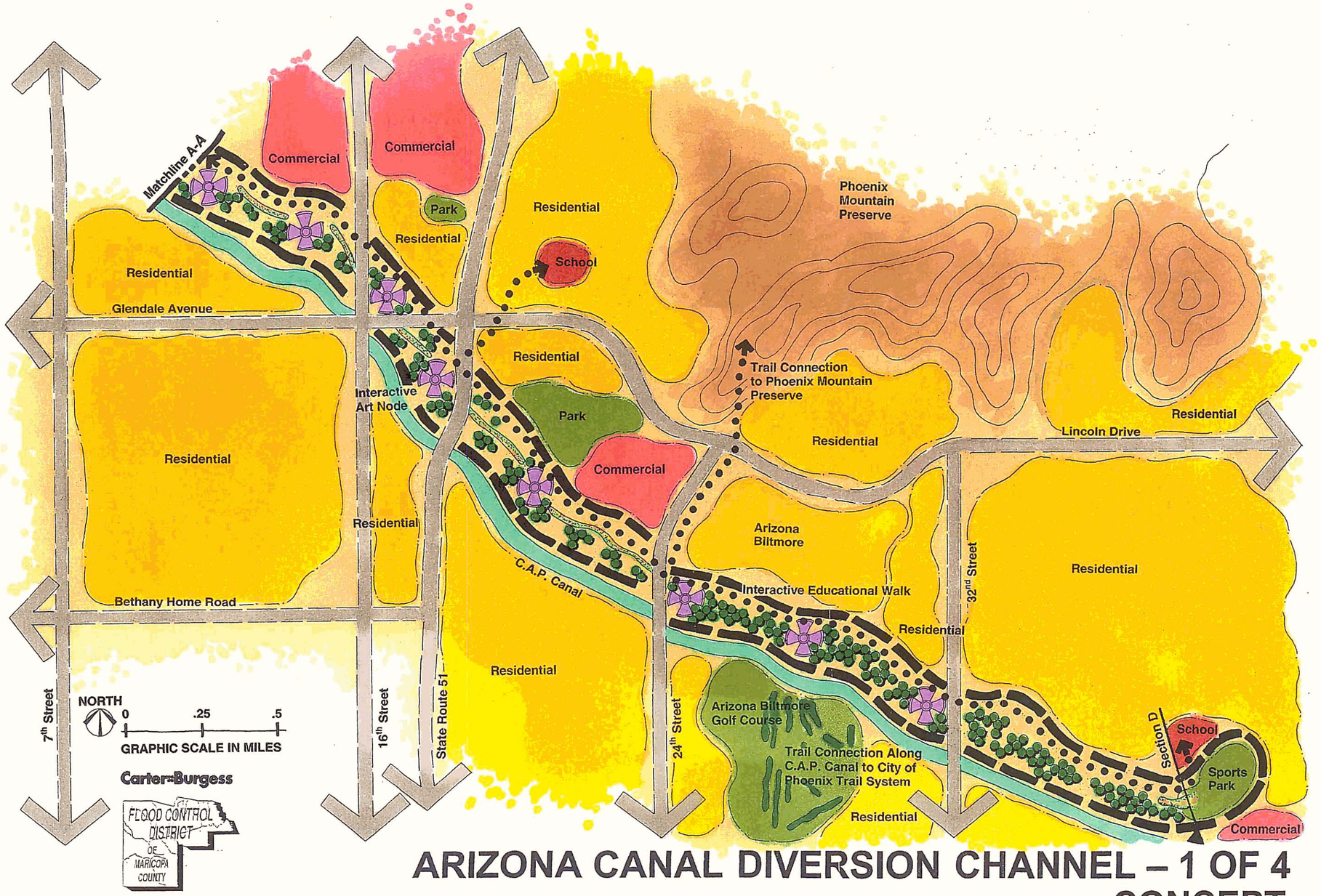
Reseeding of disturbed areas where irrigation is unavailable.
Tree and shrub placement at key areas.
Landscape irrigation at key areas where water connection is available.

Multi-Use Treatment Retrofit Opportunities

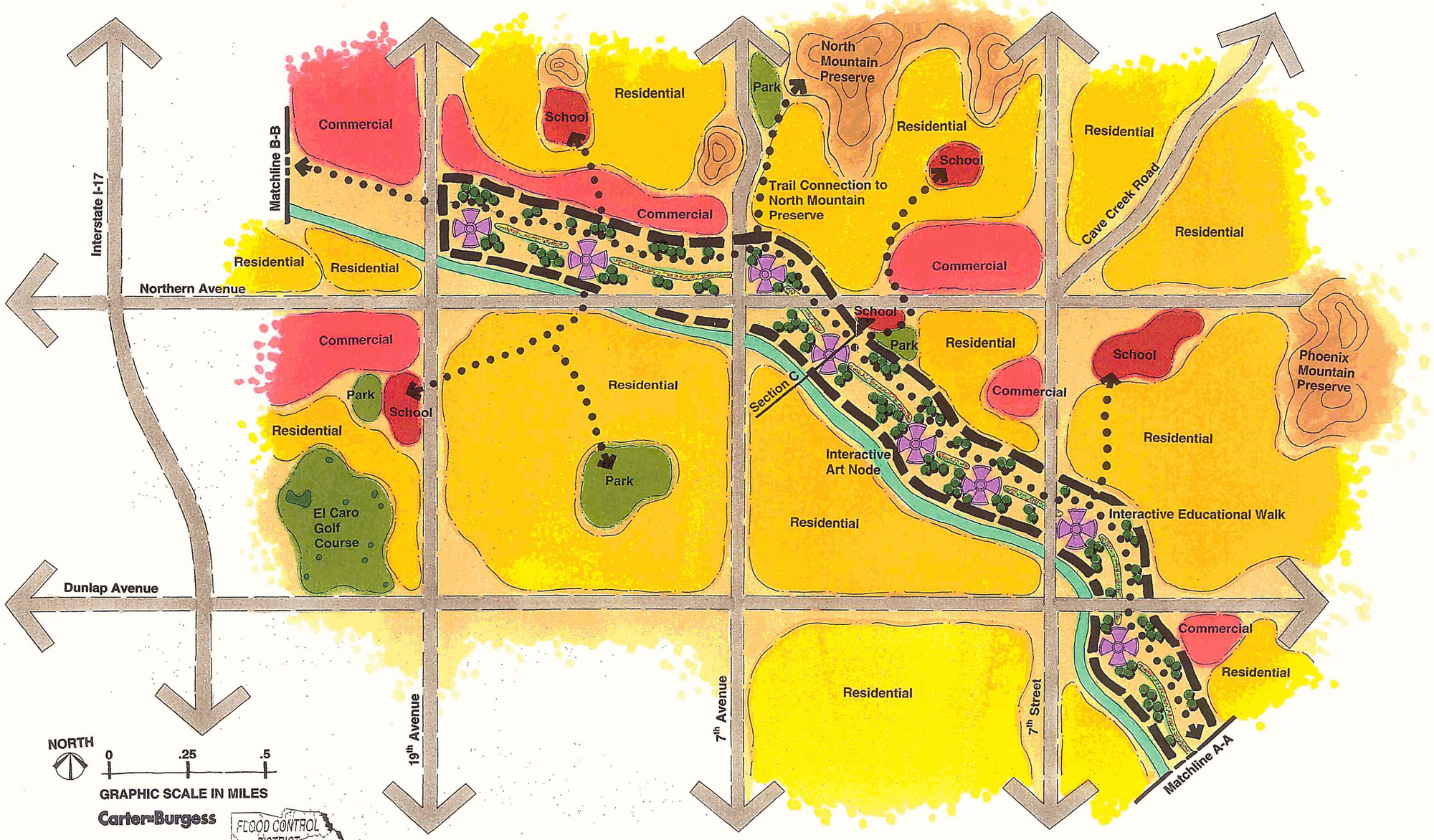
Pathway connections to the Arizona Canal Diversion Channel via open space areas.
Small parking areas.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

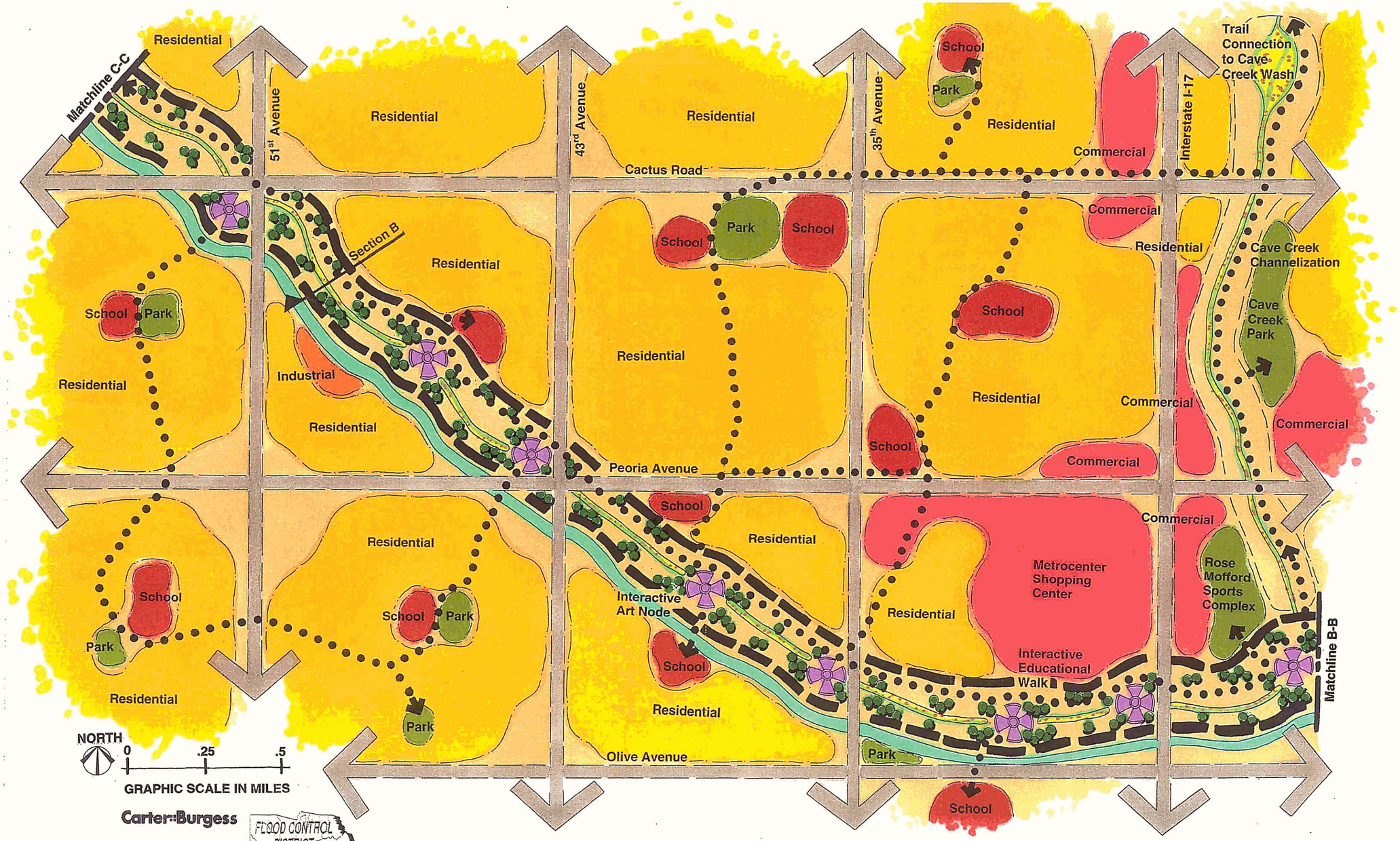
No land acquisition opportunities identified but possible land sale or lease.



ARIZONA CANAL DIVERSION CHANNEL – 1 OF 4 CONCEPT



ARIZONA CANAL DIVERSION CHANNEL – 2 OF 4 CONCEPT



ARIZONA CANAL DIVERSION CHANNEL – 3 OF 4 CONCEPT

ARIZONA CANAL DIVERSION CHANNEL – 4 OF 4 CONCEPT

Hydrologic Engineering Synopsis of Structure

Project Title: Arizona Canal Diversion Channel

Watershed and Relationship to Other Structures: To prevent serious flood damages to developed areas south of the Cave Creek drainage area including parts of Phoenix, Glendale, Peoria, and the State Capitol complex

Location: T3N, R1E, Sections 2, 1, 12
T3N, R2E, Sections 7, 16, 17, 21-22, 25-27
T3N, R3E, Sections 29-30, 32-33
T2N, R3E, Sections 3-4, 10-11, 13-14
T2N, R4E, Sections 18-19

Locate immediately upstream from and parallel to the Arizona Canal from 40th Street just north of Camelback Road to just west of 75th Avenue near Bell Road where the channel outlets into Skunk Creek.

Authorization:	Flood Control Act of 1965 (Public Law 89-298)
Federal Sponsor:	Corps of Engineers
Local Sponsor:	Flood Control District of Maricopa County
Jurisdictional Agency:	Arizona Department of Water Resources
Functional Description:	The channel will intercept Cudia City Wash and Dreamy Draw floodways as well as runoff from the Phoenix Mountains, Cave Creek, and residential street flows north of the channel. It will divert these flows into Skunk Creek
Project Features:	
Type of structure	Partly earth-lined trapezoidal (In Glendale); partly concrete lined box channel (in Phoenix)
Length	17.3 miles
Design capacity	6,800 CFS at 40th Street, increase to 36,000 CFS at Skunk Creek confluence
Top Width	36 feet near 40th Street, widens to 445 feet at the Skunk Creek confluence
Depth	22 feet
Level of Protection	Standard Project Flood-100 year storm

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel *Zone One - Retention Basin and Sports Fields*	*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.	4	The alignment of the basin meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	4	The profile or height of the basin varies to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the structure do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The structure moderately blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	3	There is some on-site screening with trees and shrubs to blend the basin.
6	There is 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 veneering or plating of the basin edges with river rock .
8	The disturbed areas are graded and replanted to match the surrounding area.	5	Most of the disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The plantings used provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	4	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	The basin has been is reseeded, this area has multiple sports fields.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The basin is mostly kept free of weeds and debris.
	Conformance Average	**3.33**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are the landscaped edges and fields 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 are no undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors within this zone to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views from the basin to Camelback and Squaw Peak Mountain.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	2	The structure or zone has not naturally revegetated.
21	The existing plantings match the community character.	5	The plantings are grass fields, shade trees and shrubs, and match the community character.
22	The structure's size and scale are proportional to its surroundings.	4	The basin's size and scale is moderately proportional to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	1	The attendant diversion channel inlet facility structure does not blend.
24	The adjacent properties positively impact the site.	4	Mostly positive surrounding properties -school property, residential and business.
25	There is existing on-site irrigation.	5	There is existing on-site irrigation of the school fields.
26	There are water recharge or floodwater retention areas.	4	This zone functions as a stormwater retention area and sediment basin.
27	The structure does not have negative on-site visual problems.	3	The barren areas, cemented rock slopes, and inlet facility are visually negative.
28	There are no overhead electrical lines and utility towers.	1	There are some overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	5	There are not multiple maintenance roads within the zone.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	4	The cemented rock slopes could be modified and the barren areas could be planted.
33	There are opportunities for aesthetic and landscape retrofit treatments.	4	This zone could have retrofit treatments that are enhancements for the school.
	Existing Aesthetic Features Average	**3.10**	
	Conformance and Aesthetic Features Average	**3.21**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Retention Basin and Sports Fields		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are the existing multi-use features of the sports fields.
36	The zone is currently accessible for multi-use.	5	The zone is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	5	There are no maintenance roads.
40	There are no physical constraints to accessing the site.	3	There are some physical constraints to accessing the site, the existing slopes of the basin.
41	There are no constraints to multi-use retrofits due to site size.	3	There are constraints to retrofits due to site size, this zone has existing multi-uses.
42	There are no constraints to multi-use retrofits due to structural hazards.	3	There are some constraints to multi-use due to the hazard of the diversion channel inlet.
43	There are no constraints to multi-use retrofits due to existing slopes.	3	There are some constraints to multi-use due to existing basin slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use due to earth mounds.
	Existing Multi-Use Features Average	**3.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to Camelback and Squaw Peak Mountains.
46	There is a possible connection to the Maricopa County Regional Trail System.	1	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are existing and possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to the many recreation areas along this channel area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas, the area is developed.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	1	There is no adjacent land that could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	4	The land north of the basin has desert washes beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	The adjacent land is developed, but would benefit from views of an enhanced corridor.
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 or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are limited opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are limited opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.22**	
	Existing and Future Multi-Use Average	**3.57**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.39**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Two - Covered Box Channel Area		
	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 channel area meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	3	The profile of the covered channel area varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The side slopes of the covered channel area varies to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	4	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is some off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	4	There is veneering or plating of this zone with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	The disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	4	The plantings used provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	5	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	4	The structure is reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**4.00**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are the landscape enhanced areas along the corridor to preserve.
15	There are wildlife habitat areas to preserve.	2	There are no wildlife areas to preserve, but the corridor and canal are used by birds.
16	There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	3	The channel and canal area is a scenic corridor.
18	There are panoramic views from the structure or zone.	5	There are panoramic views from this zone to Camelback and Squaw Peak Mountain.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The structure or zone has not naturally revegetated.
21	The existing plantings match the community character.	4	The plantings are a mix of trees + shrubs, and change to match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	5	There are no attendant flood control facilities structures.
24	The adjacent properties positively impact the site.	4	Mostly positive surrounding properties - residential, resort, and golf courses.
25	There is existing on-site irrigation.	5	There is existing on-site irrigation of landscaped areas.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	This zone lacks shade and would benefit from additional landscape treatments.
28	There are no overhead electrical lines and utility towers.	1	There are overhead electrical lines.
29	There are not multiple maintenance roads within the zone	4	There is a maintenance road along the channel area.
30	There are no intersecting arterial streets.	1	There are several intersecting arterial streets.
31	There are no noise impacts that need buffering.	3	There are some noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping could provide shade and visually enhance the corridor.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is space available along the corridor for landscape treatments.
	Existing Aesthetic Features Average	**3.00**	
	Conformance and Aesthetic Features Average	**3.50**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Covered Box Channel Area		**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	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-use features, the corridor is a multi-use trail.
36	The zone is currently accessible for multi-use.	5	The zone is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	3	There is some space to meander the maintenance roads.
40	There are no physical constraints to accessing the site.	3	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are some constraints to multi-use retrofits due to the narrow size of this site.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use due to earth mounds.
	Existing Multi-Use Features Average	**4.00**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to Camelback and Squaw Peak Mountains.
46	There is a possible connection to the Maricopa County Regional Trail System.	1	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are existing and possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to the many recreation areas along this channel area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas, the area is developed.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	1	There is no adjacent land that could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	4	The land north of the channel area has desert washes beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	2	The adjacent land is developed, but would benefit from views of an enhanced corridor.
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 or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.17**	
	Existing and Future Multi-Use Average	**3.58**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.54**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Linear Park Corridor		**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.	3	The alignment of the corridor meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the corridor does not vary to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the corridor do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is some off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	3	There is some veneering or plating of this zone with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are graded and moderately replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	4	The plantings used provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	5	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**3.08**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are the landscape enhanced areas along the corridor to preserve.
15	There are wildlife habitat areas to preserve.	2	There are no wildlife areas to preserve, but the corridor and canal are used by birds.
16	There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	3	The channel and canal area is a scenic corridor.
18	There are panoramic views from the structure or zone.	5	There are views from this zone to Camelback Mtn, Phoenix Mtn + North Mtn Preserves.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The structure or zone has not naturally revegetated.
21	The existing plantings match the community character.	3	The plantings are a mix of trees + shrubs, and change to match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	1	The adjacent flood control box channel structure does not blend into the surroundings.
24	The adjacent properties positively impact the site.	3	Some positive prop. - residential, schools. Some negative - industrial, run down residential.
25	There is existing on-site irrigation.	5	There is existing on-site irrigation of landscaped areas.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	This zone lacks shade and would benefit from additional landscape treatments.
28	There are no overhead electrical lines and utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	5	There is a maintenance road along the channel area.
30	There are no intersecting arterial streets.	1	There are numerous intersecting arterial streets.
31	There are no noise impacts that need buffering.	1	There are some noise impacts by the arterials that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping could provide shade and visually enhance the corridor.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is space available along the corridor for landscape treatments.
	Existing Aesthetic Features Average	**2.67**	
	Conformance and Aesthetic Features Average	**2.88**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Three - Linear Park Corridor		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-use features, the corridor is a multi-use trail.
36	The zone is currently accessible for multi-use.	5	The zone is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	3	There is some space to meander the maintenance roads.
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 retrofits due to site size.	3	There are some constraints to multi-use retrofits due to the narrow size of this site.
42	There are no constraints to multi-use retrofits 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 retrofits due to existing slopes.	5	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use due to earth mounds.
	Existing Multi-Use Features Average	**4.18**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to Camelback Mtn, Phoenix Mtn + North Mtn Preserves.
46	There is a possible connection to the Maricopa County Regional Trail System.	1	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to the many recreation areas along this channel area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas, the area is developed.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	1	There is no adjacent land that could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	The land north of the channel area has desert washes beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	2	The adjacent land is developed, but would benefit from views of an enhanced corridor.
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 or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.11**	
	Existing and Future Multi-Use Average	**3.65**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.26**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Concrete Lined Box Channel		**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 box channel meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the box channel does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the box channel does not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The structure is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is some off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	There are no plantings used to provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	1	There are no plantings used.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**1.58**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	1	There are no panoramic views from the box channel.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The structure or zone has not naturally 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 structure's size and scale are out of proportion to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	Some positive prop. - residential, schools. Some negative - industrial, run down residential.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	1	The box channel is a barrier with no visual interest.
28	There are no overhead electrical lines and utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	4	There are not multiple maintenance roads within the zone.
30	There are no intersecting arterial streets.	1	There are numerous intersecting arterial streets.
31	There are no noise impacts that need buffering.	3	There are noise impacts by the arterial streets that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Provide crossings over the channel and enhance the channel sides with artistic motifs.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities to increase safety, provide better access, + enhance the channel.
	Existing Aesthetic Features Average	**1.71**	
	Conformance and Aesthetic Features Average	**1.65**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Four - Concrete Lined Box Channel		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	This zone is not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	4	Multi-use features could not be added over the channel without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Multi-use features could not be added over the channel without compromising safety.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance roads.
40	There are no physical constraints to accessing the site.	1	There are physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	1	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	1	There are constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	1	There are constraints to multi-use due to the existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use due to earth mounds.
	Existing Multi-Use Features Average	**1.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	3	There are possible connections to Camelback Mtn, Phoenix Mtn + North Mtn Preserves.
46	There is a possible connection to the Maricopa County Regional Trail System.	3	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	3	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	3	There are possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	3	There are possible connections to the many recreation areas along this channel area.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	2	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	1	There is no adjacent land that could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	2	The land north of the channel has some desert washes beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land is developed, but would benefit from views of an enhanced corridor.
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 opportunities for small-scale local park facilities over the channel.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	2	There are no opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	2	There are no opportunities for separated-use trails.
	Future Multi-Use Features Average	**2.39**	
	Existing and Future Multi-Use Average	**2.15**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**1.90**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Five - Concrete Lined Trapezoid Channel		**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 trapezoid channel meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the trapezoid channel does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the trapezoid channel does not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The structure is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is some off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	There are no plantings used to provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	1	There are no plantings used.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**1.58**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	1	There are no panoramic views from the trapezoid channel.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The structure or zone has not naturally 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 structure's size and scale are slightly out of proportion to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	Some positive prop. - residential, schools. Some negative - industrial, run down residential.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	1	The trapezoid channel is a barrier with no visual interest.
28	There are no overhead electrical lines and utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	4	There are not multiple maintenance roads within the zone.
30	There are no intersecting arterial streets.	1	There are numerous intersecting arterial streets.
31	There are no noise impacts that need buffering.	3	There are noise impacts by the arterial streets that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Provide crossings over the channel and enhance the channel sides with artistic motifs.
33	There are opportunities for aesthetic and landscape retrofit treatments.	4	There are opportunities to increase safety, provide better access, + enhance the channel.
	Existing Aesthetic Features Average	**1.71**	
	Conformance and Aesthetic Features Average	**1.65**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Five - Concrete Lined Trapezoid Channel		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	This zone is not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	4	Multi-use features could be added over the channel without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Multi-use features could be added over the channel without compromising safety.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance roads.
40	There are no physical constraints to accessing the site.	1	There are physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	2	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	2	There are constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	1	There are constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use due to earth mounds.
	Existing Multi-Use Features Average	**2.09**	
	Future Multi-Use Features		
45	There are possible connections to open space.	2	There are some possible connections to adjacent open space areas.
46	There is a possible connection to the Maricopa County Regional Trail System.	1	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	3	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	3	There are possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	3	There are possible connections to the many recreation areas along this channel area.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	There is some adjacent land that could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	2	The land north of the channel has some desert washes beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	The adjacent land is developed, but would benefit from views of an enhanced corridor.
57	There are opportunities for large-scale regional park facilities.	2	There are no opportunities for large-scale regional park facilities.
58	There are opportunities for small-scale local park facilities.	3	There are opportunities for small-scale local park facilities over the channel.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	2	There are no opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	2	There are no opportunities for separated-use trails.
	Future Multi-Use Features Average	**2.17**	
	Existing and Future Multi-Use Average	**2.13**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**1.89**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Six - Earthen Channel and Community Linear Park Corridor		**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.	3	The alignment of the channel corridor meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	2	The profile of the channel corridor varies slightly to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The side slopes of the channel corridor varies to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	3	There is some off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	4	There is veneering or plating of this zone with decorative rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	The disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	4	The plantings used provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	5	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	The structure is reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**3.50**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are the landscape enhanced areas along the corridor to preserve.
15	There are wildlife habitat areas to preserve.	2	There are no wildlife areas to preserve, but the corridor and canal are used by birds.
16	There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	4	The channel corridor is a scenic corridor.
18	There are panoramic views from the structure or zone.	2	There are some views from the corrdior edges to distant mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	3	There is a moderately meandering low-flow feature.
20	The structure or zone has naturally revegetated.	3	The channel corridor has revegetated.
21	The existing plantings match the community character.	4	The existing plantings are a mix of trees and shrubs, and match the community character.
22	The structure's size and scale are proportional to its surroundings.	2	The structure's size and scale are slightly out of proportion to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	2	The attendant inlet pipe structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	Mostly positive surrounding properties - residential, rural, and school sites.
25	There is existing on-site irrigation.	3	There is existing on-site irrigation of landscaped areas.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	2	Changes to the slopes, low flow channel, + landscaping would provide visual enhancement.
28	There are no overhead electrical lines and utility towers.	3	There are some overhead electrical lines along the corridor edge.
29	There are not multiple maintenance roads within the zone	4	There is a single maintenance road within the zone.
30	There are no intersecting arterial streets.	1	There are several intersecting arterial streets, which bridge over the channel corridor.
31	There are no noise impacts that need buffering.	3	There are some noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping could provide shade and visually enhance the corridor.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is space available within the channel for aesthetic and landscape treatments.
	Existing Aesthetic Features Average	**2.71**	
	Conformance and Aesthetic Features Average	**3.11**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Six - Earthen Channel and Community Linear Park Corridor		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-uses, this zone is a greenway, community park + multi-use trail.
36	The zone 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	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	5	There is space to meander the maintenance roads.
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 retrofits due to site size.	5	There are no constraints to multi-use due to site size, this is a wide channel corridor.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are some constraints to multi-use retrofits due to existing side slopes of channel.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to adjacent open space areas.
46	There is a possible connection to the Maricopa County Regional Trail System.	1	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are existing + possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to the many recreation areas along this channel area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in areas along the channel.
53	Site property could be sold to allow for special use commercial areas.	5	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	The adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	Most adjacent land is developed, but Skunk Creek Channel could be a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	Most adjacent land is developed, but would benefit from views of an enhanced corridor.
57	There are opportunities for large-scale regional park facilities.	4	There are opportunities for large-scale regional park facilities along the channel edges.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities along the channel edges.
59	There are opportunities for riparian or desert wash areas.	4	There are opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**4.44**	
	Existing and Future Multi-Use Average	**4.49**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.80**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel	***1 to 5***	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Seven - Open Space Areas		
	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 of the open space areas meander to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	3	The profile of the open space areas vary to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The side slopes of the open space areas are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The open space areas blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	There is on-site screening from existing trees and shrubs to blend the open space areas.
6	There is off-site screening with plantings or earthwork buffers are used.	3	There is some off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	4	There is veneering or plating of this zone with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	The disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	3	The existing plantings provide erosion control and protect visual qualities.
10	There are plantings used that will not cause an impedance to design function.	5	The existing plantings do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	The open space areas are not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The open space areas are kept free of weeds and debris.
	Conformance Average	**3.50**	
	Existing Aesthetic Features		
13	There are riparian or desert wash corridor features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	4	There are some landscape or natural features to preserve (at the northwest area).
15	There are wildlife habitat areas to preserve.	4	There are some wildlife habitat areas to preserve (at the northwest area).
16	There are undisturbed open space elements to preserve.	5	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	4	These open space areas are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	4	There are panoramic views from most of the open space areas.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	4	Some of the open space areas have revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the desert wash community character.
22	The structure's size and scale are proportional to its surroundings.	5	The open space area's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into the surroundings.	1	There are no attendant flood control facilities structures.
24	The adjacent properties positively impact the site.	3	Some positive prop. - residential, rural, and school sites. Some negative - comercial.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	The open space areas have some negative on-site visual problems.
28	There are no overhead electrical lines and utility towers.	2	There are some overhead electrical lines.
29	There are not multiple maintenance roads within the zone	5	There are not multiple maintenance roads within the zone.
30	There are no intersecting arterial streets.	1	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	4	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	3	These areas are mostly undisturbed open space and there is little need for retrofits.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	These areas provide opportunities for aesthetic and landscape retrofits by the corridor.
	Existing Aesthetic Features Average	**3.10**	
	Conformance and Aesthetic Features Average	**3.30**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Arizona Canal Diversion Channel *Zone Seven - Open Space Areas*	*1 to 5*	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are some existing multi-use features.
36	The zone is currently accessible for multi-use.	3	The zone is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	3	There is space to meander the maintenance roads.
40	There are no physical constraints to accessing the site.	3	There are some physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are some constraints to multi-use retrofits due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are no constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**3.73**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to adjacent open space areas.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are no connections to the Maricopa Trail, but this corridor parallels its alignment.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to recreation areas.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open space areas.
53	Site property could be sold to allow for special use commercial areas.	5	Site property could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The adjacent land could be acquired to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	2	Most adjacent land is developed, but there are areas with features for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	4	Most adjacent land is developed, but would benefit from views of open space areas.
57	There are opportunities for large-scale regional park facilities.	5	There are opportunities for large-scale regional park facilities.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for desert wash areas.
60	There are opportunities for recharge basins or ponding areas.	3	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	3	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	3	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**4.11**	
	Existing and Future Multi-Use Average	**3.92**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.61**	

Cave Creek Channelization

Facility Location, Description and Zone Delineation

Cave Creek Channelization was constructed to handle flows from Cave Creek Wash to the Arizona Canal Diversion Channel (ACDC). The channel is located north of Dunlap Avenue and south of Greenway Road. The channel meanders between 19th Avenue to the east and Interstate 17 to the west. Storm water runoff initially flows into a retention basin area at the north end, then overflows into the concrete channel and continues southward to its connection point with the ACDC. Most of the drainage corridor consists of a trapezoidal channel although there is a very small section of concrete box channel as the channel connects to the ACDC.

Site visits by Carter and Burgess identified four zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Community Park*, which is a small park located at the northern end of the site along the edge of a retention basin, see photo bottom left. *Zone Two* was identified as the *Retention Basin Area*, which is also located at the northern end of the site and is surrounded by the community park, see photo bottom center. *Zone Three*, the *Linear Parkway Corridor*, is located downstream of the retention basin, see photo, bottom right. The *Concrete Lined Trapezoid Channel*, located south of the linear parkway corridor, was identified as *Zone Four* and includes a small segment of concrete lined box channel.

See Site Map for zone locations.

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

Because of its connection to the ACDC to the south and its connection to Cave Creek Wash to the north, this site was viewed as very significant as a recreational open space corridor connection by Carter and Burgess. The potential for trail connections to the northern portion of Cave Creek Wash are numerous. At the southern terminus where the channel meets the ACDC, there is the possibility of connections to existing trails that lead to local parks and the north-south corridors of New River and Skunk Creek River. Many connections to residential and commercial areas already exist including crossings at four major arterials that pass over the channel.

See Potential Corridor Locations Map for identified connection opportunities.

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing the evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

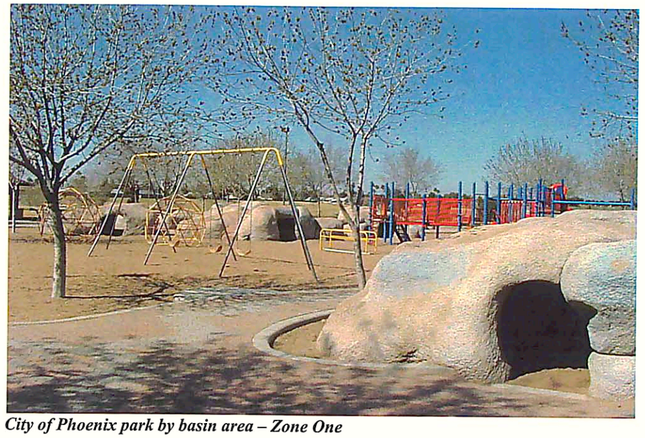
Zone One - Community Park

The community park conforms to aesthetic policy for the following reasons.

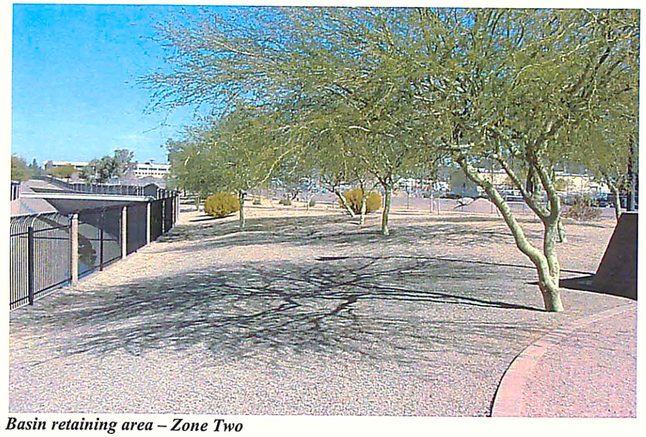
- The alignment of the park meanders to vary from a straight line.
- The park is deigned to blend into the contour of the natural terrain.
- There is on-site screening with trees and shrubs used to blend the park.
- There is off-site screening with plantings or earthwork buffers used.
- There are plantings used to provide erosion control and protect visual qualities.
- The park and maintenance roads are kept free of weeds and debris.

Zone Two - Retention Basin Area

The retention basin conforms to aesthetic policy for the following reasons.

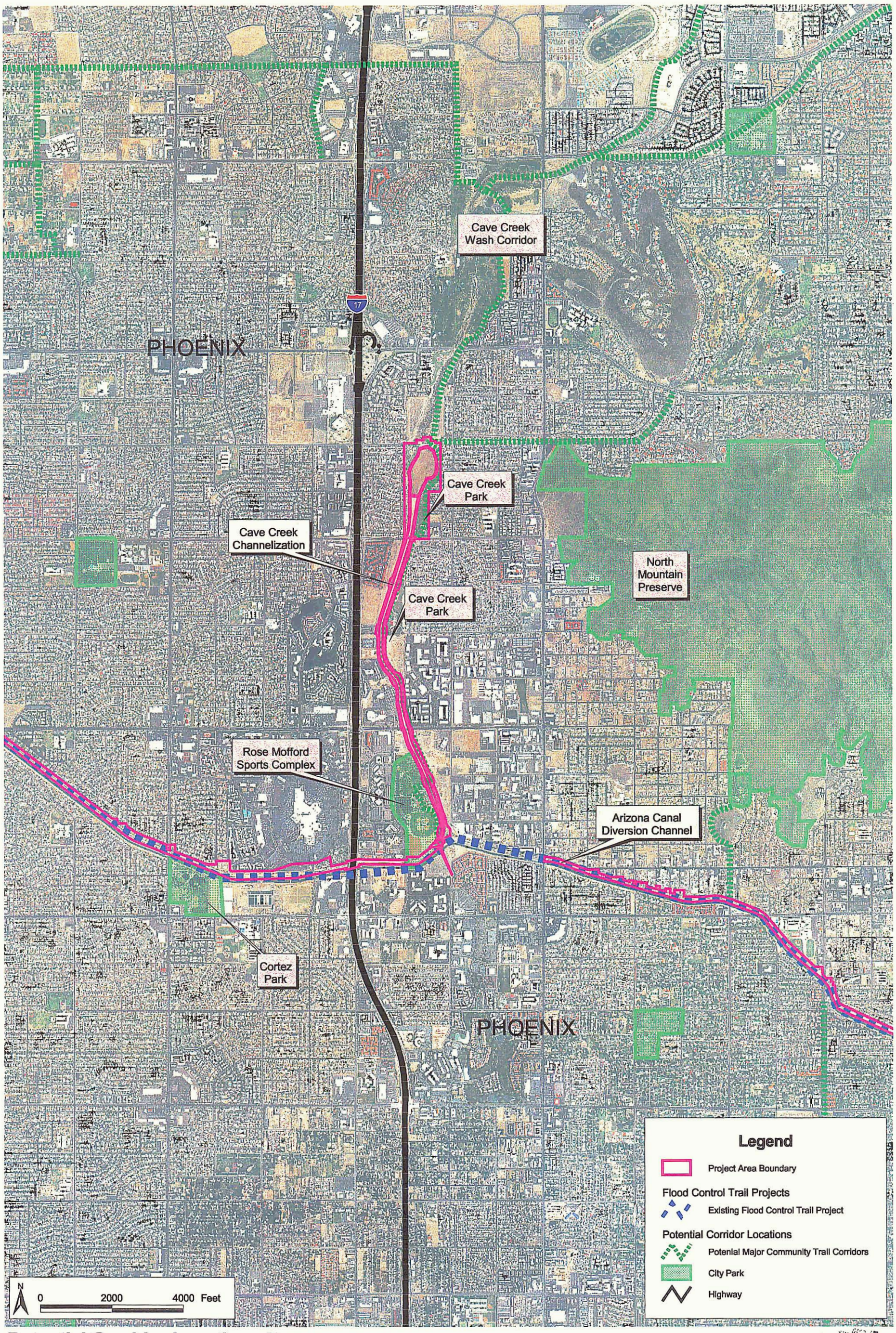


City of Phoenix park by basin area – Zone One



Basin retaining area – Zone Two

Linear parkway corridor – Zone Three



Potential Corridor Locations Map

Cave Creek Channelization

Carter+Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

- The alignment of the basin meanders to vary from a straight line.
- There is off-site screening with plantings or earthwork buffers are used.
- There are plantings used to provide erosion control and protect visual qualities.
- The plantings used will not cause an impedance to design function.

The retention basin does not conform to policy for the following reasons.

- The basin area is not kept free of weeds and debris.

Zone Three – Linear Parkway Corridor

The parkway corridor conforms to aesthetic policy for the following reasons.

- There is on-site screening with trees and shrubs used to blend the corridor.
- There are plantings used to provide erosion control and protect visual qualities.
- The plantings used will not cause an impedance to design function.
- The corridor and maintenance roads are kept free of weeds and debris.

The parkway corridor does not conform to policy for the following reasons.

- The profile or height of the corridor does not meander to vary from a straight line.
- The side slopes of the corridor are not varied to simulate natural terrain.
- The corridor is not reseeded to enhance the growth of vegetation.

Zone Four – Concrete Lined Trapezoid Channel

The concrete channel conforms to aesthetic policy for the following reasons.

- There is off-site screening with plantings or earthwork buffers are used.
- The concrete channel is kept free of weeds and debris.

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

- The profile or height of the channel does not vary to modulate the outline.
- The side slopes of the channel are not varied to simulate the natural terrain.
- The channel is not designed to blend into the contour of the natural terrain.
- There is no on-site screening with trees and shrubs used to blend the channel.
- There is no veneering or plating of the channel with indigenous rock.
- There are no plantings used to provide erosion control and protect visual qualities.

See photos, bottom left and center.

Surrounding Site Character

Zone One – Community Park

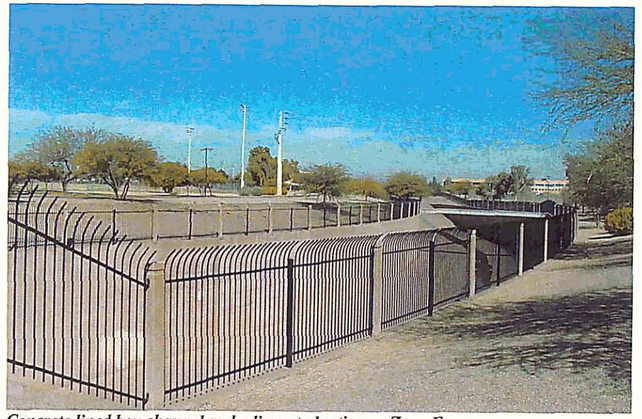
The community park, called Cave Creek Park, is located at the north end of this site and is surrounded predominantly by older single-family homes. East of the homes, along 19th Avenue are commercial developments, and further east is the North Mountain Preserve. Beyond the homes to the west is Interstate 17. To the north of the community park is Cave Creek Wash, which connects further north to Cave Creek Municipal Golf Course.

Zone Two – Retention Basin Area

The retention basin area is encircled by the community park and adjacent neighborhoods beyond. Cave Creek Wash provides a connection to the north and the concrete lined trapezoidal channel provides a visual connection towards the south. Because the basin is at a lower elevation than the surrounding land, it is difficult to see beyond the adjacent park area with the exception of North Mountain Preserve's mountains to the east.

Zone Three – Linear Parkway Corridor

The linear parkway corridor is situated along both sides of the concrete channel and extends from the retention basin at the north end to the connection with the Arizona Canal Diversion Channel (ACDC) at the southern end. The corridor is surrounded primarily by residential developments along the north end until south of Cactus Road at Cholla Street where the surrounding character changes. The residential developments along this portion consist of older single-family homes on the eastside which are oriented away from the corridor and a multi-family housing complex located on the west side which is fenced off from the site, see photo, bottom right. There is an additional section of Cave Creek Park located to the east at Cholla Street between the corridor and the single-family homes. The park provides a visual buffer between the corridor and the residential development. The segment south of Cholla Street is surrounded by a variety of business parks, industrial facilities and other commercial developments with the most notable, Metro Center Shopping Mall, located to the west at the southern end. The linear parkway corridor terminates at the Rose Mofford Sports Complex as it connects with the ACDC. The sports complex provides facilities for collegiate sports competitions (NCAA) and consists of baseball fields, tennis courts, basketball courts, numerous other sports amenities and serves Arizona State University



Concrete lined box channel and adjacent plantings – Zone Four

Concrete lined trapezoidal channel – Zone Four

Plantings and paved trail adjacent to channel – Zone Three

Zone One - Community Park
Community park sites with play and sport fields, picnic areas, playgrounds, and paved pathways.

Zone Two - Retention Basin Area
Grassy basin area that retains flows from Cave Creek Wash.

Zone Three - Linear Parkway Corridor
Linear open space area along both sides of the concrete channel. The corridor is enhanced with plantings, a paved pathway, and bridge crossings.

Zone Four - Concrete Lined Trapezoid Channel
100 foot wide and 20 foot deep concrete channel enclosed by steel fencing.

17

Cactus Rd.

19th Ave.

Peoria Ave.

Legend

Project Area Boundary1

- Concrete Lined Channel
- Retention Basin Area
- Linear Parkway Corridor
- Community Park
- Drainage Flows
- Highway
- Arterial

N 0 2000 4000 Feet

Site Map

Cave Creek Channelization

Carter=Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

athletes and fans.

Zone Four – Concrete Lined Trapezoid Channel

The concrete-lined trapezoid channel is bordered solely by the linear parkway corridor along the east and west sides. The channel connects to the retention basin area at the north end and the Arizona Canal Diversion Channel (ACDC) at the south end. Since access to the channel bottom is restricted, the surrounding land character was evaluated from pedestrian bridges that cross the zone. From the bridges, Interstate 17 is visible to the west as was Metro Center Mall. There are small landscaped areas adjacent to each bridge crossing located in the linear parkway corridor zone but much of the adjacent zone was minimally landscaped. See photos, bottom right and center.

Site Impressions

Zone One – Community Park

Cave Creek Park has playground facilities, picnic areas, open play fields, basketball courts and restroom facilities. The park also has three entry points with parking; one located at the northwest corner and two located along the eastside, one at the midpoint and the other at the southern tip. At the southeast and northwest portions of the park, there are paths lined with trees for shade and because the portions have a lot of turf, it seems fairly lush. The northeast portion of the park contrasts the previously described section because it consists of primarily a large open field without turf. There is a concrete walk loop provided and a few trees but the trees are placed far enough away from the walk that they do not provide shade. There is a concrete channel that connects to a grouted riprap slope and the basin below with Cave Creek Wash to the north. The concrete basin, grouted riprap slope, gravel mulch in planting areas and lack of plant material combine to create a hot environment with glaring sunlight reflected off of the surfaces. The concrete channel is also littered with graffiti, which adds to the visual contrast between the turf areas of the park. In the southwest portion of the park, there is a concrete path connection from the loop to Cactus Road. This area, although without turf, has less of a visual contrast to the lush area because there are a fair amount of trees and the trees are located close to the path to provide shade in several areas.

Zone Two – Retention Basin Area

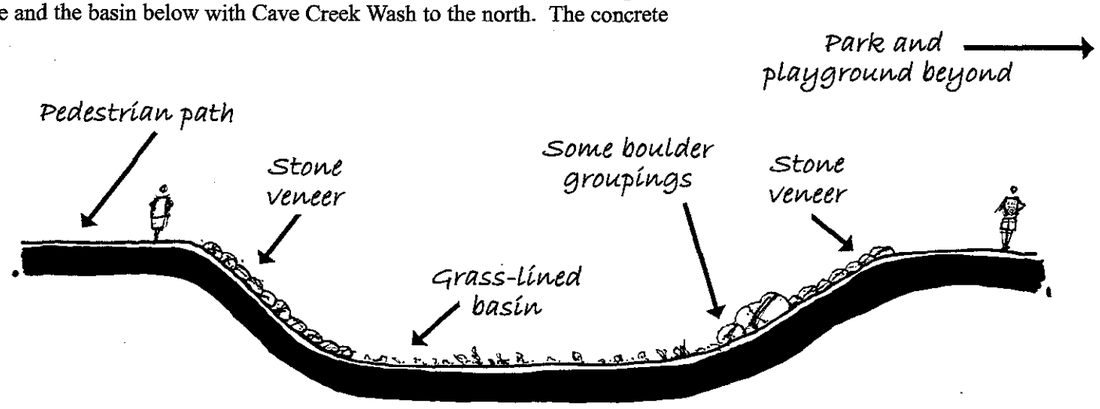
The northeast corner of the basin contains a grouted river rock slope that connects through the park to Cave Creek Wash. Storm water collects until it reaches the top of a concrete spillway wall located at the southern end of the basin and then flows into the concrete lined channel. The basin side slopes have been aesthetically treated in areas with the placement of large boulders to add some textural variety, but the boulders are not arranged in any naturalistic manner. The remainder of the basin side slopes and bottom are covered with un-maintained grasses and weeds. Visually, the basin area has a riparian character with the exception of the grouted riprap slope at the inlet and the concrete spillway wall located at the southern end. The spillway wall is quite high, approximately 20 feet and has a chain link fence on top. While the spillway wall does not blend into the surroundings because of the material used and its uniform shape, it is tall enough to screen the concrete channel beyond it and create a sense of being in nature.

Zone Three – Linear Parkway Corridor

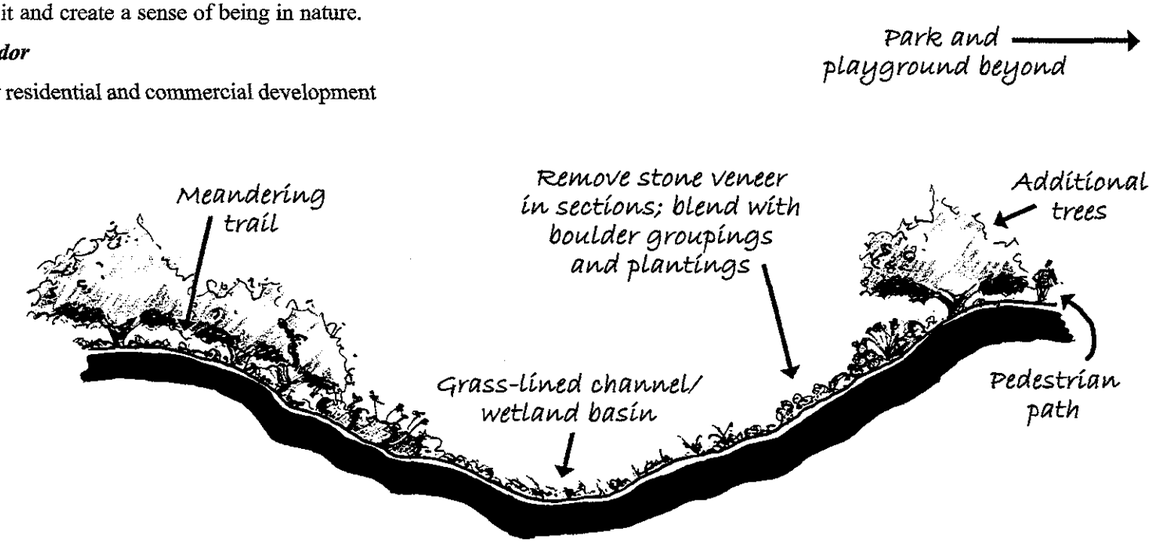
Since the linear parkway is bordered by residential and commercial development on the outer edges and the concrete lined channel to the inside, this zone strongly contrasts with the adjacent properties because there is no continuity or visual connection between land located beyond the property boundary or to the adjacent channel. The concrete path at the community park transitions to a meandering asphalt path along both sides of the channel, which connect over the channel at several simply styled concrete pedestrian bridge crossings located at regular intervals. The length of the parkway corridor is sparsely landscaped with a higher density of plant material placed at the pedestrian bridge crossings. The landscape consists of predominantly trees and under-story shrub plantings to provide a variety of texture and color are absent.

Zone Four – Concrete Lined Trapezoid Channel

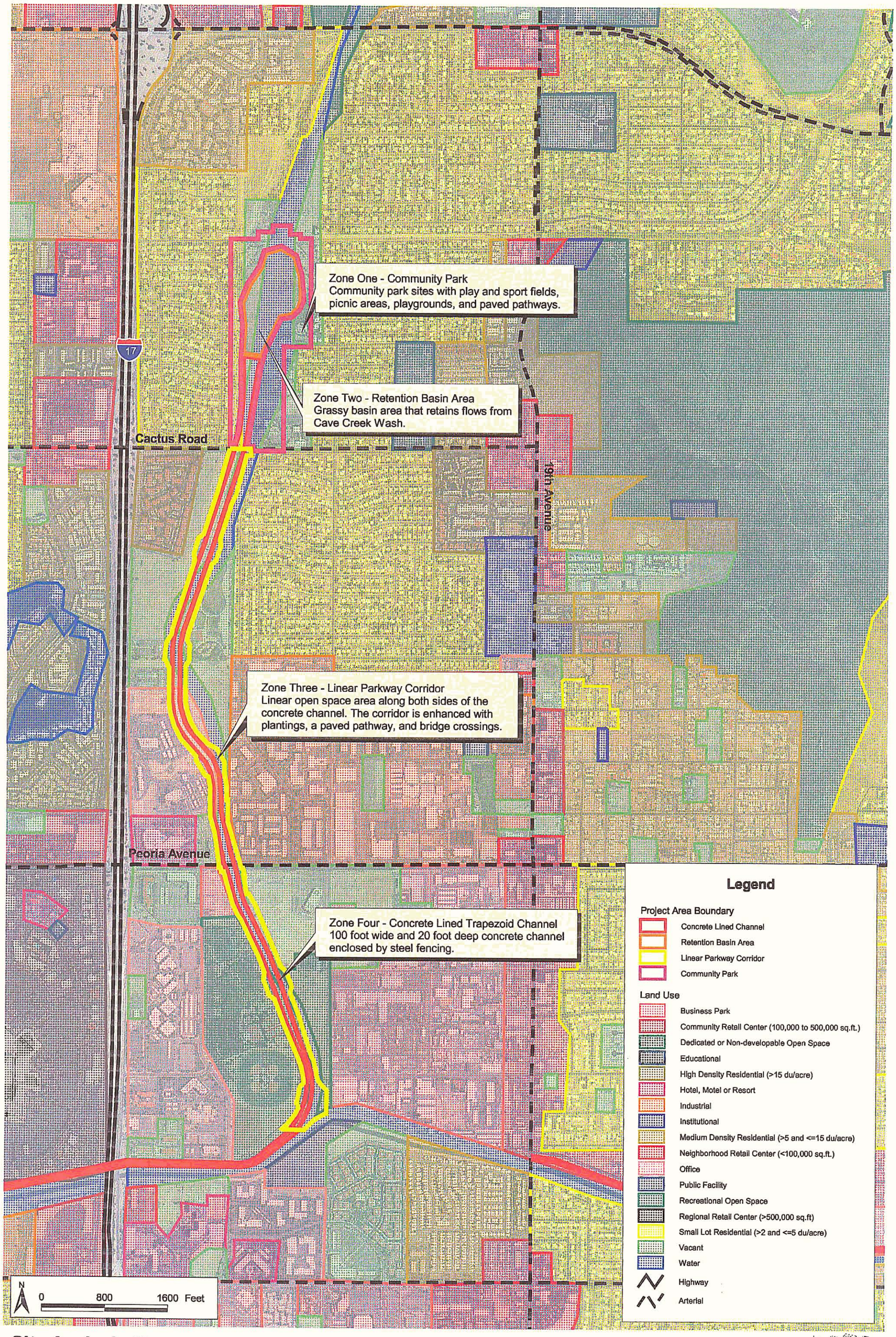
Although the channel serves its function as flood control well, it is a structure that does not aesthetically blend with the surroundings, nor does it mimic nature. The concrete lining reflects sunlight and negatively impacts the adjacent parkway corridor by creating glare and a heat island. The channel, lined by a black safety fence along its entirety, is not visually pleasing to look at because of its lack of visual variety. There are also areas with graffiti, painted-over graffiti, trash, and discarded debris, which add to its lack of visually pleasant character.



Cave Creek Channelization - Existing Conditions (Section A)
Not to scale



Cave Creek Channelization - Potential Retrofit (Section A)
Not to scale



Site Analysis Map

Cave Creek Channelization

Carter+Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Opportunities and Constraints for Retrofit Treatments

Zone One – Community Park

Although, the community park is in good condition and currently provides recreational amenities for neighborhood use, there is an opportunity to expand the park to include the northeast corner, which contains the grouted riprap slope. The slope could be retrofitted with a sculptural art feature that was interesting to look at when dry or when water flowed through it. Most of the park site would benefit visually from additional landscaping to provide shade and a variety of textures and colors. There is also an opportunity to provide a connection north towards Cave Creek Wash, North Mountain Preserve and a need for greater connectivity to the nearby neighborhoods. Constraints to retrofit opportunities include cost of retrofit improvements, particularly the water sculpture and design of an art element that does not impede design function.

Zone Two – Retention Basin Area

The basin has the opportunity to further build upon its existing riparian character with placement of additional appropriate vegetation and construction of a naturalistic rock drop structure to slow water flows and create a wetlands area. There is an opportunity to re-use the large boulders that line the basin side slopes by repositioning them in a more naturalistic manner along the banks and rock drop structure. Additionally, there is an opportunity to mask the side slopes of the basin further with additional planting that is tucked into small areas between boulders. The constraints to retrofitting are construction of wetlands that do not inhibit the design function of the basin and project construction costs.

Zone Three – Linear Parkway Corridor

Employees working in businesses that border the corridor, particularly in the area south of Cholla Street, would benefit from a recreational opportunity that would be primarily used during the midday work week. There is also an opportunity in area north of Cholla Street that connects to Cave Creek Park to construct a variety of recreational amenities that compliment the existing facilities located at Cave Creek Park and the Rose Mofford Sports Complex. Because many of the potential recreation opportunities are typically used during the day, there is a need for additional shade, seating and under-story shrub planting to help minimize the glare from the concrete channel. Because the corridor is located on both sides of the channel and extends for an approximate distance of two miles, cost is a constraint to retrofitting the parkway corridor.

Zone Four – Concrete Lined Trapezoid Channel

There is an opportunity to renovate the channel to allow limited access to the channel embankments for recreation purposes and to create desert wash areas that blend with Cave Creek Wash. There is also an opportunity to stain, veneer or aesthetically treat the channel in portions to reduce the glare and heat emanating from the channel sides and add rock drop structures to slow channel flows. Lastly, there is an opportunity to paint the safety fencing a less contrasting color, renovate portions of the fence or remove upper portions of the safety fencing to enable the user to see through to the channel and beyond and also to allow greater accessibility for multi-use opportunities. Constraints to aesthetic retrofit treatments include designing a system of accessing and exiting the channel that is safe for public use. The retrofit opportunities are also constrained by the need of the site to retain its important flood control function and construction costs.

Landscape Aesthetic and Multi-Use Treatment Recommendations

See concept graphic on page 74. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One – Community Park

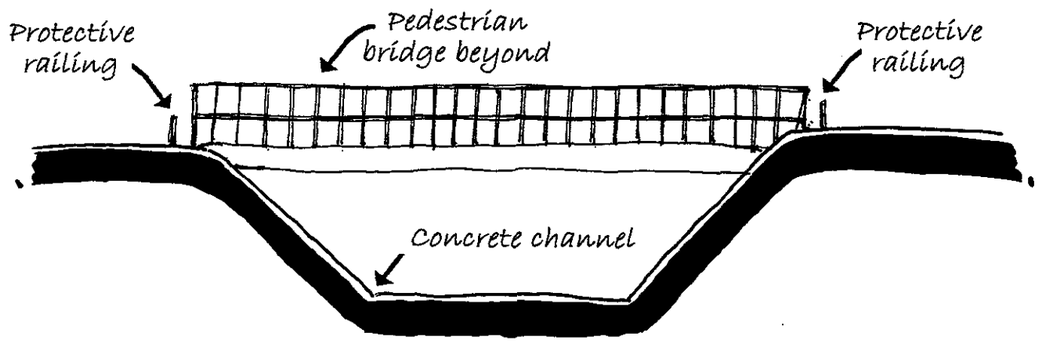
Because the community park is currently in good condition and well used by the community, the design concept focuses on the inlet area with the grouted riprap slope and proposes an art element that uses water flows for aesthetic purposes. Since most of the park is in need of additional shade, the concept proposes the addition of trees in turf and rock areas and shrub plantings in rock areas. Because connectivity to other recreational corridors was identified as important, there is a trail connection north to Cave Creek Wash and east to North Mountain Preserve.

Aesthetic Treatment Retrofit Opportunities

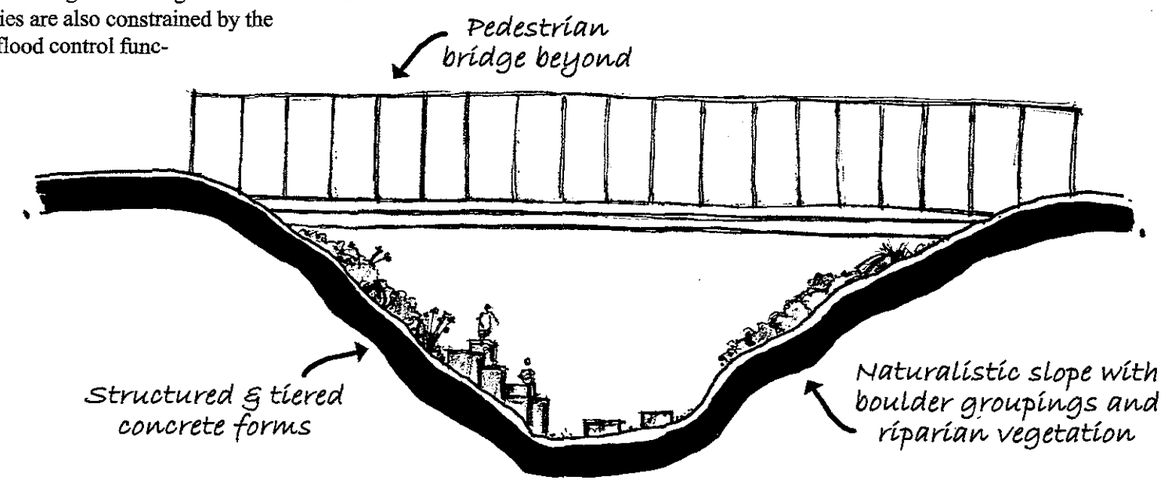
Removal of grouted riprap slope.

Landscaping Treatment Retrofit Opportunities

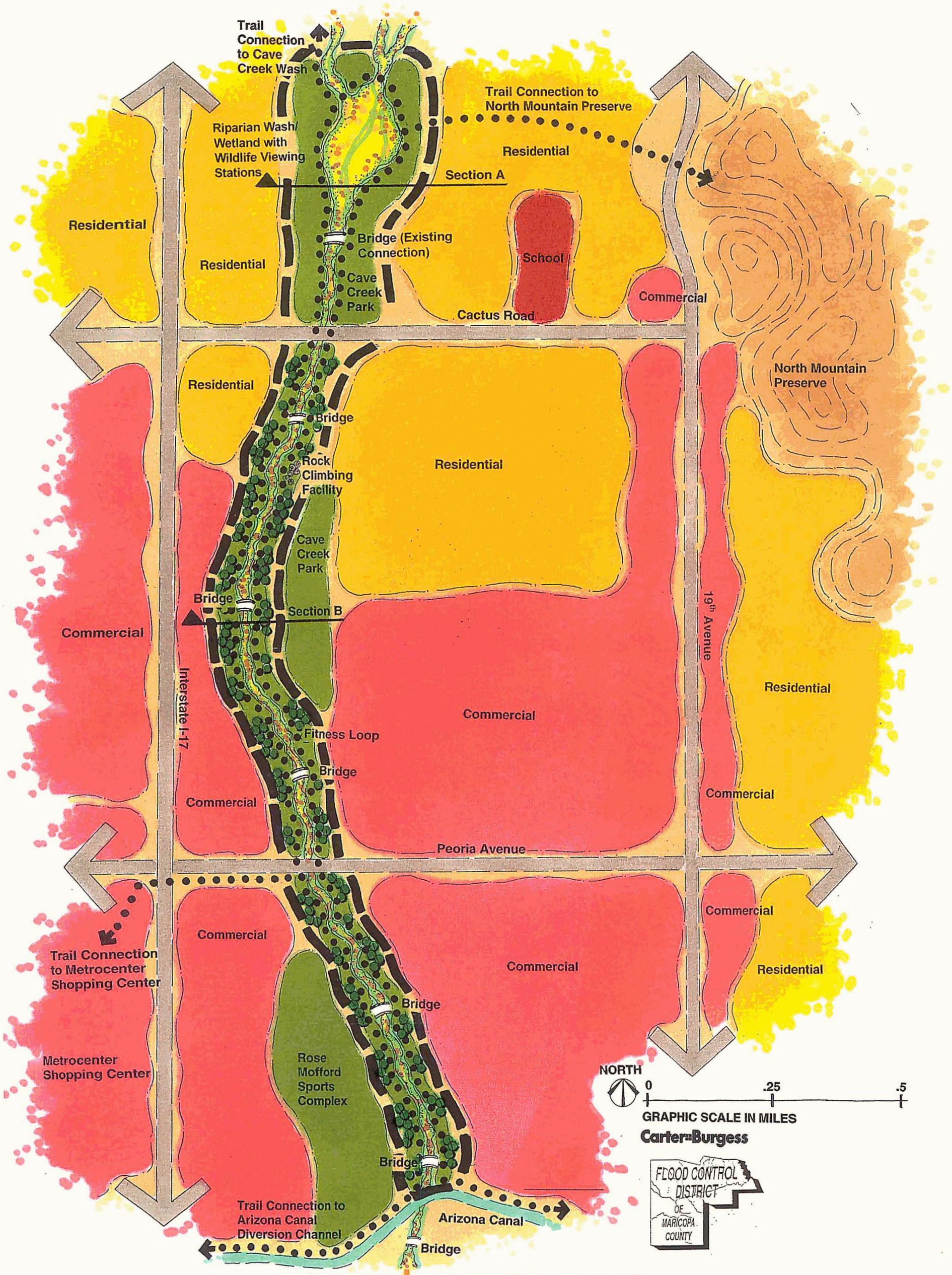
Additional tree and shrub plantings to provide buffering and shade. Additional drip irrigation connects to existing system.



Cave Creek Channelization - Existing Conditions (Section B)
Not to scale



Cave Creek Channelization - Potential Retrofit (Section B)
Not to scale



CAVE CREEK CHANNELIZATION CONCEPT

Multi-Use Treatment Retrofit Opportunities

Trail connection to Cave Creek Wash.
Art element that utilizes water flows at riprap area.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two – Retention Basin Area

The conceptual design solution proposes establishing a naturalistic riparian wash and wetland area modeled after Cave Creek Wash. Renovation of the basin would transform the area into a place for observation of natural ecological systems within an otherwise urbanized setting. The construction of the wash and wetlands would also provide additional habitat for riparian dwellers and create viewing opportunities of a unique ecological system.

Aesthetic Treatment Retrofit Opportunities

Construction of a naturalistic, meandering low flow channel feature.
Construction of adjacent wetland areas.
Modify existing boulder placement with relocation and partial embedment into basin side slopes.

Landscaping Treatment Retrofit Opportunities

Re-seeding of basin bottom and side slopes with native riparian vegetation.
No irrigation of re-seeded areas.

Multi-Use Treatment Retrofit Opportunities

Soft surface trail loops around the basin edges that connect existing park trails.
Wildlife viewing stations with boardwalks that connect to trail loop.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Three – Linear Parkway Corridor

Because the linear parkway corridor links together neighborhoods, parks and offices and is regularly used, the retrofit treatment proposes expanding upon the existing recreational uses by adding more fitness opportunities. A rock-climbing center is proposed near the southern portion of Cave Creek Park located along the channel embankment. A connection to the rock-climbing center is proposed. In addition, a fitness loop with exercise stations and mile markers surrounds the channel and links to the parks located at each end. There is additional planting of trees for rest area shade and shrubs for color and textural variety.

Aesthetic Treatment Retrofit Opportunities

Path and ramp connection to rock-climbing center.

Landscaping Treatment Retrofit Opportunities

Additional tree and shrub plantings to provide buffering and shade.
Additional drip irrigation connects to existing system.

Multi-Use Treatment Retrofit Opportunities

Fitness loop with exercise stations and mile markers.
Rest nodes with seating and shade ramadas.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four – Concrete Lined Trapezoid Channel

The concept proposes retrofitting the channel with a variety of aesthetic treatments and slowing water flows with naturalistic rock drop structures to enable construction of riparian wash areas. Portions of the concrete channel would remain and would be treated aesthetically with texture and color to reduce glare. The safety fence would also remain in sections and would be painted to blend into the background. The fence would have areas cut out to allow the viewer visual access to the channel and area beyond and sections of the fence would be removed to allow pedestrian access to the recreational amenities. The theme of the concept seeks to illustrate the juxtaposition of architectural forms and organic shapes. The architectural portions of the channel would slowly degrade into naturalistic wash areas with access points into the channel for recreational uses such as the rock-climbing center. The concept would visually unify the contrasting characters of the architectural concrete channel and the wash areas that it serves. Existing pedestrian bridge links over the channel would remain and would become art elements that would draw upon the concept theme.

Aesthetic Treatment Retrofit Opportunities

Texture and color treatment of portions of the channel.
Removal of portions of the channel and replacement with naturalistic wash embankments.
Art treatment of existing pedestrian bridge crossings.
Color treatment of safety fence.
Removal of portions of the safety fence to allow pedestrian access to the channel's recreation amenities.
Removal of top portions of the safety fence to allow visual access to the channel.

Landscaping Treatment Retrofit Opportunities

Re-seeding portions of the channel where concrete has been replaced with wash embankment.
Re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Construction of rock-climbing facility.
Construction of ramped access points into the channel.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Hydrologic Engineering Synopsis of Structure

Project Title: Cave Creek Wash at A.C.D.C. Location #119

Location: T3N, R2E, Sections 13, 24 and 25

Access is off of Cactus Road and Cave Creek Wash and also Peoria Avenue

Local Sponsor: Flood Control District of Maricopa County

Functional Description: The concrete channel will convey storm runoff from the Cave Creek Sediment Basin to the A.C.D.C.

Project Features:

Type of structure	concrete lined channel
Length of structure	2.25 miles (11,880 lf.)
Top width	125 feet
Base width	100 feet
Cave Creek Basin height	30 feet
Cave Creek Basin length	2,500 feet-perimeter

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization *Zone One - Community Park*	*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 of the park meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	2	The profile or height of the park slightly vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The side slopes of the park slightly vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	4	The park mostly blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening with trees and shrubs are used to blend the park.
6	There is off-site screening with plantings or earthwork buffers are used.	5	There is no off-site screening with plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	2	There is some veneering of the park with decorative rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	5	The disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	There are plantings used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	The park is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The park and maintenance roads are kept free of weeds and debris.
	Conformance Average	**3.83**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	5	There are landscaped areas and open play fields 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 within this zone to preserve.	3	The park is a scenic corridor.
18	There are panoramic views from the structure or zone.	4	There are panoramic views to the North Mountain Preserve.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	5	The park has not naturally revegetated.
21	The existing plantings match the community character.	5	The plantings are grass fields, shade trees and shrubs, + match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The park's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant inlet facility structure does not blend.
24	The adjacent properties positively impact the site.	3	Some positive properties - residential. Some negative properties - unkempt residential.
25	There is existing on-site irrigation.	5	There is existing on-site irrigation for the park.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	5	The inlet facility is a large area of cemented river rock and is visually negative.
28	There are no overhead electrical lines or utility towers.	1	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	5	There is a single maintenance road 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.	1	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	4	The cemented rock areas could be modified and additional shade trees could be planted.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.19**	
	Conformance and Aesthetic Features Average	**3.51**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone One - Community Park		**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	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are the existing multi-use features of the park facilities and open play fields.
36	The zone is currently accessible for multi-use.	5	The community park is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	5	The existing maintenance road meanders.
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 retrofits due to site size.	4	There are no constraints to multi-use retrofits due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to public multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections east to North Mountain Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	4	There are possible connections to the Maricopa County Trail System via Cave Creek.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are existing connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to recreation areas.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas, the area is developed.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land to the north could be acquired to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The land north of the park is a desert wash and beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	5	The undeveloped adjacent land needs design guidelines for future development.
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.	5	There are opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are some opportunities for desert wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.94**	
	Existing and Future Multi-Use Average	**4.24**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.88**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	***1 to 5***	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Two - Retention Basin Area		
	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 retention basin meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	4	The profile of the retention basin varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	4	The side slopes of the impoundment area vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The structure moderately blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	There is some on-site screening with trees and shrubs to blend the basin.
6	There is off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the plantings in the community park.
7	There is veneering or plating of the structure with indigenous rock.	4	There is veneering along the edges of the basin area with decorative rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	The disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	There are plantings used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	4	The basin is reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	1	The basin is not kept free of weeds and debris.
	Conformance Average	**4.00**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash features to preserve.
14	There are landscape or natural features to preserve.	3	There are the landscaped edges and open space to preserve.
15	There are wildlife habitat areas to preserve.	2	There are some wildlife habitat areas to preserve, the basin wetland areas attract wildlife.
16	There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	2	The basin area and surrounding park is a scenic corridor.
18	There are panoramic views from the structure or zone.	4	There are panoramic views to the North Mountain Preserve.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	4	The retention basin area has revegetated.
21	The existing plantings match the community character.	4	The plantings are grass fields, trees and shrubs, and match the community character.
22	The structure's size and scale are proportional to its surroundings.	3	The basin's size and scale is moderately proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant inlet facility structure does not blend.
24	The adjacent properties positively impact the site.	4	Some positive properties - residential. Some negative properties - unkempt residential.
25	There is existing on-site irrigation.	1	There is existing on-site irrigation for the landscaped edges.
26	There are water recharge or floodwater retention areas.	5	The basin is a water recharge and floodwater retention area.
27	The structure does not have negative on-site visual problems.	2	The large boulders around the basin visually contrasts with the landscape treatment.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone	5	There are no 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.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	The basin could be enhanced with a low flow feature and wetland areas.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.24**	
	Conformance and Aesthetic Features Average	**3.62**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Retention Basin Area		**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 existing wetland areas are beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The basin retetion area is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	3	There is one small 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 retrofits due to site size.	4	There are no constraints to multi-use retrofits due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to public multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.09**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections east to North Mountain Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	4	There are possible connections to the Maricopa County Trail System via Cave Creek.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are existing connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are possible connections to recreation areas.
50	There are possible connections to multi-modal facilities.	2	There are no possible connections to multi-modal facilities.
51	There are possible connections to local commercial areas.	2	There are no possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas, the area is developed.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land to the north could be acquired to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The land north of the basin is a desert wash and beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	5	The undeveloped adjacent land needs design guidelines for future development.
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.	5	There are opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for desert wash areas.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.94**	
	Existing and Future Multi-Use Average	**4.02**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.82**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Linear Parkway Corridor		**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.	3	The alignment of the corridor meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the parkway does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the corridor do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The corridor is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening with trees and shrubs to blend the corridor.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is 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 or plating of this zone with decorative rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	The disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	There are plantings used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The plantings used will not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The corridor and maintenance roads are kept free of weeds and debris.
	Conformance Average	**3.33**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash features to preserve.
14	There are landscape or natural features to preserve.	3	There are the landscape enhanced areas along the corridor 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 within this zone to preserve.	2	The linear parkway is a scenic corridor.
18	There are panoramic views from the structure or zone.	4	There are panoramic views to the North Mountain Preserve.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on desert washes.
20	The structure or zone has naturally revegetated.	1	The structure or zone has not naturally revegetated.
21	The existing plantings match the community character.	4	The plantings are trees and shrubs, which match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The parkway corridor's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Some positive properties - residential + business. Some negative - unkempt resid. + comm.
25	There is existing on-site irrigation.	5	There is existing on-site irrigation for the landscaped areas.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	4	This corridor needs more shade and screening of negative views.
28	There are no overhead electrical lines or utility towers.	1	There are no overhead electrical lines or utility towers.
29	There are not multiple maintenance roads within the zone	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	1	There are intersecting arterial streets.
31	There are no noise impacts that need buffering.	1	There are noise impacts from the arterial streets that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits would provide shade and visually enhance the corridor.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is space available along the corridor for landscape treatments.
	Existing Aesthetic Features Average	**2.62**	
	Conformance and Aesthetic Features Average	**2.98**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Linear Parkway Corridor		**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	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The linear parkway is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Additional multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Additional multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	5	There is space to meander the maintenance roads.
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 retrofits due to site size.	3	There are some constraints to multi-use retrofits due to the narrow site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to public multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.45**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections east to North Mountain Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	4	There are possible connections to the Maricopa County Trail System via Cave Creek.
47	There are possible connections to the local trail system.	5	The local trail system connects to this linear parkway corridor.
48	There are possible connections to residential neighborhoods.	5	There are existing and possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are existing and possible connections to recreation areas.
50	There are possible connections to multi-modal facilities.	5	There are possible connections to multi-modal facilities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	Adjacent land does have natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	5	The undeveloped adjacent land needs design guidelines for future development.
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.	5	There are opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian or desert wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.72**	
	Existing and Future Multi-Use Average	**4.09**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.53**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Four - Concrete Lined Trapezoid Channel		
	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 trapezoid channel meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the trapezoid channel does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the trapezoid channel does not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The channel is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is off-site screening with plantings and earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	There are no plantings used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	There are no plantings used.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The channel and maintenance roads are kept free of weeds and debris.
	Conformance Average	**1.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	1	There are no panoramic views from the trapezoid channel.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The channel has not naturally 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 channels's size and scale are out of proportion to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	Some positive prop. -residential, schools. Some negative -industrial, run down residential.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The channel is a barren concrete structure with no visual interest and acts as a barrier.
28	There are no overhead electrical lines or utility towers.	2	There are overhead electrical lines.
29	There are not multiple maintenance roads within the zone	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	2	There are several intersecting arterial streets.
31	There are no noise impacts that need buffering.	3	There are noise impacts by the arterial streets that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits will visually enhance the structure.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities to retrofit the channel into a tiered concrete channel.
	Existing Aesthetic Features Average	**1.90**	
	Conformance and Aesthetic Features Average	**1.74**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Concrete Lined Trapezoid Channel		**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	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	This zone is not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	3	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 without compromising public safety.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance roads.
40	There are no physical constraints to accessing the site.	1	There are physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are some constraints to multi-use retrofits due to the narrow site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	2	There are constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**2.09**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections east to North Mountain Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	4	There are possible connections to the Maricopa County Trail System via Cave Creek.
47	There are possible connections to the local trail system.	5	The local trail system connects to this linear parkway corridor.
48	There are possible connections to residential neighborhoods.	5	There are existing and possible connections to the surrounding residential neighborhoods.
49	There are possible connections to recreation areas.	5	There are existing and possible connections to recreation areas.
50	There are possible connections to multi-modal facilities.	5	There are possible connections to multi-modal facilities.
51	There are possible connections to local commercial areas.	5	There are possible connections to local commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	Adjacent land does have natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	5	The undeveloped adjacent land needs design guidelines for future development.
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.	5	There are some opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian or desert wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	1	There are no opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	1	There are no opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.28**	
	Existing and Future Multi-Use Average	**2.68**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.21**	

Cave Creek Dam & Cave Butte Dam

Facility Location, Description and Zone Delineation

Cave Creek Dam and Cave Butte Dam are located in the north valley within the City of Phoenix. The dams are situated on the Cave Creek and Apache Washes, surrounded by the Union Hills, and are approximately four miles southeast of Interstate 17 and the Carefree Highway.

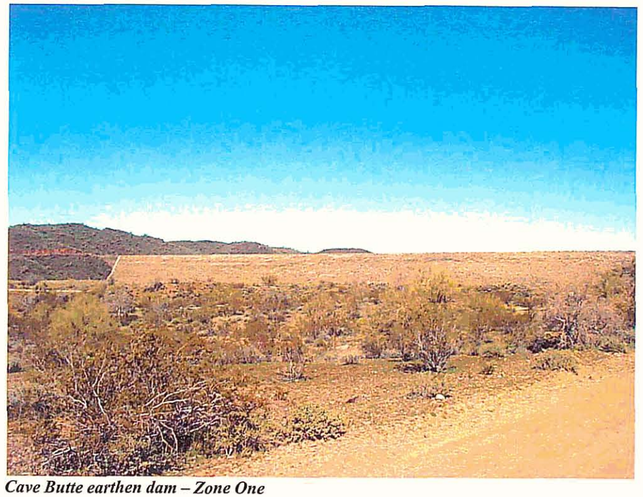
Floodwaters are impounded behind the historic Cave Creek Dam, which was built in the 1920s, but is now a non-operational structure. This multiple-arch dam is constructed of concrete and approximately 1650 feet long. The newer Cave Butte Dam was built in 1985 to provide additional flood protection. The new dam is a compacted earth-fill structure, approximately 2300 feet long and 190 feet high, and veneered on the north side with river rock. The dam provides protection to downstream land uses along the Cave Creek Wash by detaining floodwaters and conveying regulated flows back into the wash. There are also three earthen dike structures, one located adjacent to the dam, another extending from the Union Hills to east of Cave Creek Road, and the third is northwest of the dam. Site visits by Carter and Burgess identified seven zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Cave Butte Dam Structure,* the operational dam, see photos bottom left and center. *Zone Two* is the *Cave Creek Dam Structure,* the non-operational dam. *Zone Three*, the *Cave Butte Impoundment Dikes 1, 2 and 3* located upstream of Cave Creek Dam, the saddle dikes direct water flows towards the impoundment area, see photo bottom right. The *Impoundment Area*, located upstream of both Cave Butte Dam and Cave Creek Dam was identified as *Zone Four*. *Zone Five* was designated the *Foothills Area* and it is located in four segments around both of the dam structures. *Zone Six* is the *Natural Wash Area* located downstream from both Cave Butte Dam and Impoundment Dike 1. The *Multi-Use Area* is *Zone Seven* and is located directly west of the Natural Wash Area.

See Site Map for zone locations.

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

The potential for this site was identified by Carter and Burgess as significant due to the site's existence as a large recreational open space. The site is also in close proximity to other natural areas and recreational corridors such as the Phoenix Sonoran Preserve, Reach 11 Recreational Area, and Cave Creek Wash and Regional Park. Portions of the site currently provide specialized open space recreational uses, such as a model airplane field and a hot air balloon launch site. Lastly, this site has great connection potential because it is immediately adjacent to the planned Maricopa County Regional Trail System primary corridor of the Central Arizona Project Canal.

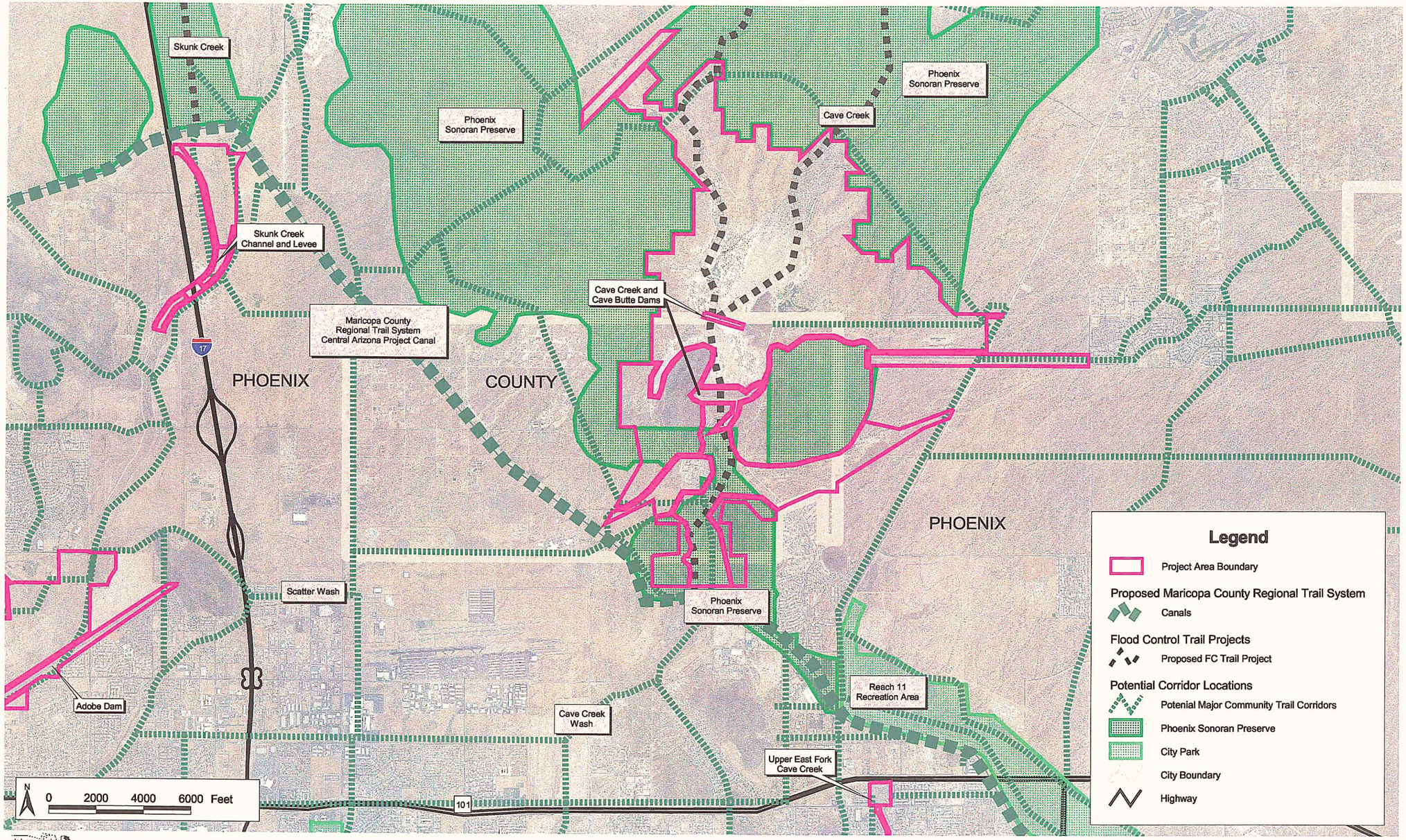
See Potential Corridor Locations Map for identified connection opportunities.



Cave Butte earthen dam – Zone One

Cave Butte earthen dam – Zone One

Rock veneered Cave Butte training dike 3 – Zone Three



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter+Burgess

Potential Corridor Locations Map

Cave Creek Dam & Cave Butte Dam

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing an evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One - Cave Butte Dam Structure

The dam does conform to aesthetic policy for the following reasons:

- The plantings used will not cause an impedance to design function.
- The dam and maintenance roads are kept free of weeds and debris.

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

- The alignment of the dam does not meander to vary from a straight line.
- The profile or height of the dam does not vary to modulate the outline.
- The side slopes of the dam are not varied to simulate natural terrain.
- The dam is not designed to blend into the contour of the natural terrain.
- No on-site screening with trees and shrubs were used to blend the structure.

Zone Two - Cave Creek Dam Structure

The dam does conform to aesthetic policy for the following reasons:

- There is off-site screening with plantings or earthwork buffers are used.
- The dam and maintenance roads are kept free of weeds and debris.

The dam does not conform for the following reasons:

- The alignment of the dam does not meander to vary from a straight line.
- The profile or height of the dam does not vary to modulate the outline.
- The side slopes of the dam are not varied to simulate the natural terrain.
- The dam is not designed to blend into the contour of the natural terrain.
- There is no veneering or plating of the structure with indigenous rock.

See photo bottom center.

Zone Three - Cave Butte Impoundment Dikes 1,2 and 3

The impoundment dikes conform to aesthetic policy for the following reasons:

- Plantings used will not cause an impedance to design function.
- The dikes are reseeded to enhance the growth of vegetation.
- The dikes and the maintenance roads are kept free of weeds and debris.

The impoundment dikes do not conform to policy for the following reasons:

- The alignments of the dikes do not meander to vary from a straight line.
- The profile or height of the dikes does not vary to modulate the outline.
- The side lopes of the dikes are not varied to simulate the natural terrain.
- The dikes are not designed to blend into the contour of the natural terrain.
- There is no on-site screening with trees and shrubs used to blend the structure.

See photo bottom right.

Zone Four - Impoundment Area

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

- The impoundment area meanders to vary from a straight line.
- The profile or height of the impoundment area varies to modulate the outline.
- The side slopes of the impoundment area are varied to simulate the natural terrain.
- The plantings used will not cause an impedance to design function.
- There are plantings used to provide erosion control and protect visual qualities.

The impoundment area does not conform for the following reasons:

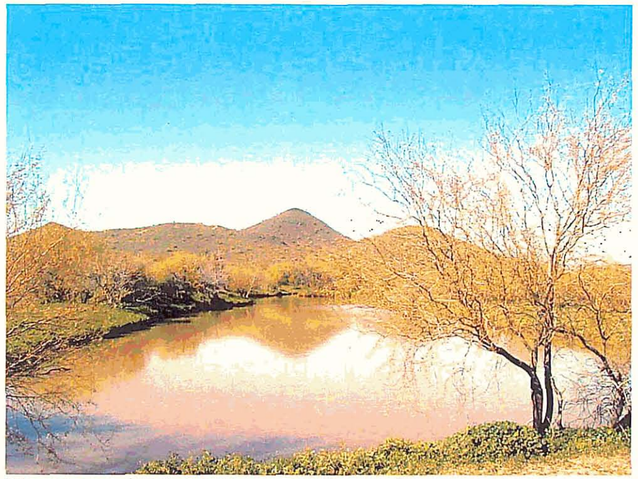
- Disturbed areas are not graded and replanted to match surrounding area.

See photo bottom left.

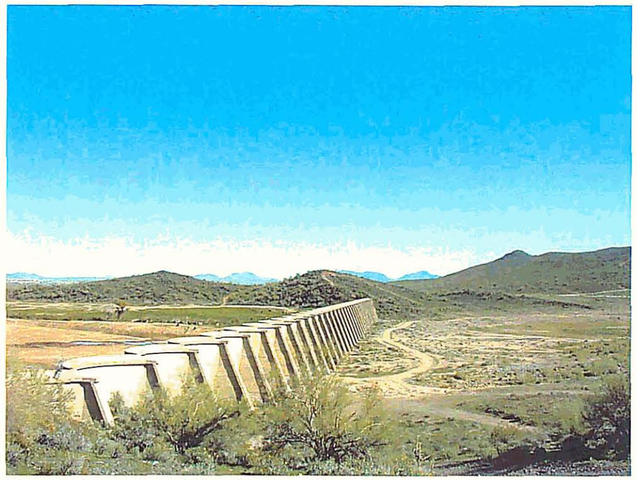
Zone Five - Foothills Area

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

- The alignment of the foothills area meanders to vary from a straight line.
- The profile or height of the foothills area varies to modulate the outline.

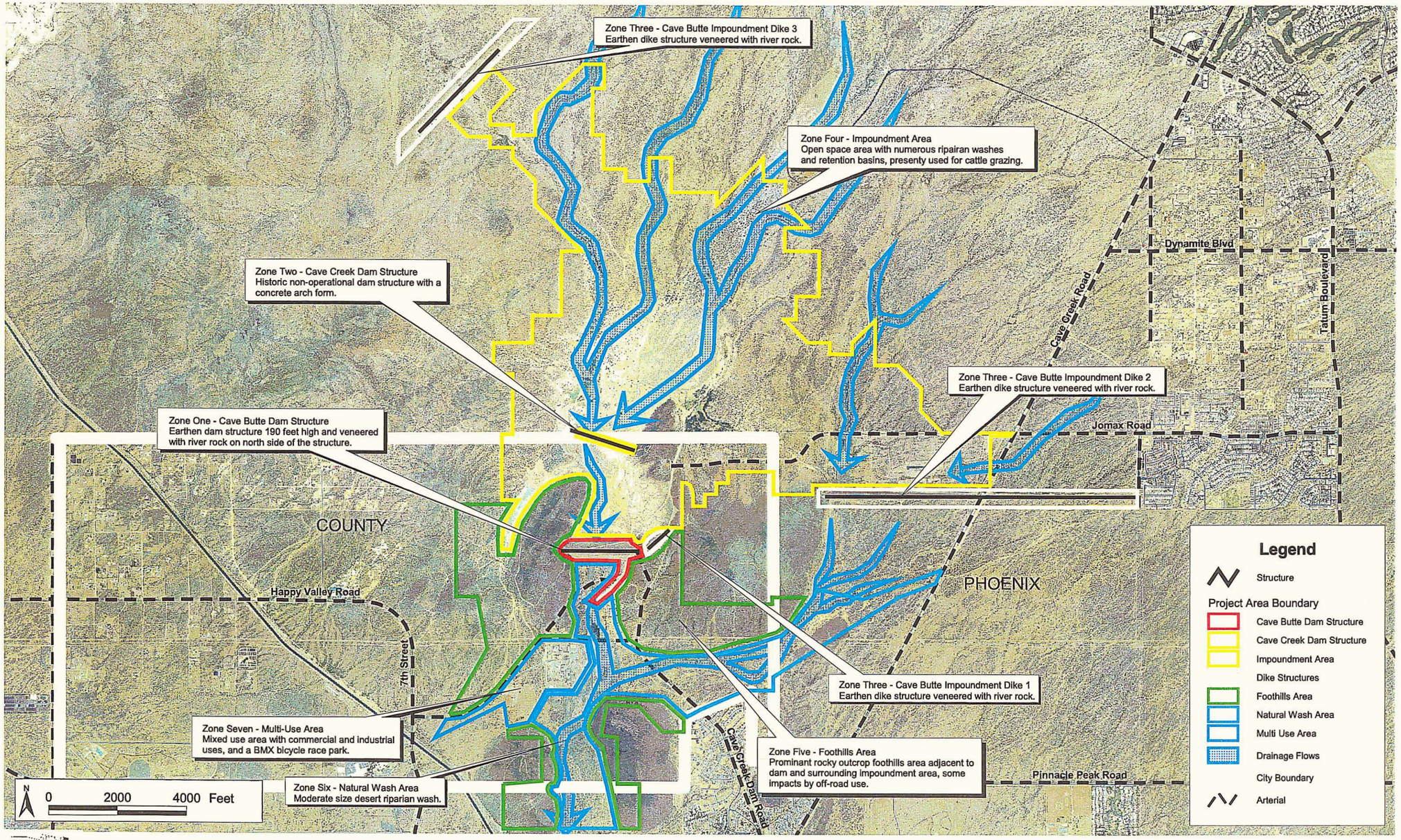


Riparian zone in impoundment area – Zone Four



Cave Creek concrete arch dam structure – Zone Two

Cave Butte earthen dike 2 – Zone Three



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ter=Burgess

Site Map

Cave Creek Dam & Cave Butte Dam

- There are plantings used to provide erosion control and protect visual qualities.
- The plantings used will not cause an impedance to design function.
- There is off-site screening with plantings or earthwork buffers are used.

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

- The foothills area is not reseeded to enhance the growth of vegetation.

Zone Six - Natural Wash Area

The natural wash area conforms to aesthetic policy for the following reasons:

- The alignment of the natural wash area meanders to vary from a straight line.
- The profile or height of the natural wash area varies to modulate the outline.
- The side slopes of the natural wash area are varied to simulate the natural terrain.
- There are plantings used to provide erosion control and protect visual qualities.
- The plantings used will not cause an impedance to design function.

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

- The disturbed areas are not graded and replanted to match the surrounding area.
- The natural wash area is not reseeded to enhance the growth of vegetation.
- The natural wash area is not kept free of weeds and debris.

See photo bottom center.

Zone Seven - Multi-Use Area

The multi-use area conforms to aesthetic policy for the following reasons:

- The alignment of the multi-use area meanders to vary from a straight line.
- The profile or height of the multi-use area varies to modulate the outline.
- There is on-site screening with trees and shrubs used to blend the structure.
- There is off-site screening with plantings and earthwork buffers are used.

The multi-use area does not conform to policy for the following reasons:

- The multi-use area is not designed to blend into the contour of the natural terrain.
- The disturbed areas are not graded and replanted to match the surrounding area.
- The multi-use area is not reseeded to enhance the growth of vegetation.
- The multi-use area is not kept free of weeds and debris.

See photo bottom right.

Surrounding Site Character

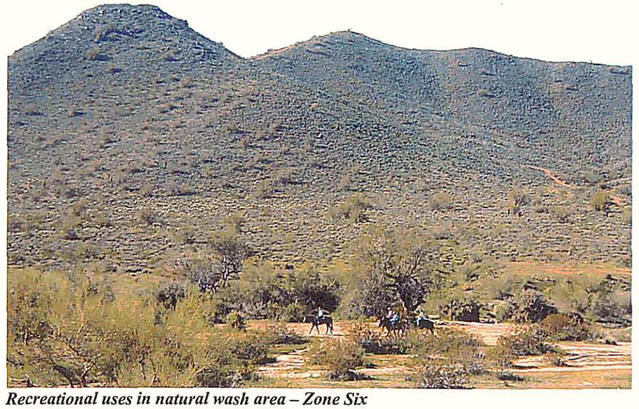
Zone One - Cave Butte Dam Structure

The area surrounding Cave Butte Dam consists of the adjacent foothills, zone five, which contains mostly undisturbed upland desert vegetation; the impoundment area between the two dams, zone four; and the natural wash area to the south of the dam, zone six. Because of the height of the dam structure, the surrounding natural area is very visible, particularly the mountains that abut each end of the dam structure. To the north, Cave Creek Dam is visible and scarring is visible of both the foothills area and impoundment area directly adjacent to the dam. Because of the large size of this site, adjacent residential development is not generally visible except to the south where there is a newer, well kept, single-family home development.

Zone Two - Cave Creek Dam Structure

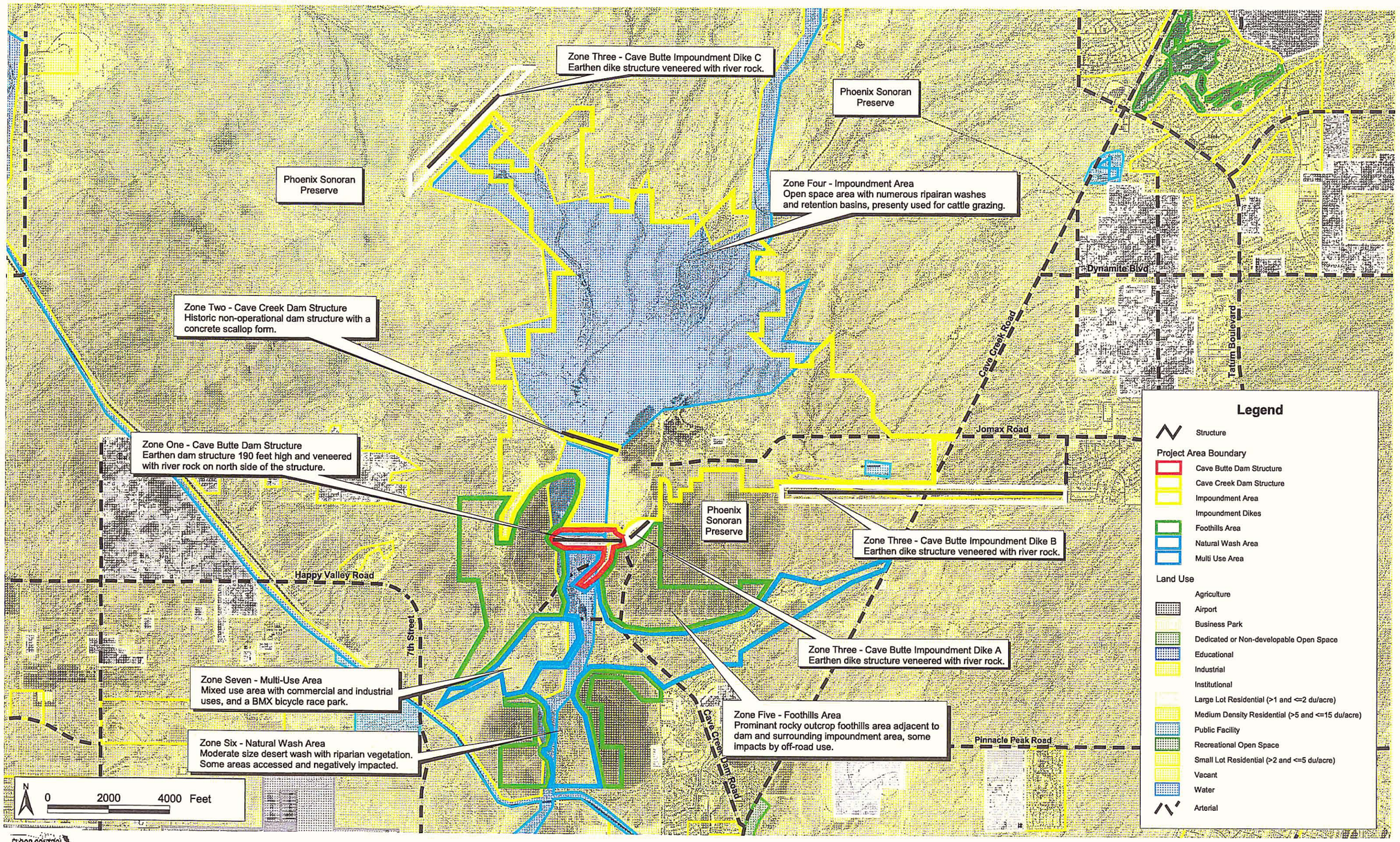
The area surrounding Cave Creek Dam is very similar to the character of Cave Butte Dam's surroundings. Though, since this dam structure is located further north and more centered in the site, less of the surrounding areas are visible, such as the residential area to the south. Two features dominate the surrounding character at this zone: the foothills area and the earthen Cave Butte Dam. It is very apparent, at this vantage point, how strongly the earthen dam contrasts the hillsides.

Impoundment area behind Cave Butte dike 2 – Zone Four



Recreational uses in natural wash area – Zone Six

BMX bike park in multi-use area – Zone Seven



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter&Burgess

Site Analysis Map

Cave Creek Dam & Cave Butte Dam

Zone Three - Cave Butte Impoundment Dikes 1,2 and 3

Impoundment dike 1 is located closest to Cave Butte Dam than the other two dikes. Therefore, the dam structure is the most dominant visual feature. The foothills areas and the impoundment area are also visible from the dike. In addition, scaring and damage from off road vehicle use and cattle grazing are visible. Impoundment dike 2 is located to the east of both dam structures. The dike's surrounding views are again most dominated by Cave Butte Dam. The dike is much lower than the dam and views to the southwest beyond the dam are blocked. Washes and hillsides beyond the site are visible to the direct north and south of this dike. There is not development nearby this dike, but it can be seen off in the distance and is expected to move closer over time. Dike 3 is located at the northwest end of the site. Because this dike is quite low in comparison to the other dikes and Cave Butte Dam, there is not as much visible from this vantage point. The surrounding area consists of mostly undisturbed native washes and hillsides; most located within the Phoenix Sonoran Preserve directly to the west.

Zone Four - Impoundment Area

The surrounding character by this area includes the foothills, open spaces and desert washes of the Phoenix Sonoran Preserve. The foothills have a large variety of upland vegetation such as cholla cactus and Palo Verde trees. However, many of these hills are noticeably scarred by off-road use. The desert washes of Cave Creek and Apache Creek continue north, past sand and gravel mining operations, to the foothills and mountains by the town of Cave Creek. There are residential neighborhoods consisting of large lots with horses several miles to the east and north but they are not noticeable because the impoundment area is at a lower elevation.

Zone Five - Foothills Area

The foothills area primarily surrounds the Cave Butte Dam structure. The dam is the most dominant visual element from this zone. This area is also surrounded by desert open spaces and washes located in the impoundment area and the natural wash areas. To the west are homes visible that have large lots with horses. To the southwest, the Central Arizona Project Canal is visible in a portion of two areas located within this zone.

Zone Six - Natural Wash Area

Because the natural wash area is located south of Cave Butte Dam, the dam structure and adjacent hillsides block views to the north. The washes are lower in elevation relative to hillsides flanking them and act to block views beyond the site to the east and west. The surrounding site character by this area consists of the foothills, desert open spaces and washes. Most surrounding areas have been moderately impacted by off-road uses with the exception of the multi-use area. The multi-use zone is a conglomeration of a shooting range, dumping area, multiple access roads, maintenance buildings and electrical transmission poles. This adjacent zone has been severely degraded and negatively impacts the natural wash area because it is quite visible from the wash area just south of Cave Butte Dam. To the southeast of this portion of the wash is a recently built small-lot residential neighborhood, which is somewhat visible from three points located in this zone.

Zone Seven - Multi-Use Area

The surrounding site character for this area consists of the foothills, desert open spaces with lowland vegetation, and desert washes. Some of the open space areas have been negatively impacted by off-road uses but not a severely as this zone. The contrast in form between Cave Butte Dam and the adjacent foothills is quite apparent from this zone. Surrounding residential land uses are not visible from this area as the hillsides block potential views. A connection to the Central Arizona Project Canal is visible to the southwest of this zone.

See the Site Analysis Map for land uses and zone locations.

Site Impressions

Zone One - Cave Butte Dam Structure

The Cave Butte Dam was constructed to replace Cave Creek Dam, although Cave Creek Dam has never failed to provide flood protection. Cave Butte Dam is a massive structure with a base width of over 500 feet and a height of over 100 feet; the scale makes the dam visible from the entire area, even from Cave Creek Road located several miles away. The dam is a compacted earthfill structure, uniform in alignment and profile, which strongly contrasts the surrounding hillsides. There is river rock veneer on the north, upstream side to control erosion. Because the structure is so large, the entire site and beyond is visible from this vantage point.

Zone Two – Cave Creek Dam Structure

Cave Creek Dam is a unique structure, built of reinforced concrete in a multiple arch shape. The dam was listed on the National Historic Register of Historic Places and any alteration of the structure is subject to guidelines established by the State Historic Preservation Office. The dam is noticeable from a distance because its shape stands out from the surrounding natural vegetation and landforms. It has a "pier" quality even though it's not publicly accessible to the top.

Zone Three - Cave Butte Impoundment Dikes 1, 2 and 3

There are three saddle dikes that were built to operate in conjunction with Cave Butte Dam. Dike 1 is adjacent to Cave Butte Dam and is very similar in construction. It is a uniformly sloped earth fill structure with a veneered surface like the dam but, it is not nearly as tall or as long as the dam. Even though it is smaller than the dam structure, uniform height and outline do not blend into the surrounding landscape. Dike 2 is located in eastern portion of this site and extends from the Union Hills, across Cave Creek Road, to 40th Street. This is also an earthen dike structure with rock veneer on the upstream side with naturalized vegetation on the downstream side. This dike is the largest of the three dikes and the most visible from the east side because its height and uniform side slopes strongly contrast the natural landforms. Dike 3 is located in the northwest corner of the study site and has a very low profile. The dike is of earthen construction with river rock veneer. The low height of dike 3, combined with the river rock veneer, makes the dike structure appear to look like the remains of an old building.

Zone Four - Impoundment Area

The impoundment area is the largest zone of the site and contains a large variety of natural features from desert foothills, washes, grassy areas, and mesquite bosques. Most of this zone contains a rich diversity of upland vegetation and wildlife with the exception of the impoundment area between Cave Butte Dam and Cave Creek Dam. This portion of the zone is mostly barren with a few grassy areas because the area is regularly excavated, due to the continuous buildup of sediments behind the dam structures. This maintenance activity leaves the area stripped of any significant vegetation. Additionally, this zone is utilized for cattle grazing. There are herds of cattle concentrated by the remnant grassy areas and roaming throughout the site. Numerous water tanks built for the cattle have created areas of lush vegetation with dense mesquite bosques, however, the herds have damaged the natural environment, leaving washes and desert areas degraded and desolate. This zone also contains recreation opportunities such as a model airplane landing field, a hot air balloon launch site, a makeshift shooting range and unmonitored off-road vehicle use. The shooting range has left the area littered with shell casings and clay targets while the unmonitored off-road vehicle use has left both the impoundment area and surrounding hillsides visibly scarred.

Zone Five - Foothills Area

This area is a composite of gradually sloping hills and steeply inclined foothills that rise from the desert floor. The hills offer panoramic vistas of the site and beyond. The foothills are volcanic in origin and are a combination of black rock and desert upland vegetation such as bursage, creosote, and palo verde trees. The eastern portion of the foothills zone is relatively undisturbed while the western portion has been scarred by off-road use.

Zone Six - Natural Wash Area

The natural wash area consists of two wash channels that join just south of Cave Butte Dam to create Cave Creek Wash. Both the tributary washes and Cave Creek Wash are typical desert washes with braided channels and riparian vegetation. Unfortunately, at the point where the two washes converge is the most severely degraded landscape-without vegetation, with multiple off-road tracks, debris dumping and gun shell damage. In addition, a row of electrical transmission lines with associated maintenance roads intersect the area at this point, detracting from the positive visual quality of the nearby foothills.

Zone Seven - Multi-Use Area

The multi-use area consists of a BMX bicycle racing park, a makeshift shooting range, dumping ground, and maintenance facility with storage area. This zone is the most damaged of the zones in this site and has a poor visual quality that detracts from the surrounding natural features.

Opportunities and Constraints for Retrofit Treatments

Zone One - Cave Butte Dam Structure

Retrofit opportunities include modifying the dam aesthetically with earthwork to mimic the adjacent foothills and adding trails to viewpoints to take advantage of the panoramic views.

The predominant constraint to retrofitting the dam structure is cost. Any significant aesthetic treatment would be costly because of the immense size of the dam structure.

Zone Two - Cave Creek Dam Structure

The unique dam structure is a potential opportunity to elaborate on its "pier" like quality while preserving the historic structure. Since the dam is longer needed for floodwater control, the retrofit treatment is less constrained and the dam could actually become a pier on a lake created in the degraded impoundment area. Currently, the top of the dam is not accessible to the public but the unusual shape and height of the dam does offer a potential opportunity to create an interesting viewing point for the site and the lake. A possible constraint to retrofitting a lake around the dam is the age of the structure and difficulty of determining the structural viability of using the dam to permanently retain water.

Zone Three - Cave Butte Impoundment Dikes 1,2 and 3

Retrofit opportunities for the impoundment dikes include aesthetically modifying the structures to resemble natural terrain. Because of its location between areas of the Phoenix Sonoran Preserve and its low height, the retrofit opportunity for impoundment dike 3 could include construction of wildlife viewing towers. Dike structures 1 and 2 could also be utilized as wildlife viewing points. Because cost for retrofitting the structures is viewed as a constraint, the cost constraints to retrofitting the dike structures are expected to vary because of their varied sizes.

Zone Four - Impoundment Area

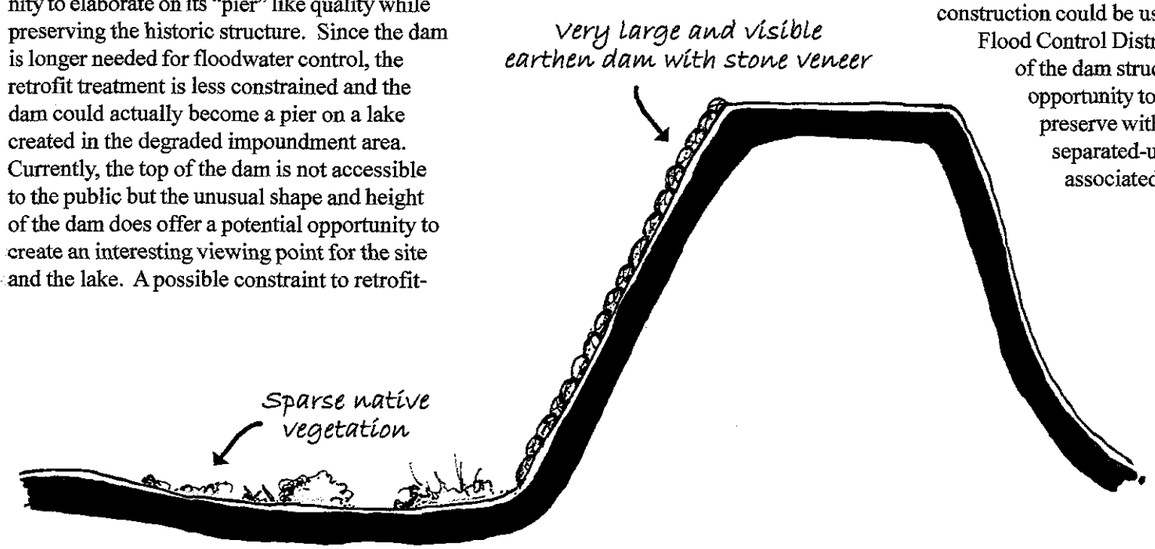
Several opportunities are available for this large zone. The zone's size allows for a variety of recreational activities to occur in separate areas of the zone. Since the area immediately adjacent to both dam structures is already quite degraded, there is already an opportunity to retrofit this area with a completely different recreational opportunity such as a lake. The areas behind the dam structures could become permanent lake areas with supporting facilities. The lake could be created as a mitigation project after temporary sand and gravel mining operations ceased. A possible constraint to utilizing mining operations to create the lake is the negative public image that sand and gravel mining has. The mining and lake construction could be used as a mitigation research project for the Flood Control District. The area within the zone to the north of the dam structures is relatively undisturbed, it has an opportunity to become a wildlife preserve with viewing points, separated-use trails and associated facilities. The eastern portion of the impoundment area with the existing hot air balloon launch is an existing recreation use that has an opportunity to be expanded upon through additional facilities for public access and viewing.

Zone Five - Foothills Area

The foothill area offers a natural setting with an elevated vantage point for landscape and wildlife viewing. There is an opportunity to enhance existing trails and create new trail connections that can take a visitor throughout this area and connect with existing lowland trails. The slope of the hills is viewed as a constraint because of the difficultly and expense of accessing hillsides with construction equipment. Because the foothills already contain existing off-road vehicle damage, there is an opportunity to restrict access and re-vegetate the surrounding hillsides.

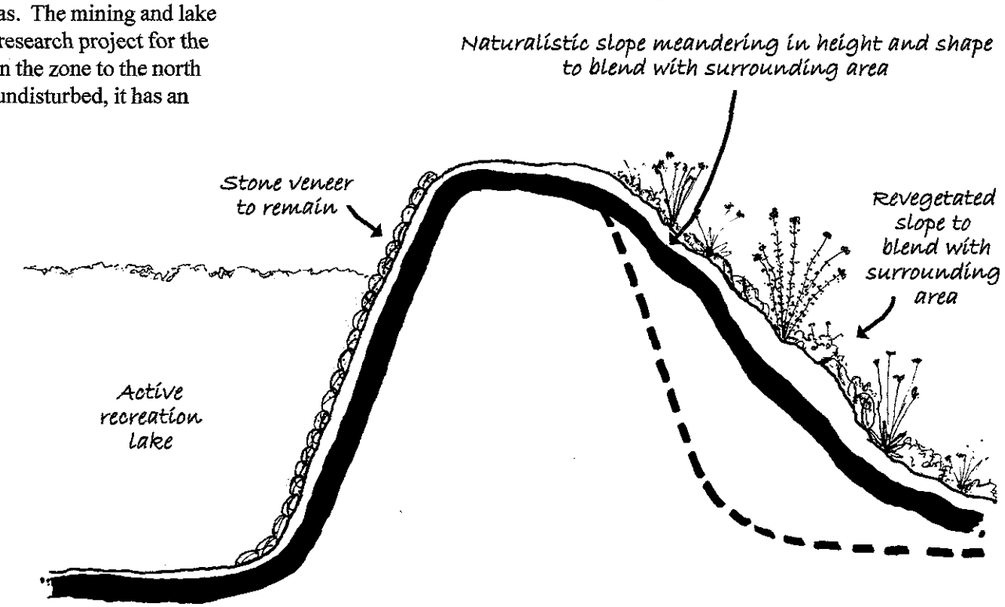
Zone Six - Natural Wash Area

This zone, particularly in the area just south of Cave Butte Dam would benefit greatly from re-vegetation efforts and restricted access. There is an opportunity to provide a southerly trail connection to Cave Creek Wash, which connects to the Maricopa County Regional Trail System located along Central Arizona Project Canal. There is also an opportunity to construct multiple northerly connections to the Phoenix Sonoran Preserve. The most significant restraint for this zone is the



Cave Butte Dam - Existing Conditions (Section B)

Not to scale



Cave Butte Dam - Potential Retrofit (Section B)

Not to scale

high cost of construction to recreate a natural desert wash environment.

Zone Seven - Multi-Use Area

There is an opportunity in this area to build upon the existing recreational uses such as the BMX racing park. Additional bicycle themed recreation opportunities could be provided such as a staging area for mountain biking and clearly marked bike trails. The constraint to retrofits for this area is necessity of either relocating or visually masking the existing storage facilities and the cost of cleaning up and re-vegetating disturbed areas.

Landscape Aesthetic and Multi-Use Treatment Recommendations

See concept graphic on page 94. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One - Cave Butte Dam Structure

The retrofit treatment concept proposes aesthetically renovating the dam structure in order to blend it with the surrounding foothills. The retrofit concept proposes the irregular placement of overburden on the dam with deposits of rock and desert vegetation to achieve a naturalistic form.

Aesthetic Treatment Retrofit Opportunities

Irregular rock and earth placement on both sides of dam structure.

Landscaping Treatment Retrofit Opportunities

Re-seeding, shrub and tree plantings on the dam's side slopes to achieve a texture and color similar to its surroundings.
Limited landscape irrigation of key planted areas, re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Flood Control interpretive center adjacent to dam and lake for viewing.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two - Cave Creek Dam Structure

Because of the unique form of the Cave Creek dam structure, the concept creates a pier out of the dam that divides a passive recreation lake with an active recreation lake. The retrofit concept also proposes limited access to the top of the structure for viewing the surrounding lake areas.

Aesthetic Treatment Retrofit Opportunities

Restoration of the dam structure.

Landscaping Treatment Retrofit Opportunities

None identified.

Multi-Use Treatment Retrofit Opportunities

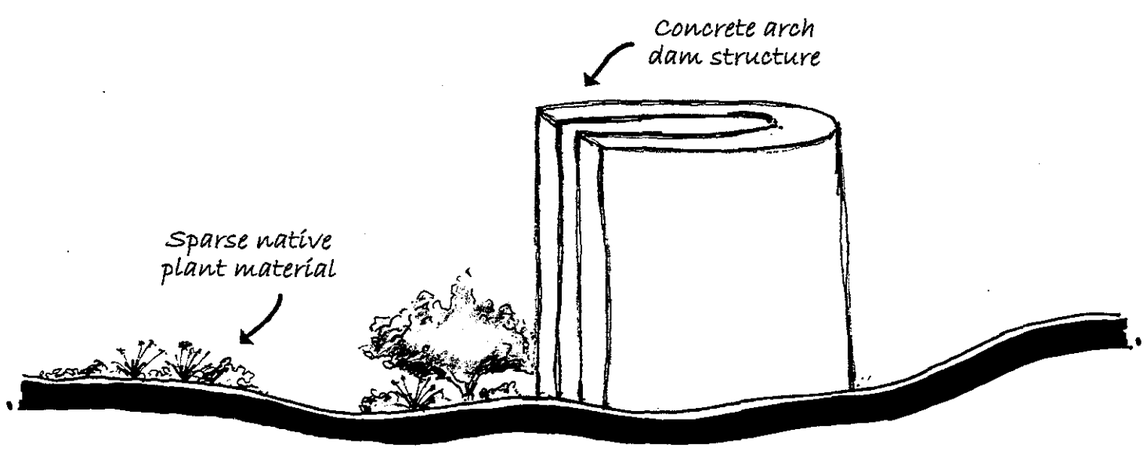
Modification of the dam structure to permit public access for use as a pier. Installation of railing and viewing stations.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

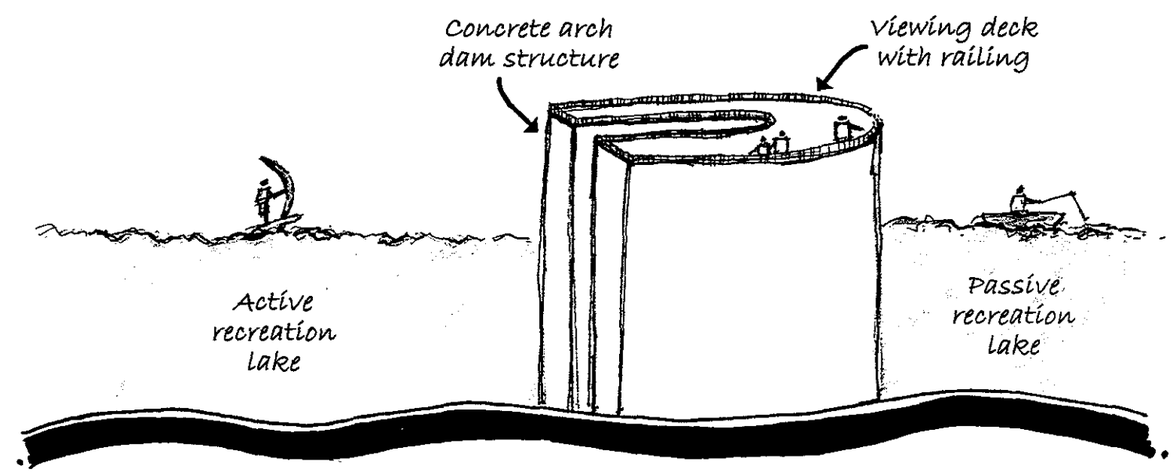
Zone Three - Cave Butte Impoundment Dikes 1,2 and 3

The retrofit concept for the impoundment dikes, in particular dikes 1 and 2, proposes modifications to the structures to allow them to blend into their surroundings. This would be accomplished by the irregular placement of overburden on the dike with deposits of rock and desert vegetation to achieve a naturalistic form. In addition, dike 2, which is near the hot air balloon launch site would be used as a



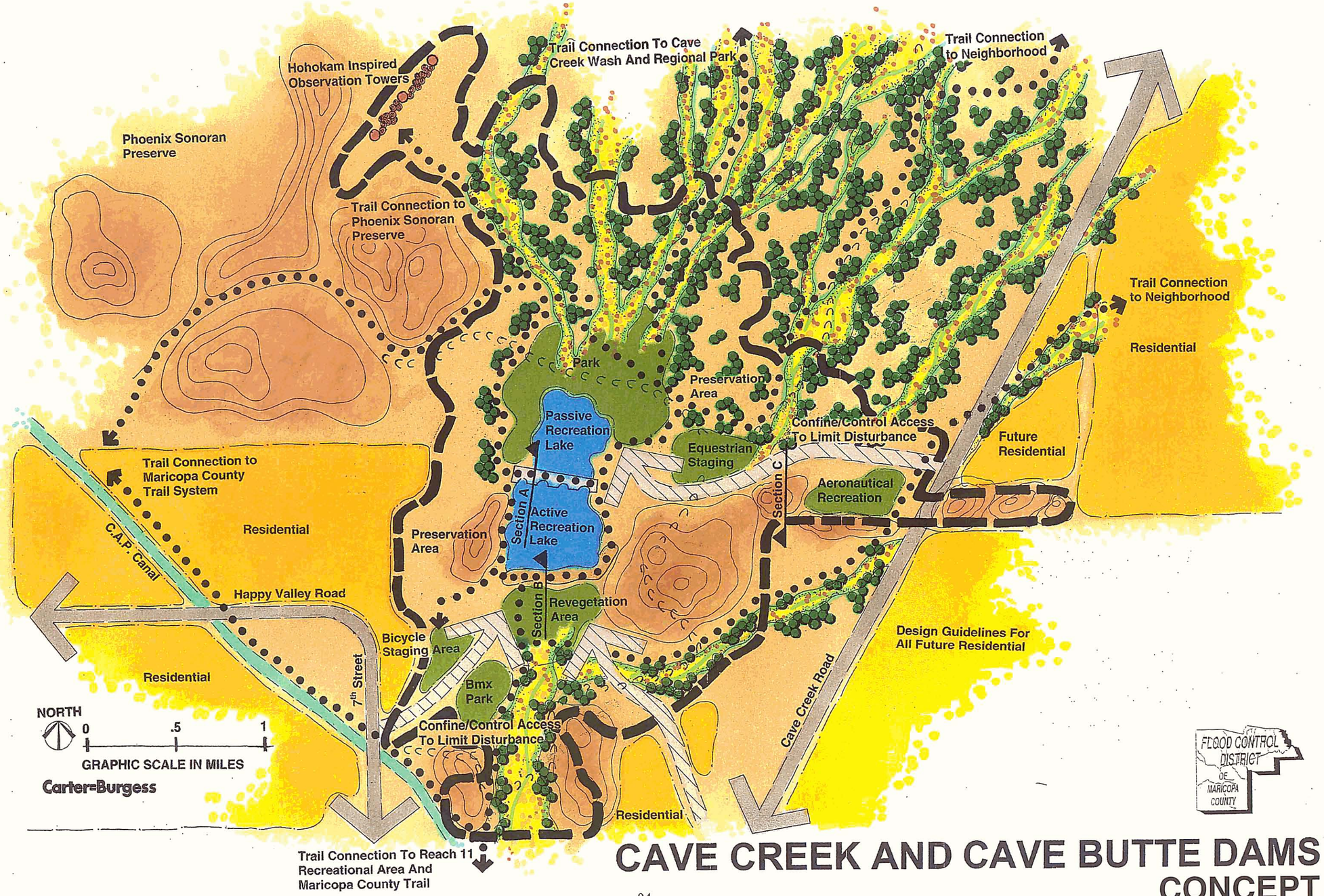
Cave Creek Dam - Existing Conditions (Section A)

Not to scale



Cave Creek Dam - Potential Retrofit (Section A)

Not to scale



CAVE CREEK AND CAVE BUTTE DAMS CONCEPT

vantage point for witnessing launching. The concept for the low-profile dike 3 is to expand upon its archeological remnant-look and construct several stacked-rock Hohokam observation towers to view the hillsides and impoundment area below.

Aesthetic Treatment Retrofit Opportunities

Irregular rock and earth placement on dike structures.

Landscaping Treatment Retrofit Opportunities

Re-seeding, shrub and tree plantings on the dikes side slopes to achieve a texture and color similar to its surroundings.
Limited landscape irrigation of key planted areas, re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft Surface Trail - Decomposed Granite Trail.
Gateway Features - At trail connection points.
Construction of observation towers.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Impoundment Area

The overall retrofit concept for the impoundment area is to provide a variety of recreational opportunities within this large and varied environment. The concept proposes adding an active recreational lake behind the Cave Butte Dam and a passive recreational lake behind the Cave Creek Dam with an adjacent park space. The remainder of the impoundment area is to be protected as a preservation area and re-vegetated in disturbed areas. A network of separated trails for hiking, biking and equestrian uses would be established to provide varied experiences of the foothills, lakes and desert riparian environments.

Aesthetic Treatment Retrofit Opportunities

Re-contouring of disturbed areas to mimic natural landforms.

Landscaping Treatment Retrofit Opportunities

Tree and shrub plantings to create a naturalistic riparian wash and enhance the slopes of the retention basin.
Limited landscape irrigation of key areas.
Revegetation of disturbed areas with native seed mixes.

Multi-Use Treatment Retrofit Opportunities

Park facilities by passive recreational lake.
Wildlife viewing facilities by the preservation area.
Trail corridors throughout impoundment area.
Equestrian staging area.
Gateway features at the corridor connection points
Passive recreation lake by Cave Creek Dam and active recreation lake by Cave Butte Dam.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Five - Foothills Area

Due to the existing off-road vehicular impacts in the foothills area, the retrofit concept proposes closing, regrading and revegetating these very visible scars. Single-track hiking and biking trails could be properly planned and constructed through the foothills to be less conspicuous and utilize already disturbed trails where possible.

Aesthetic Treatment Retrofit Opportunities

Recontour closed trails in foothills surrounding this site.
Earthwork - Landscape berms for screening

Landscaping Treatment Retrofit Opportunities

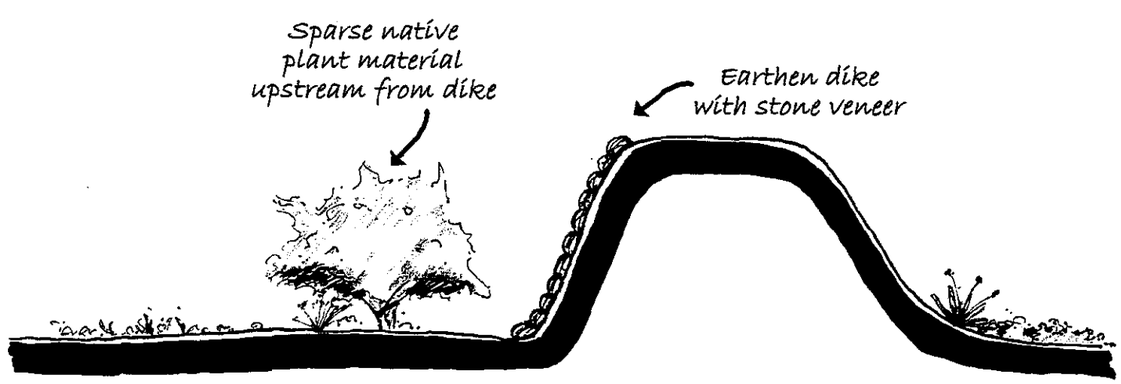
To provide visual buffers between uses and shade for trails linking amenities.
Limited landscape irrigation of key areas.
Revegetation of closed trails with native seed mixes.

Multi-Use Treatment Retrofit Opportunities

Provide separated multi-use trail connections through the foothills.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.



Cave Butte Dike - Existing Conditions (Section C)

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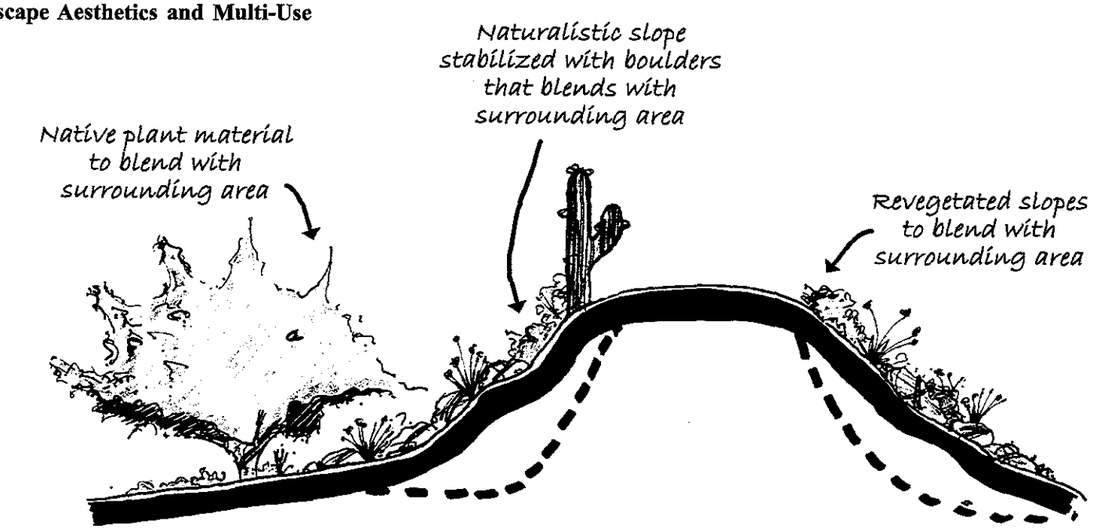

Cave Butte Dike - Potential Retrofit (Section C)

Not to scale

Zone Six - Natural Wash Area

The concept for the natural wash focuses on restoration and revegetation of disturbed wash banks. Separated-use trails would be established along with gateway and viewing features.

Aesthetic Treatment Retrofit Opportunities

Recontour closed trails in riparian area.

Landscaping Treatment Retrofit Opportunities

Tree and shrub plantings to provide shade and visual screening for trails.
Limited landscape irrigation of key areas.
Re-seeding of closed trails and disturbed areas.

Multi-Use Treatment Retrofit Opportunities

Corridor connection through riparian area.

Wildlife Viewing Facilities

Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Seven - Multi-Use Area

The retrofit concept for the multi-use area is to clean up, screen and phase out the industrial uses. The concept also proposes eventually altering the use of the area by creating support businesses for the recreational activities. For the short term, the existing uses could be enhanced with berms and landscaping. Ultimately, facilities for recreational trail users and trail connections would be established in this area.

Aesthetic Treatment Retrofit Opportunities

Landscape berms for screening.
Clean up operations.

Landscaping Treatment Retrofit Opportunities

Tree and shrub plantings to provide visual buffers between recreational uses and shade for trails.
Limited landscape irrigation of key areas.
Revegetation with native desert seed species for disturbed areas.

Multi-Use Treatment Retrofit Opportunities

Trailhead facilities with a bicycle staging area.
Soft surface trail connections through the foothills, to other site amenities, and to connections to the Phoenix Sonoran Preserve and to the Maricopa County Trail.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Hydrologic Engineering Synopsis of Structure

Project Title: Cave Buttes Dam

Watershed and Relationship to Other Structures: Apache Wash and Cave Creek. This structure sits about .7 miles downstream from Cave Creek Dam.

Location: T4N, R3E, Sections 1-4, 9-11, 15 & 16
T5N, R3E, Sections 21, 27-29, 33-35

The structure is approximately 17 miles north of downtown Phoenix. Use Cave Creek Road to Jomax Road then west to end of the road. The dam is located southwest of this point.

Authorization: Flood Control Act of 1965 (Public Law 89-298, 89th Congress)

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: The structure collects runoff water coming into the Cave Creek Channel. This water is impounded behind Cave Creek Dam and Cave Buttes Dam. It is then released through an un-gated outlet back into the Cave Creek Wash.

Project Features:

Type of structure Zoned earthfill

Top of structure elevation 1,679.1 elevation

Length of structure 2,275 (.43 miles)

Maximum height 115 feet

Top crest width 20 feet (12 feet paved)

Spillway capacity 46,100 acre feet

Drainage area 191 square miles

Storage capacity 46,600 acres feet

Maximum water surface elevation 1,674.1 elevation

Freeboard 5 feet

Peak inflow 54,000 cfs

Peak outflow 494 cfs

Drawdown Time 48 days

Principal outlet discharge rate 500 cfs

Principal outlet structure 7.25' x 7.25' structure into 45" diameter conduit x 529 lf

Saddle dike #1

Crest length 930 feet

Maximum height above existing ground 39 feet

Saddle dike #2

Crest length 9,035 feet

Maximum height above existing ground 55 feet

Saddle dike #3

Crest length 3,245 feet

Maximum height above existing ground 10 feet

Project Title: Cave Creek Dam

Watershed and Relationship to Other Structures: Located .7 miles upstream to Cave Buttes Dam.

Functional Description: A multi-arch dam, curved upstream face. Constructed in 1922-1923 for flood control.

Project Features:

Type of structure reinforced concrete dam

Top of structure elevation 1,638 elevation

Length of structure 1,692 feet

Maximum height 120 feet above foundation/60 feet from creek bed

Top crest width 1 foot

Spillway crest elevation 1,637.5 elevation

Spillway capacity 20,000-25,000 cfs in natural saddle

Drainage area 210 square miles

Storage capacity 14,000 acre feet

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone One - Cave Butte Dam Structure		
	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 dam does not meander to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile or height of the dam does not vary to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the dam are not varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The dam structure does not blend into surrounding foothills.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees, and there are limited shrubs on the dam structure.
6	There is off-site screening with plantings or earthwork buffers are used.	3	The exiting natural vegetation and landforms provide some off-site screening.
7	There is veneering or plating of the structure with indigenous rock.	3	The dam is plated with river rock, but it does not match the indigenous rock character.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are moderately graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	3	The existing plants provide erosion control, but only partially enhance visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	The dam has been partially reseeded, but there are many unvegetated areas.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.42**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the adjacent foothills, open spaces, and residential areas.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	2	The dam structure has slightly revegetated.
21	The existing plantings match the community character.	3	The existing plantings on the dam match the desert shrub character.
22	The structure's size and scale are proportional to its surroundings.	3	The structure's size and scale are proportional to the surrounding foothills.
23	The attendant flood control facility structures blend into the surroundings.	3	The attendant principal outlet structure does not blend into the surroundings.
24	The adjacent properties positively impact the site.	5	The adjacent foothills and open space areas are positive features.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	1	The dam and spillway structures have very little aesthetic or landscape treatments.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	1	There are multiple roads by the dam, one on top the structure and two along the sides.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Overbuilding and landscape treatments will blend the structures into their surroundings.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is available open space for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.67**	
	Conformance and Aesthetic Features Average	**2.54**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Cave Butte Dam Structure		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	The dam structure is not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	4	Trails and connection features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Trails and connection features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	1	There is no space to meander the maintenance road on top of the dam.
40	There are no physical constraints to accessing the site.	2	There are physical constraints to accessing the zone.
41	There are no constraints to multi-use retrofits due to site size.	2	There are constraints to multi-use retrofits due to structure size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds
	Existing Multi-Use Features Average	**2.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are currently no adjacent commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	1	This zone has no additional property to be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land could be acquired to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
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.	1	There are no opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails to cross over the dam.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails to cross over the dam.
	Future Multi-Use Features Average	**3.44**	
	Existing and Future Multi-Use Average	**2.99**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.77**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Cave Creek Dam Structure		**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 dam does not meander to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile or height of the dam does not vary to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the dam are not varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The dam structure does not blend into surrounding foothills.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	3	The exiting natural vegetation and landforms provide some off-site screening.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are moderately regraded to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	3	The structure and maintenance roads have some of weeds and debris.
	Conformance Average	**1.50**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the adjacent foothills and open spaces.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on desert washes.
20	The structure or zone has naturally revegetated.	1	The dam has not naturally 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 structure's size and scale are proportional to the surrounding foothills.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facility structures.
24	The adjacent properties positively impact the site.	5	The adjacent foothills and open space areas are positive features.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	5	This is a unique scalloped dam and is an historic structure.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	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.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	2	There is little need for additional aesthetic and landscape retrofit treatments.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is available open space for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.67**	
	Conformance and Aesthetic Features Average	**2.08**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	*1 to 5*	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Cave Creek Dam Structure		**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	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	The dam structure is not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	4	Multi-use viewing features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Multi-use viewing features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	1	There are no maintenance/ access roads.
40	There are no physical constraints to accessing the site.	1	There are physical constraints to accessing the zone.
41	There are no constraints to multi-use retrofits due to site size.	2	There are constraints to multi-use retrofits due to structure size.
42	There are no constraints to multi-use retrofits due to structural hazards.	2	There are constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds
	Existing Multi-Use Features Average	**2.18**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are currently no adjacent commercial areas.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas.
53	Site property could be sold to allow for special use commercial areas.	1	This zone has no additional property to be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land could be acquired to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
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.	1	There are no opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	1	There are no opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	1	There are no opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.00**	
	Existing and Future Multi-Use Average	**2.59**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.34**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Three - Cave Butte Impoundment Dikes A,B, and C		
	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 dikes does not meander to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile or height of the dikes does not vary to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the dikes are not varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The dike structure does not blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees, and there are limited shrubs on the dike structures.
6	There is off-site screening with plantings or earthwork buffers are used.	3	The exiting natural vegetation and landforms provide some off-site screening.
7	There is veneering or plating of the structure with indigenous rock.	3	The dikes are plated with river rock, but it does not match the indigenous rock character.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are moderately graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	3	The existing plants provide erosion control, but only partially enhance visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	The dikes have been partially reseeded, but there are many unvegetated areas.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.42**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the adjacent foothills and open spaces.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on desert washes.
20	The structure or zone has naturally revegetated.	2	The dike structures have slightly revegetated.
21	The existing plantings match the community character.	4	The existing plantings on the dikes match the desert shrub character.
22	The structure's size and scale are proportional to its surroundings.	3	The structure's size and scale are moderately proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facility structures.
24	The adjacent properties positively impact the site.	5	The adjacent foothills and open space areas are positive features.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The dike structures do not blend into the surroundings need additional retrofits.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	2	There are multiple roads by the dikes, one on top the structure and two along the sides.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Overbuilding and landscape treatments will blend the structures into their surroundings.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There is available open space for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.71**	
	Conformance and Aesthetic Features Average	**2.57**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Cave Butte Impoundment Dikes A,B, and C		**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	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	1	The dike structures are not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Trails and connection features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Trails and connection features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	3	There is no space to meander the road on top the dikes, but the road along could meander.
40	There are no physical constraints to accessing the site.	3	There are some physical constraints to accessing the zone.
41	There are no constraints to multi-use retrofits due to site size.	5	There are no constraints to multi-use retrofits due to structure size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	3	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds
	Existing Multi-Use Features Average	**3.36**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	1	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	This zone has no additional property to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	Adjacent land could be acquired to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	1	There are some opportunities for small-scale park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails to traverse the dike structures.
62	There are opportunities for separated-use trails.	3	There are some opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.56**	
	Existing and Future Multi-Use Average	**3.46**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.01**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Impoundment Area		**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.	4	The alignment of the impoundment area varies, this is mostly undisturbed open space.
2	The profile or height of the structure varies to modulate the outline.	5	The profile of the impoundment area varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes of this zone varies, this is mostly undisturbed open space.
4	The structure is designed to blend into the contour of the natural terrain.	5	The impoundment area is natural and blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening from the existing native trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the existing native plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	5	There is veneering with existing indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	The disturbed areas are not graded and replanted to match the surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The existing native plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The existing native plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	The impoundment area is not reseeded, but this zone has revegetated.
12	The structure and maintenance roads are kept free of weeds and debris.	3	This zone and the maintenance roads have some weeds and debris.
	Conformance Average	**4.33**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	The impoundment area has numerous desert wash features to preserve.
14	There are landscape or natural features to preserve.	5	This zone has desert vegetation and riparian plants to preserve.
15	There are wildlife habitat areas to preserve.	5	This zone has many wildlife habitats by the desert washes 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 within this zone to preserve.	5	This zone is a scenic corridor, the area is comprised of native landforms and vegetation.
18	There are panoramic views from the structure or zone.	4	This zone offers panoramic views of the Union Hills and the mountains by Cave Creek.
19	There is a meandering low-flow feature modeled on desert washes.	5	The impoundment area has many meandering low-flow washes.
20	The structure or zone has naturally revegetated.	3	Some of the disturbed areas have naturally revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the desert and riparian community character.
22	The structure's size and scale are proportional to its surroundings.	5	The impoundment area's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the 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 no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	3	There are numerous floodwater retention areas, they are cattle watering tanks.
27	The structure does not have negative on-site visual problems.	4	Most of the impoundment area is visually positive, except for impacted areas.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	1	There are multiple roads and tracks 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.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits will restore disturbed areas.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**4.10**	
	Conformance and Aesthetic Features Average	**4.21**	

Site Criteria

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	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Four - Impoundment Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	This zone has undisturbed land and desert washes that are beneficial for a greenway.
35	There are existing multi-use features.	5	The impoundment area currently has some off-road vehicular use.
36	The zone is currently accessible for multi-use.	1	This zone is not accessible, but areas have been accessed.
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 public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the access/ maintenance roads.
40	There are no physical constraints to accessing the site.	4	There are some physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	5	There are no constraints to multi-use retrofits due to site size, this zone is large.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	4	There are some constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.36**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	4	Special use commercial areas could be located on suitable parcels.
54	Adjacent land could be acquired to provide for enhancements and buffering.	1	Adjacent land is not needed to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	5	There are opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for additional riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.61**	
	Existing and Future Multi-Use Average	**4.49**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**4.35**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Five - Foothills Area		**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 meander to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	5	The profile or height 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	The foothills blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening from the existing native trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the existing native plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	1	This zone consists of landforms with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The existing native plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The existing native plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	
12	The structure and maintenance roads are kept free of weeds and debris.	3	The foothills are not kept free of weeds and debris.
	Conformance Average	**4.00**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	The foothills area has numerous desert wash features to preserve.
14	There are landscape or natural features to preserve.	5	This zone has desert upland vegetation and natural landforms to preserve.
15	There are wildlife habitat areas to preserve.	5	This zone has many wildlife habitats 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 within this zone to preserve.	5	This zone is a scenic corridor, the area is comprised of native landforms and vegetation.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the surrounding foothills and desert open spaces.
19	There is a meandering low-flow feature modeled on desert washes.	5	The foothills have many natural meandering low-flow features.
20	The structure or zone has naturally revegetated.	3	Some of the disturbed areas have naturally revegetated.
21	The existing plantings match the community character.	5	The existing plantings match the desert and riparian community character.
22	The structure's size and scale are proportional to its surroundings.	5	The foothill's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the 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 no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	4	Most of the foothills area is visually positive, except for impacted areas.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	5	There are multiple roads and tracks within the foothills area.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits will restore disturbed areas.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**4.29**	
	Conformance and Aesthetic Features Average	**4.14**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	*1 to 5*	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Five - Foothills Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	This zone has undisturbed land and foothills that are beneficial for a greenway.
35	There are existing multi-use features.	5	The impoundment area currently has some off-road vehicular use.
36	The zone is currently accessible for multi-use.	2	This zone is not accessible, but areas have been accessed.
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 public safety.
39	There is space to meander the access/ maintenance road(s).	3	There is space to meander the access/ maintenance roads.
40	There are no physical constraints to accessing the site.	2	There are some physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	5	There are no constraints to multi-use retrofits due to site size, this zone is large.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	4	There are some constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.09**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	4	There are some opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	4	Special use commercial areas could be located on suitable parcels.
54	Adjacent land could be acquired to provide for enhancements and buffering.	1	Adjacent land is not needed to provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	4	There are some opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	3	There are some opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding area at the base of the foothills.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.39**	
	Existing and Future Multi-Use Average	**4.24**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**4.19**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Six - Natural Wash Area		
	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 meanders, this is an open space area.
2	The profile or height of the structure varies to modulate the outline.	5	The profile of the natural wash varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes of the natural wash are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	5	The natural wash blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening from the existing native trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the existing native plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	1	There is existing natural indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The existing native plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	4	The existing native plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	This zone is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	1	This zone and the maintenance roads are not kept free of weeds and debris.
	Conformance Average	**3.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	This zone has numerous desert wash features to preserve.
14	There are landscape or natural features to preserve.	5	This zone has desert vegetation and natural landforms to preserve.
15	There are wildlife habitat areas to preserve.	5	This zone has many wildlife habitats 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 within this zone to preserve.	5	This zone is a scenic corridor, the area is comprised of native landforms and vegetation.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the surrounding foothills and desert open spaces.
19	There is a meandering low-flow feature modeled on desert washes.	4	The natural wash area has many natural meandering low-flow features.
20	The structure or zone has naturally revegetated.	4	Some of the disturbed areas have naturally revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the desert and riparian community character.
22	The structure's size and scale are proportional to its surroundings.	5	The natural wash area's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Mostly positive properties -open space, foothills, residential. Some negative - industrial.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	2	There are some natural water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	4	Most of the natural wash area is visually positive, except for impacted areas.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	1	There are multiple roads and tracks within the natural wash area.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits will restore disturbed areas.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.81**	
	Conformance and Aesthetic Features Average	**3.70**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Six - Natural Wash Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	There are existing natural wash features that are beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are some existing multi-use features, horseback riding and off-road trails.
36	The zone is currently accessible for multi-use.	3	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 public safety.
39	There is space to meander the access/ maintenance road(s).	3	There is space to meander the access/ maintenance roads.
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 retrofits due to site size.	5	There are no constraints to multi-use retrofits due to site size, this zone is large.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	4	There are some constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.27**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	4	There are some opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	4	Site property could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	5	There are opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.72**	
	Existing and Future Multi-Use Average	**4.50**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**4.10**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam *Zone Seven - Multi-Use 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.	4	The alignment of the area meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	4	The profile of the area varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The side slopes of the multi-use are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The structures are not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	There is on-site screening from the existing native trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	4	There is off-site screening from the existing native plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	1	There is existing natural indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	3	The existing native plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	3	The existing native plants do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	This zone is not is reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	1	This zone and the maintenance roads are not kept free of weeds and debris.
	Conformance Average	**2.42**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	3	There are some desert wash features to preserve.
14	There are landscape or natural features to preserve.	3	There are natural features to preserve.
15	There are wildlife habitat areas to preserve.	3	There are wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	2	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	5	This zone is a scenic corridor, the area is comprised of native landforms and vegetation.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the surrounding foothills and desert open spaces.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is a meandering low-flow feature modeled on desert washes.
20	The structure or zone has naturally revegetated.	2	Some of the disturbed areas have naturally revegetated.
21	The existing plantings match the community character.	3	The existing native plantings match the desert community character.
22	The structure's size and scale are proportional to its surroundings.	2	The multi-use area's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Mostly positive properties -open space, foothills, residential. Some negative -industrial.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	1	The industrial area, multi-uses, and impacted areas are visually negative.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	1	There are multiple maintenance roads in this zone.
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 noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits will restore disturbed areas.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.62**	
	Conformance and Aesthetic Features Average	**2.52**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Cave Creek Dam and Cave Butte Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Seven - Multi-Use Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	2	There are existing natural wash features that are beneficial for a greenway corridor.
35	There are existing multi-use features.	4	There are some existing uses, the BMX bike track, horseback riding, and off-road trails.
36	The zone is currently accessible for multi-use.	5	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	3	There is space to meander the access/ maintenance roads.
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 retrofits due to site size.	5	There are no constraints to multi-use retrofits due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	4	There are some constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.27**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve, Cave Creek and Scatter Creek.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	4	There are some opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	4	Site property could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	5	There are opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.50**	
	Existing and Future Multi-Use Average	**4.39**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.45**	

New River Channelization & Camelback Ranch Levee

Facility Location, Description and Zone Delineation

New River Channelization and Camelback Ranch Levee are located in the west valley and control flows from the north towards the south. The two sites extend for a distance of approximately nine miles through the cities of Peoria, Glendale and Phoenix. New River Channelization is bounded by Bell Road to the north and Bethany Home Road to the south. Camelback Ranch Levee begins at Bethany Home Road and continues south to Camelback Road. Both sites run parallel to highway Loop101. The channel and levee direct inflows from New River Dam, Arizona Canal Diversion Channel (ACDC), Skunk Creek, and Adobe Dam to the Agua Fria River. New River Channelization and Camelback Ranch Levee predominantly consist of a series of levees constructed of compacted earth with soil cement. There are small segments of the site where other bank stabilization methods are used such as gabions.

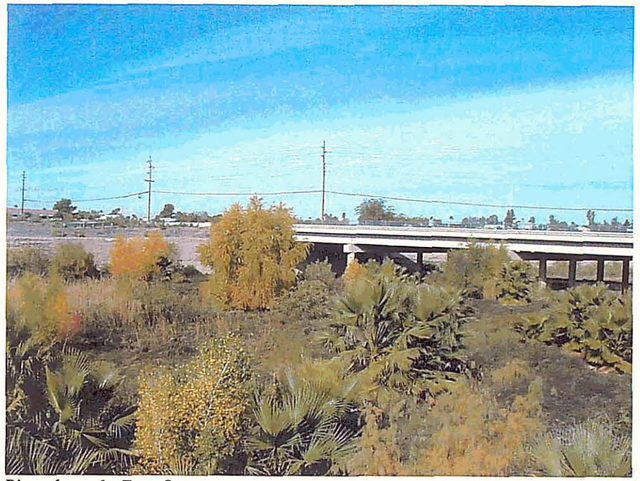
Site visits by Carter and Burgess identified four zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *River Channel with Riparian Areas,* which is the area that contains a meandering channel bottom that extends the length of the site, see photos, bottom right and left. *Zone Two* was identified as the *Levee Structure and Bank Stabilization,* which are the structures located on either side of the river channel, see photos, bottom right and center. *Zone Three*, the *Open Space Areas* are undeveloped areas of land located adjacent to the levees at major road intersections. The *Agricultural Heritage Landscape*, was identified as *Zone Four* which are areas of agricultural land located along the levee embankment on the east side.

See Site Maps for zone locations.

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

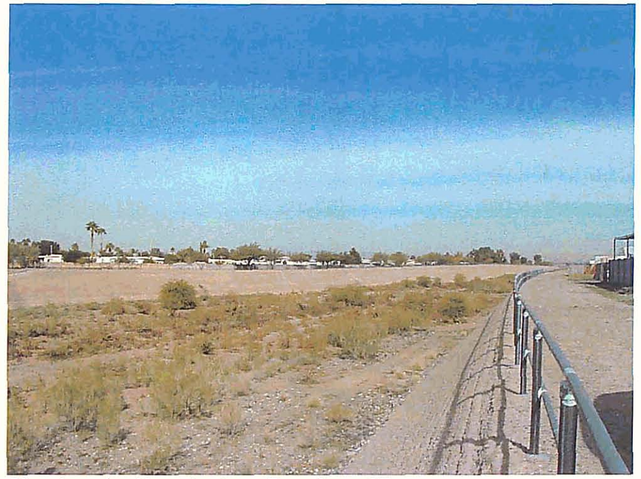
Because the site is located within the West Valley Recreation Corridor, which is a proposed regional plan for recreational uses along the prominent watercourses of the New River and Agua Fria River that extends from Lake Pleasant to Estrella Mountain Regional Park, Carter and Burgess rated this site as having a significant opportunity to provide both recreational opportunities and connections. This facility is also adjacent to the Agua Fria River, which is a major component of the Maricopa County Regional Trail System. In addition, the City of Peoria has formulated a comprehensive Rivers Master Plan, for the planning, design and implementation of lands adjacent to river corridors. Lastly, there are opportunities to introduce recreational facilities at key points along the New River Channel and Camelback Ranch Levee to connect with the network of local trails and city parks.

See Potential Corridor Locations Map for identified connection opportunities.

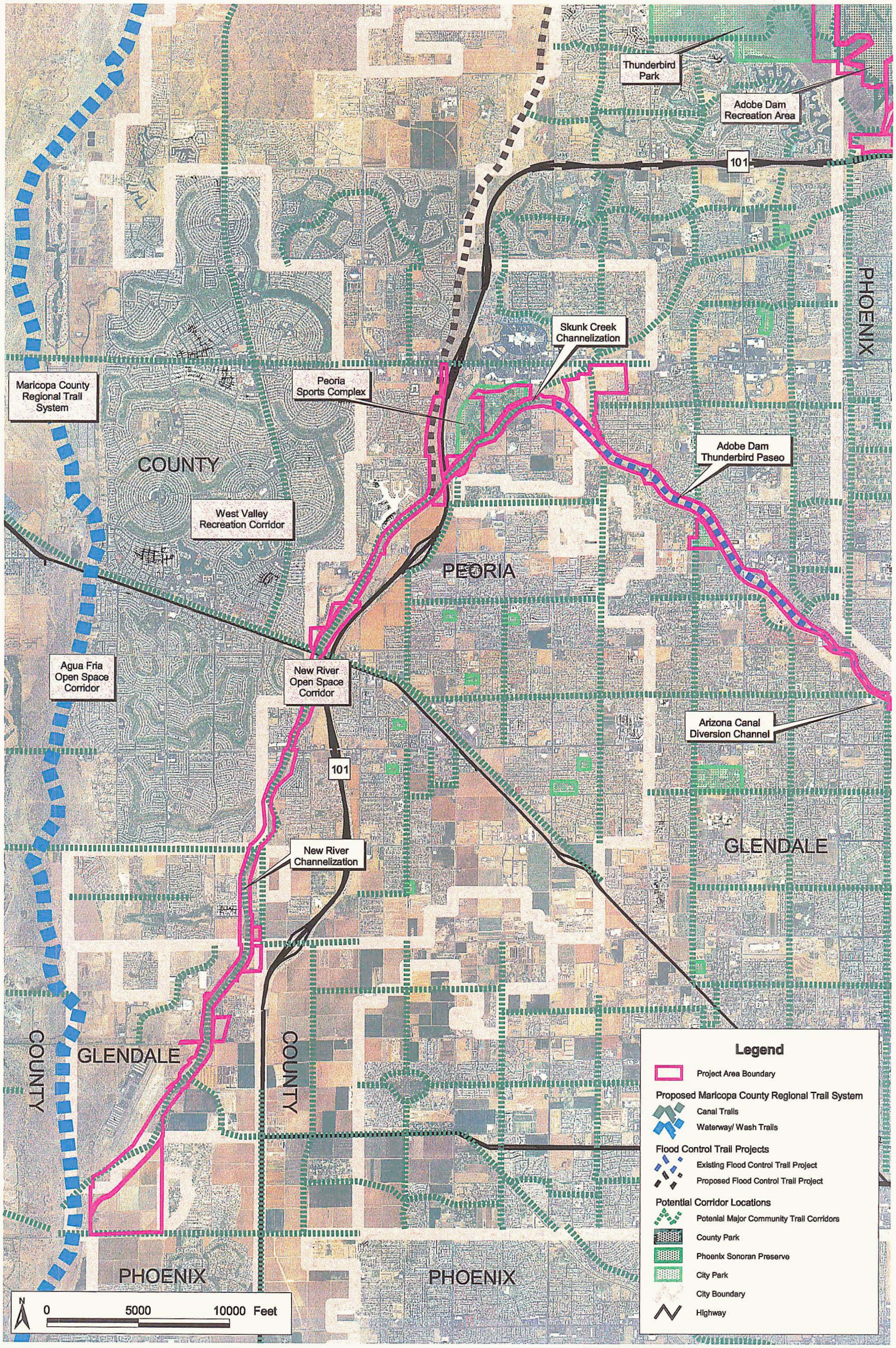


River channel – Zone One

Levee structure – Zone Two



River channel and levee structure – Zones One and Two



Potential Corridor Locations Map

New River Channelization & Camelback Ranch Levee

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing the evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One - River Channel with Riparian Areas

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

- There is on-site screening with trees and shrubs that blend the structure.

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

- There is not off-site screening with plantings or earthwork buffers used.
- There is no veneering or plating of the structure with indigenous rock.
- The channel is not re-seeded to enhance the growth of vegetation.

Zone Two - Levee Structure and Bank Stabilization

The levee structure and bank stabilization conform to aesthetic policy for the following reasons:

- The alignment of the levee meanders somewhat to vary from a straight line.

The levee structure and bank stabilization do not conform to policy for the following reasons:

- The profile or height of the levee does not vary to modulate the outline.
- The side slopes of the levee are not varied to simulate the natural terrain.
- There are no plantings used to provide erosion control and protect visual qualities.
- The levee is not re-seeded to enhance the growth of vegetation.

See photo, bottom left.

Zone Three - Open Space Areas

The open space areas conform to aesthetic policy for the following reasons:

- The open space areas blend into the contour of the natural terrain.
- There is on-site screening with trees and shrubs that blend the area.
- The plantings provide erosion control and protect visual qualities.
- The area is kept free of weeds and debris.

The open space areas do not conform to policy for the following reasons:

- The area is not re-seeded to enhance the growth of vegetation.

See photos, bottom center and right.

Zone Four - Agricultural Heritage Landscape

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

- The agricultural plantings provide erosion control and protect visual qualities.
- The area is mostly kept free of weeds and debris.

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

- There is not on-site screening with trees and shrubs used to blend the area.
- There is not off-site screening with plantings or earthwork buffers used.

Surrounding Site Character

Zone One - River Channel with Riparian Areas

This zone is visually impacted most by the adjacent levee zone because the channel bottom is at a lower elevation than the levee and the levee blocks views of the surrounding site character. The uniform slope and soil cement treatment visually contrast the rocky, naturalistic river bottom. Taller industrial and multi-family residential developments located close to the levee embankment are generally the only structures visible from this zone. Additionally, bridge crossings at major streets are visible at several points along the site as is highway Loop 101 to the east.

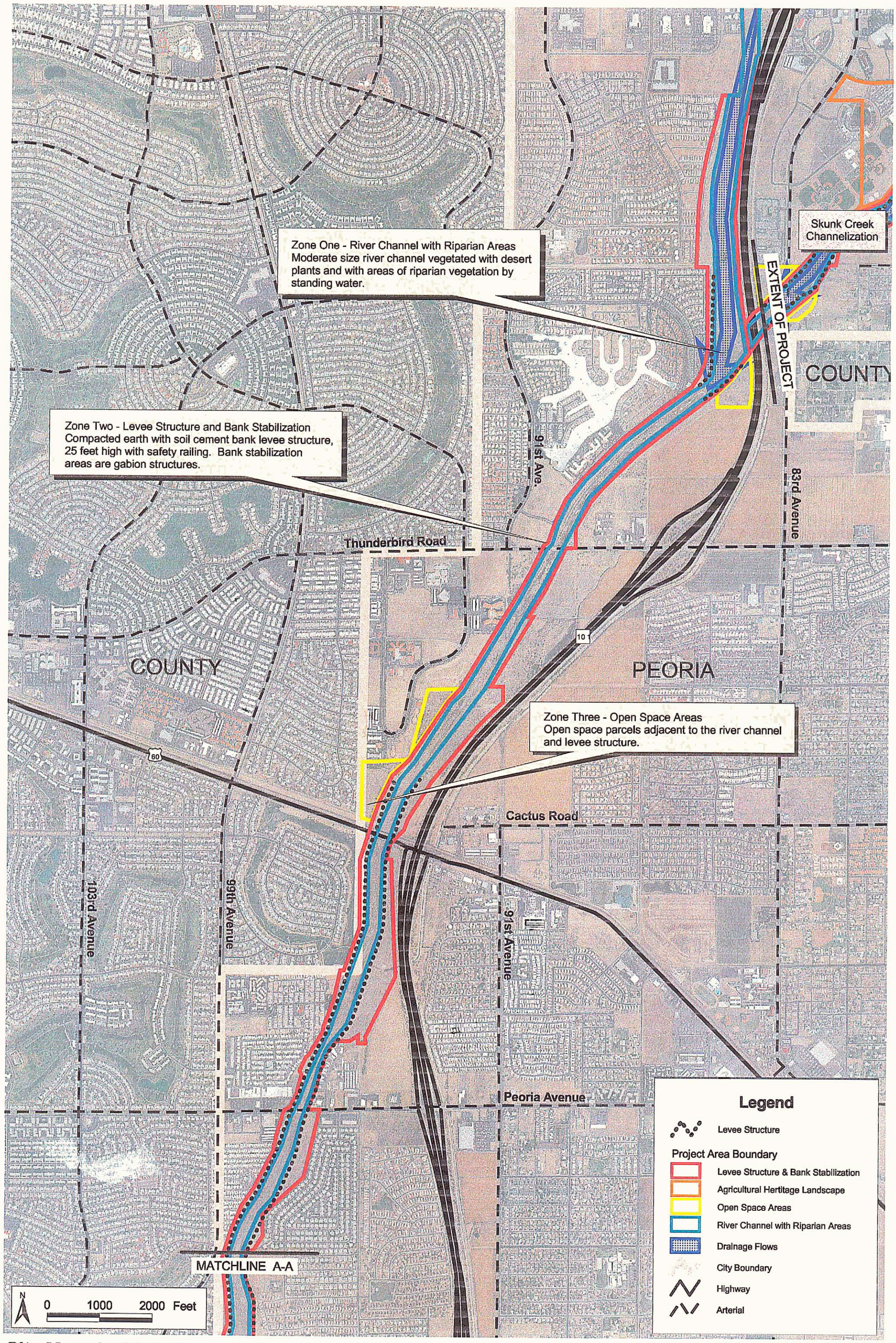
Zone Two - Levee Structure and Bank Stabilization

From the top of the levee embankment, there are golf courses, multi-family residential developments, single-family residential neighborhoods, commercial

Arterial street crossing and levee structure – Zone Two

Open space areas – Zone Three

Open space area – Zone Three



Site Map 1 of 2

New River Channelization & Camelback Ranch Levee

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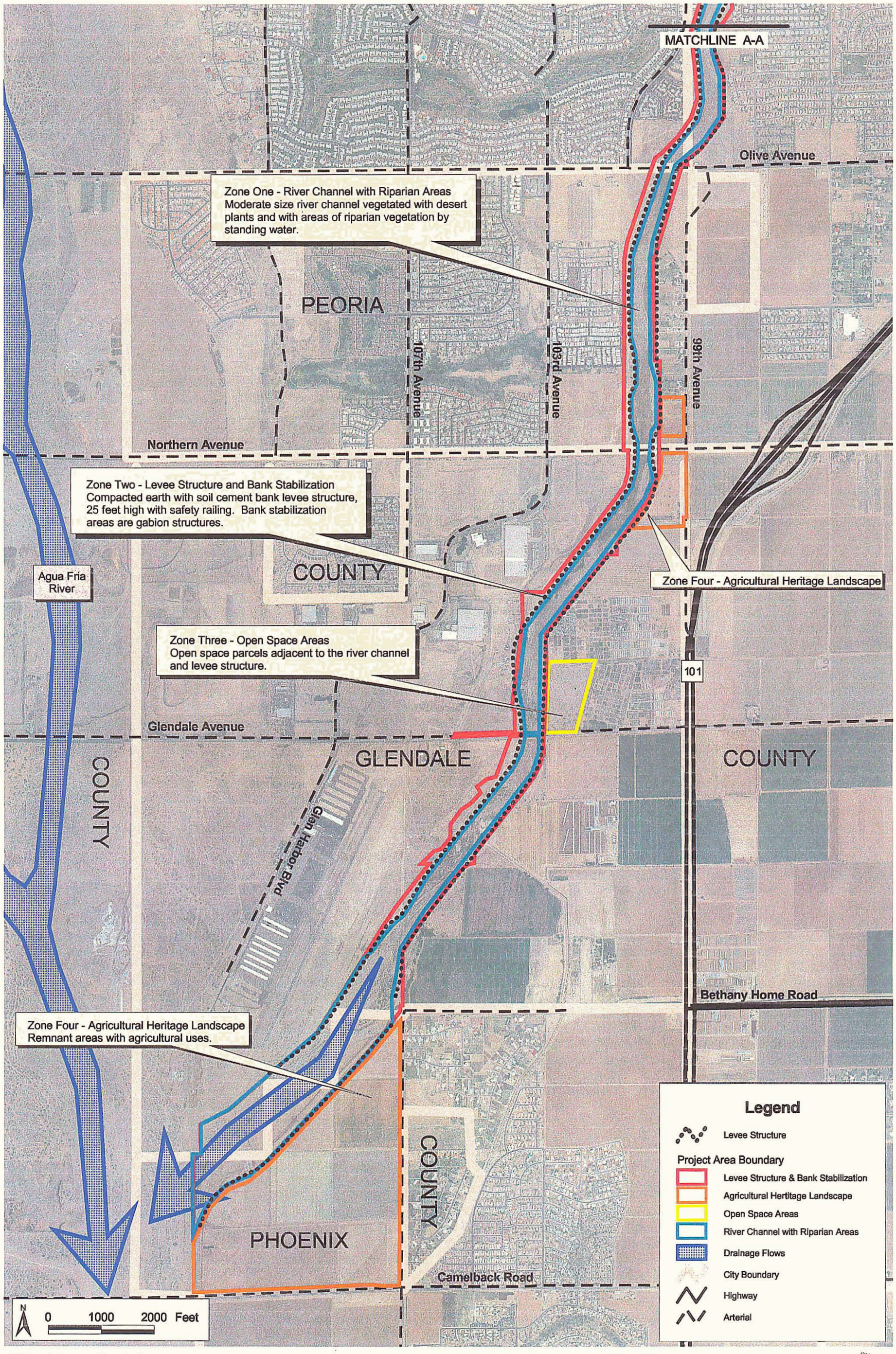
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY



Site Map 2 of 2

New River Channelization & Camelback Ranch Levee

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developments, industrial buildings, remnant agricultural fields and undeveloped open spaces visible. Glendale Municipal Airport is visible at the southwest end of the site and highway Loop 101 is very visible to the east. Sun City is located one mile west of the site and the City of Peoria to the east. Within the city's boundaries there are numerous schools and parks within a three-mile distance of the site. The adjacent commercial and industrial developments have negatively impacted the site as there is evidence of dumping and, generally, the commercial developments use the channel side of their property for storage purposes. All development, whether commercial or residential, is oriented away from the site and residential developments typically have walls surrounding them.

Zone Three - Open Space Areas

The open space areas are located at several locations along the river channel on the east and west sides of the channel. The areas are highly impacted visually by highway Loop 101 and the channel. The northern most area is sandwiched between the highway and channel while the middle two areas are located along the channel side opposite the highway. The southern most area is located to the east of the channel and is surrounded by agricultural land and a plant nursery. The highway is very audible at all of the areas but to a lesser degree at the southernmost area.

Zone Four - Agricultural Heritage Landscape

The agricultural heritage landscape areas are located adjacent to the levee, east of the channel. Two of the areas, which are located on either side of Northern Avenue, are surrounded by other agricultural fields, while the area located north of Camelback Road, is bordered by residential development to the east and additional agricultural fields to the south. Because of their location between the levee and the highway, the two northern areas are visually impacted by the surrounding land uses. The southern portion of this zone is located just east of both the levee and Glendale Municipal Airport where small planes using the airport are frequently heard. The surrounding character consists of undeveloped open spaces encircling the airport, older single-family residential development. There is visual continuity between this area and the area to the south because it is also agricultural land. The Agua Fria River, which is located west of this zone, is visible from the southern section only.

See the Site Analysis Map for land uses and zone locations.

Site Impressions

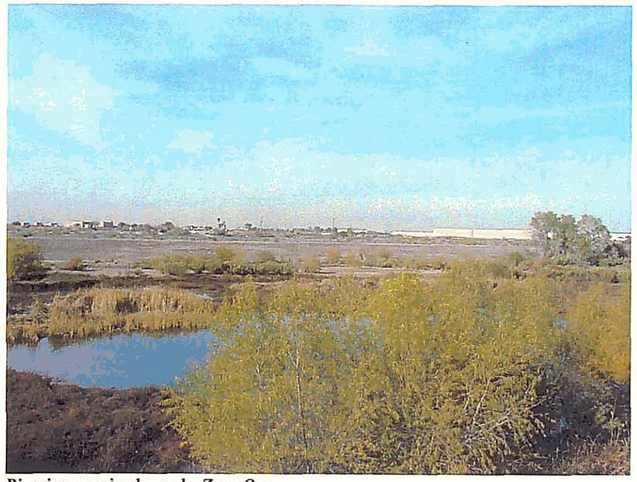
Zone One - River Channel with Riparian Areas

The river channel varies only slightly in width and alignment. Most of the river channel consists of sparse native riparian vegetation, weeds and grasses. There are areas with dense riparian and invader species vegetation near the intersection of the Skunk Creek Channel and New River north of Thunderbird Road. There are also several concrete weir structures located at regular intervals within the channel to slow water flows and erosion, which have created wetland areas immediately upstream. The weir structures are massive and tier shaped; because they are concrete, they are not masked with vegetation. The remainder of the channel, especially south of Glendale Avenue, consists of somewhat sparse native vegetation and there is damage from off-road vehicle use and gravel mining. With the exception of the visual impact from the levee structure, the river channel offers the opportunity to experience nature along a large riparian river corridor. See photos along bottom.

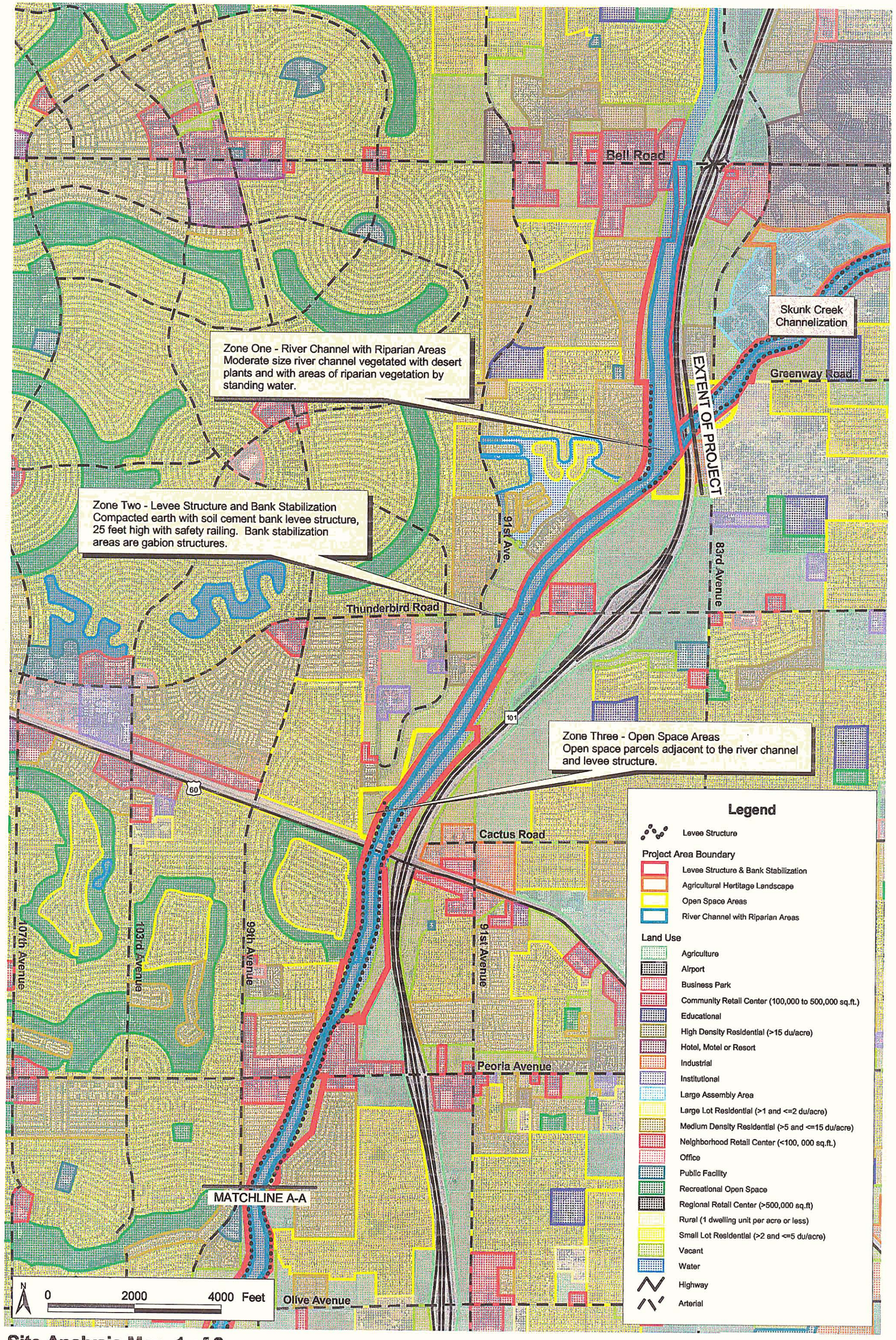
Zone Two - Levee Structure and Bank Stabilization

The levee structures vary in height and materials used to stabilize the side slopes. The northern portion of the levee, from Bell Road to Grand Avenue, has areas of river rock gabions and areas with natural earth forms and riparian vegetation. The southern portion of the river channel, from Grand Avenue until the confluence with the Agua Fria River, has compacted earth levee structures with soil cement. There are safety railings along the entire length of the levees in this segment and there are pedestrian access points at road crossings. When standing on the top of the embankments, the immense scale of the structure becomes apparent. Views extend beyond the channel to areas outside the property boundary because the landscape is so flat.

Concrete drop structure in channel bottom – Zone One


Riparian area in channel – Zone One

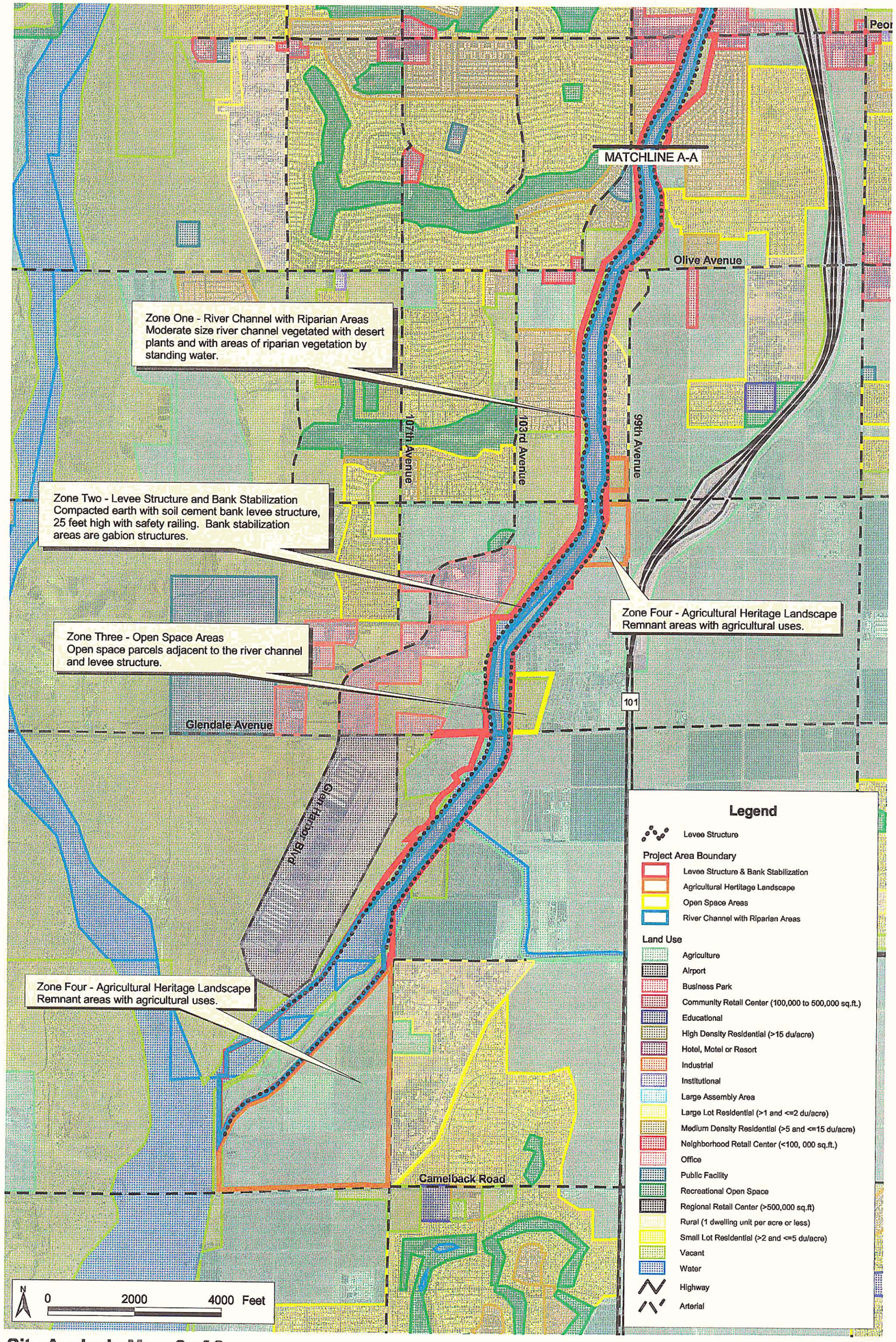
Riparian area in channel – Zone One



Site Analysis Map 1 of 2

New River Channelization & Camelback Ranch Levee

Carter-Burgess



Site Analysis Map 2 of 2

New River Channelization & Camelback Ranch Levee

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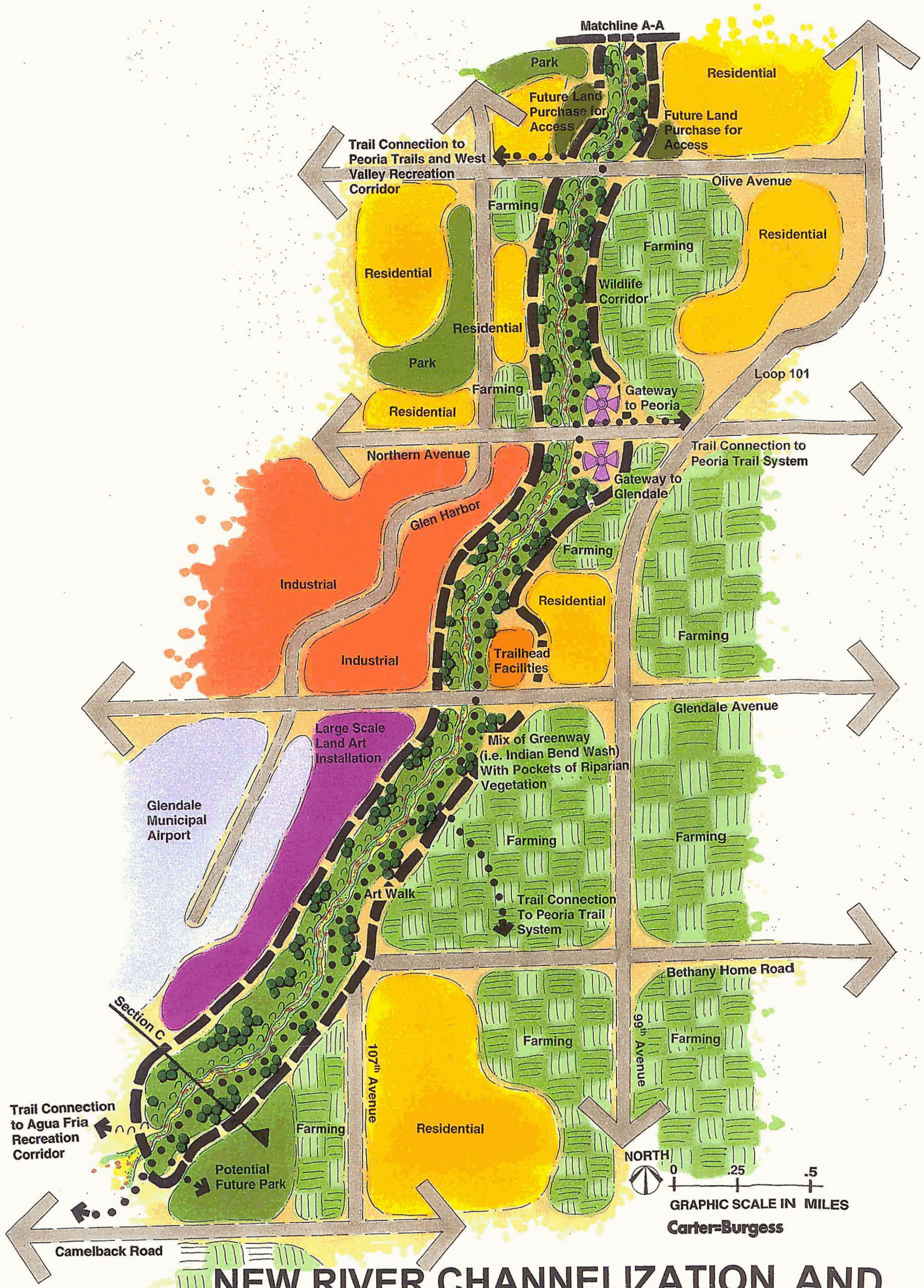
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

NEW RIVER CHANNELIZATION AND CAMELBACK RANCH LEVEE – 1 0F 2

CONCEPT



NEW RIVER CHANNELIZATION AND CAMELBACK RANCH LEVEE – 2 0F 2 CONCEPT

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Zone Three - Open Space Areas

The open space areas are relatively small pieces of land when compared to the size of the facility. They adjoin the river channel and are undeveloped parcels of land. The open space areas are generally fenced. None of the areas included in this zone were previously utilized for agriculture but some areas contain disturbed and degraded natural landscapes.

Zone Four - Agricultural Heritage Landscape

The agricultural heritage landscapes consist of two small parcels and one large area of land located at the southern terminus of the site. All three parcels have the same visual characteristic of evenly plowed fields planted with a variety of crops. Each parcel is dissected by irrigation channels and visually blends with the adjacent farmland. However, where the farming meets the street or desert edge there is no landscape treatment and is typically barren or contains an irrigation ditch with weeds.

Opportunities and Constraints for Retrofit Treatments

Zone One - River Channel with Riparian Areas

There is an opportunity to enhance the existing riparian areas to provide a wildlife viewing corridor and larger riparian habitat. The retrofit opportunities are limited by the hydrologic feasibility of retrofitting the channel without restricting the necessary designed flow capacities and retrofit construction costs. There is an opportunity to find funding partners that support construction of urban wildlife corridors or to partner with adjacent cities to provide recreational opportunities and preserve open space areas.

Zone Two - Levee Structure and Bank Stabilization

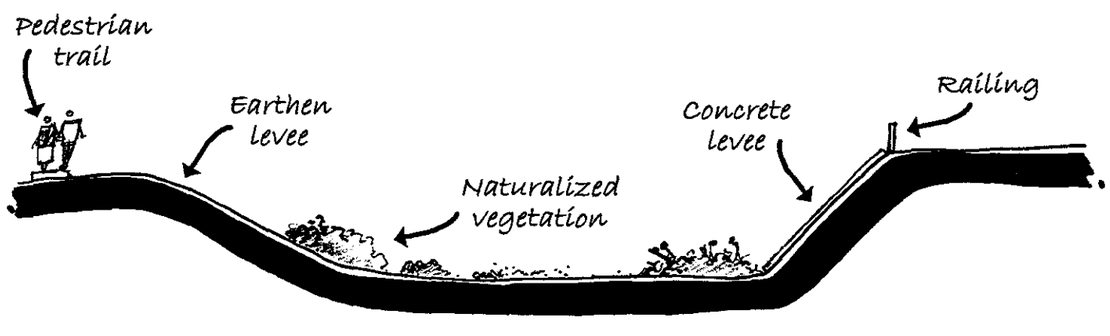
The levee structures have the opportunity to be retrofit in an aesthetic manner that blends with the river channel corridor. Overburden of soil and rock could be placed along the embankments to create areas for re-vegetation, vantage points constructed to view the unique river corridor environment below and multi-use trail connections. There are numerous opportunities to construct safe street crossings at access points along the top of the levee to create a continuous connection to the north and south wash corridors. The connection could serve to tie the different communities together and provide a recreational destination spot. Constraints to retrofit opportunities include designing methods of visually masking such a large scale structure that are structurally feasible and developing low cost aesthetic treatments.

Zone Three - Open Space Areas

Because of the open space areas' locations adjacent to the levee and often at prominent intersections, there is an opportunity for their development into gateway access points to the project with parking areas. Alternately, the areas could be sold for commercial purposes or leased for agricultural use. These areas, because of their noisy locations near highway Loop 101 and small size, are not suitable for residential development.

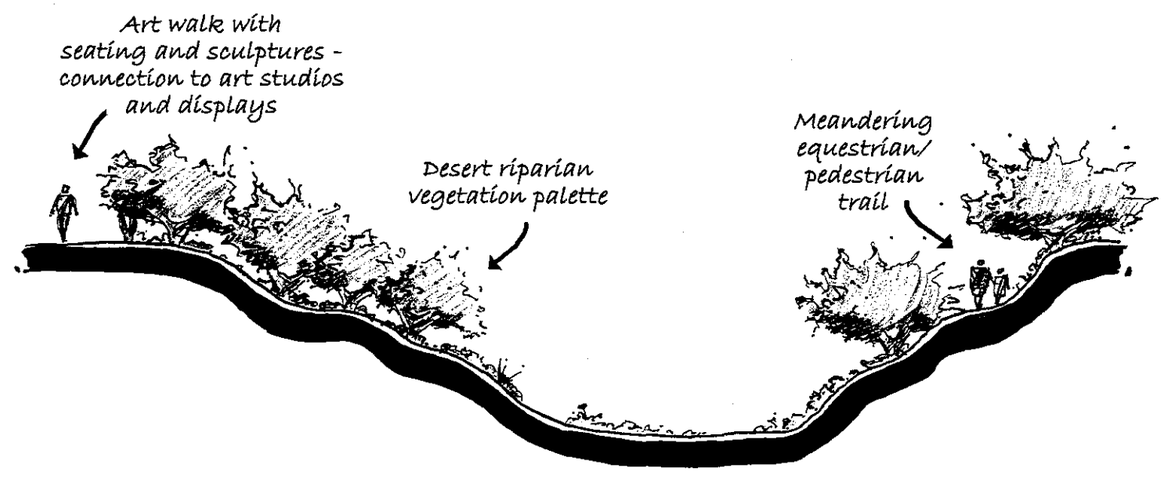
Zone Four - Agricultural Heritage Landscape

Two of the portions of land included in this zone are quite small while the piece of land located at the southern tip is quite large and there is also a medium sized area located adjacent to a nursery. Because of their differing sizes, the four areas' available opportunities vary. The two smaller pieces could be combined with the open space areas to provide site access points. The medium size portion of land could be leased or sold to the nursery for their expansion or it could be developed as trailhead facilities for the site. The large parcel located at the southern end has the most potential to become a park facility that serves the rapidly growing nearby residential neighborhoods. The park's theme could draw upon the surrounding agricultural character and provide amenities that are interesting to view from the air since there is Glendale Municipal Airport is located directly to the west of the site. There is also an opportunity to retain the area as agriculture and not alter its character or use.



New River Channelization and Camelback Ranch Levee - Existing Conditions (Section A)

Not to scale



New River Channelization and Camelback Ranch Levee - Potential Retrofit (Section A)

Not to scale

Landscape Aesthetic and Multi-Use Treatment Recommendations

See concept graphics on pages 120-121. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One - River Channel with Riparian Areas

The concept focuses upon creating a recreational corridor within the channel that links to other recreational corridors such as Skunk Creek Channelization to the north and the Agua Fria to the south. The design achieves this by re-contouring the channel bottom and constructing naturalistic rock drop structures to create low-flow areas for the establishment of additional riparian areas and utilizing channel banks for construction of trail connections. The benefit of establishing additional riparian zones and building trails enables the opportunity for more active interaction with the natural environment while enhancing the existing wildlife habitat. This site and specifically this zone are ideally suited to function as a regional greenway and linear park because of its existing connectivity and proximity to neighborhoods.

Aesthetic Treatment Retrofit Opportunities

Construct low-flow channel features within the river channel.
Add naturalistic rock drop structures to create additional wetland areas.

Landscaping Treatment Retrofit Opportunities

Re-seeding with native riparian plants along channel embankments.
Re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft surface trail connection through site.
Separated equestrian use trail.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two - Levee Structure and Bank Stabilization

Because the levee structure currently has a steep and uniform slope with safety railings, the concept proposes placing overburden along the levee banks in areas to lessen the slope so that the safety railings are no longer needed and additional access points to the channel can be constructed. In areas where the railings and current levee banks remain, the concept utilizes the areas as large-scale landscape art and creates of an "art walk" that coordinates with the natural trail connection. The art walk would display both temporary and permanent land art that reflects the surrounding community's identity and themes could include the agricultural history of the area or desert riparian plants and animals. The large-scale art along the levee embankments would be visible by both users traveling along the channel or levee and at the southern end by planes using the airport. Additionally, connections under or over major thoroughfares are provided to create extensions of the art walk and nature connection to other recreational corridors.

Aesthetic Treatment Retrofit Opportunities

Placement of overburden along levee embankments to create a more naturalistic looking structure and provide connections to the corridor.

Landscaping Treatment Retrofit Opportunities

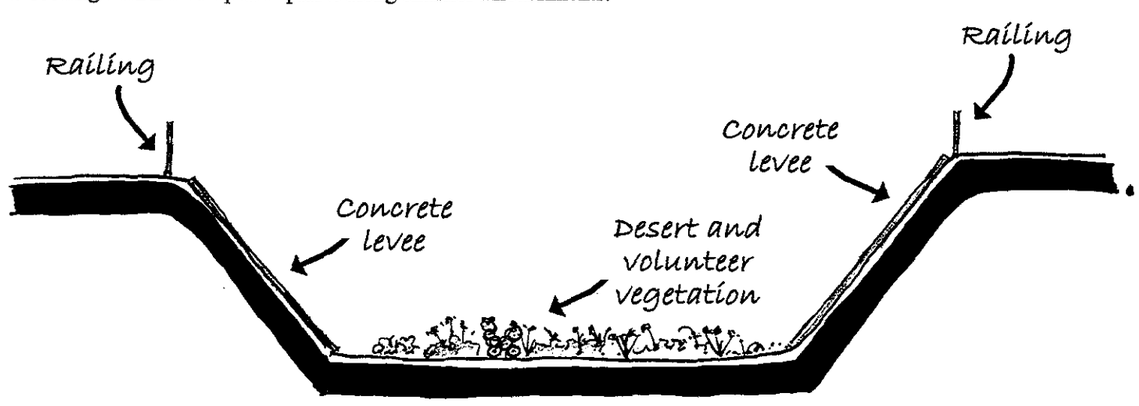
Re-seeding with native trees and shrubs along levee embankments.
Re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Construction of trials for access under major street crossings.
Construction of bridge crossings over minor street crossings.
Installation of a paved pathway with connections to parking areas.
Installation of land-art elements along levee embankments, approximately two per mile.
Installation of a soft surface trail with connections to channel corridor.
Wildlife viewing facilities located adjacent to riparian areas.

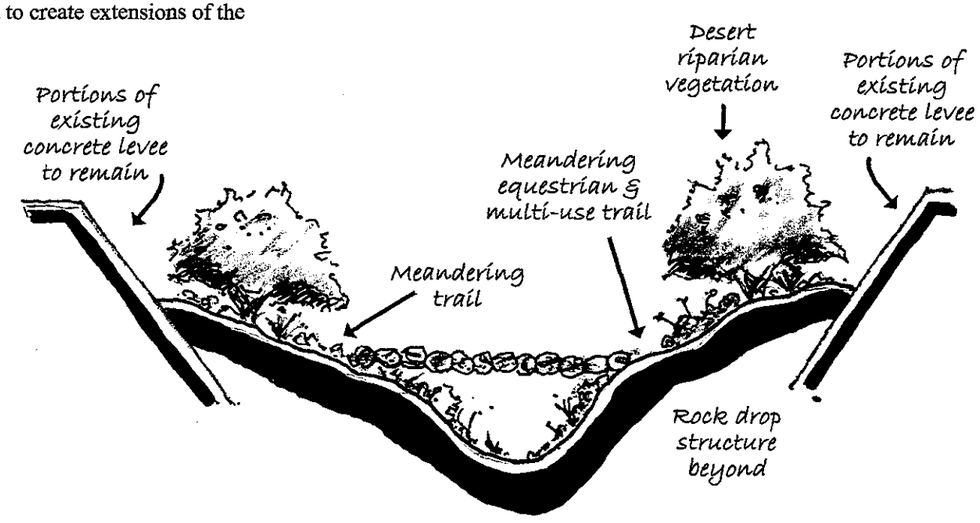
Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.



New River Channelization and Camelback Ranch Levee - Existing Conditions (Section B)

Not to scale



New River Channelization and Camelback Ranch Levee - Potential Retrofit (Section B)

Not to scale

Zone Three - Open Space Areas

The concept proposes construction of parking areas, trail access points and trailhead facilities in open space areas. The facilities would include additional art elements, native plant materials, interpretive signage and directional signage. These points of access would also serve as community identity gateways and would display information regarding community heritage and the types of vegetation and wildlife that the user can anticipate seeing while visiting the site.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

Re-seeding with native trees and shrubs at periphery.
Tree and shrub plantings at key areas near trailhead facilities.
Limited landscape irrigation at key areas, re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Trailhead facilities including restroom and maintenance buildings.
Directional and interpretive signage.
Art elements that communicate community history and identity.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Agricultural Heritage Landscape

Because of their small size, the two agricultural areas located on either side of Northern Avenue are to become companion gateways to the cities of Peoria and Glendale. The concept also proposes development of a trailhead facility on the medium sized parcel located north of Glendale Avenue. The remaining large parcel of land located at the southern end is to be divided into two areas; one portion will remain agricultural fields while the other portion will become a park that serves the nearby residential developments. The park will draw inspiration from the agricultural land and will include trail connections to the levee and channel to foster use of the site by the surrounding communities.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

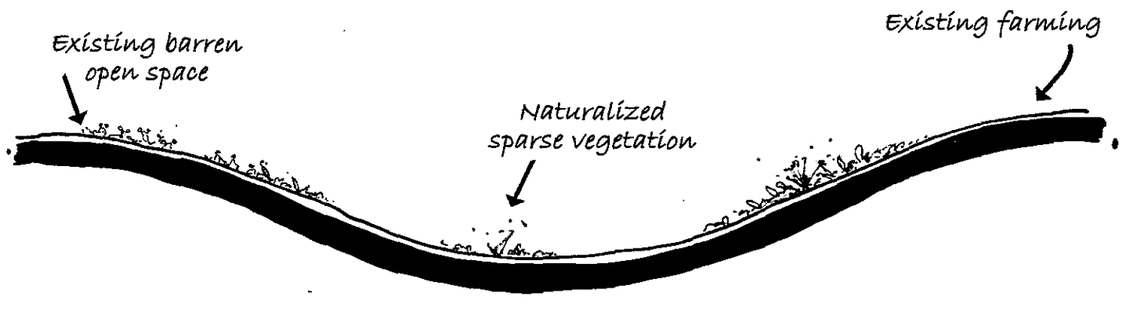
Re-seeding with native trees and shrubs at periphery areas.
Tree and shrub plantings at key areas near trailhead facility.
Tree, shrub and turf plantings at neighborhood park.
Landscape irrigation at neighborhood park.
Limited landscape irrigation at trailhead facility; re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft surface connection from park and trailhead facility to levee and channel areas.
City gateway features.
Neighborhood park facility.
Trailhead facility.

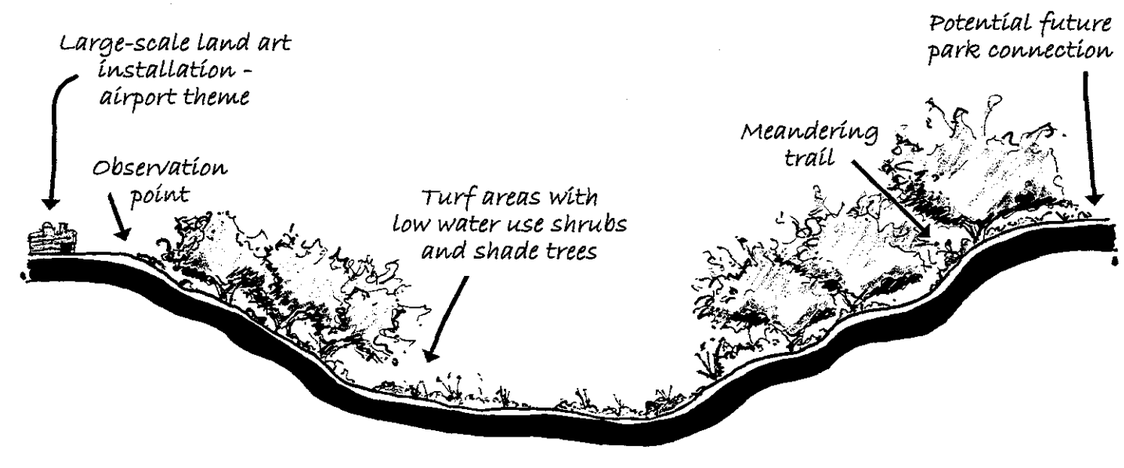
Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None Identified.



New River Channelization and Camelback Ranch Levee - Existing Conditions (Section A)

Not to scale



New River Channelization and Camelback Ranch Levee - Potential Retrofit (Section C)

Not to scale

Hydrologic Engineering Synopsis of Structure

Project Title: New River Improvements – Grand Avenue to Olive Avenue

Location: T3N, R1E, Sections 16, 21, 28 and 29

The river channel is located at Grand Avenue between 99th Avenue and 91st Avenue to the north and just east of 99th Avenue on Olive Avenue to the north.

Federal Sponsor: U.S. Army Corps of Engineers

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

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

Project Features:

Length of this segment	2.5 miles
Invert width	167 to 330 feet
Invert depth	8 to 25 feet
Side Slopes	1:1
Type of structure	Compacted earth with soil cement banks
O&M Service Roads	15 feet wide, both sides
Bridge Crossings	Grand Avenue
	Peoria Avenue
	Olive Avenue

Railroad Crossing At & SF Railroad at Grand Avenue

Project Title: Camelback Ranch Levee-(North) Location #400

Location: T2N, R1E

Access can be obtained from Camelback Road Bridge at the confluence of the Agua Fria River and New River Channel.

Local Sponsor: Flood Control District of Maricopa County

City of Glendale

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

Project Features:

Design freeboard	3 feet-levied condition
Design freeboard	1 foot-un-levied condition
Length of east levee	7,229 lf.
Length of Glendale Airport levee	3,830 lf.

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone One - River Channel with Riparian Areas		**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 river channel has some gradual bends.
2	The profile or height of the structure varies to modulate the outline.	2	The river channel has some height variety.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The channel has some slope variety.
4	The structure is designed to blend into the contour of the natural terrain.	2	The channel blends with natural river terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	There is no on-site screening with trees and shrubs.
6	There is 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, except for the naturally occurring river rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are graded but not replanted.
9	There are plantings used to provide erosion control and protect visual qualities.	2	The existing plantings provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	2	There are no plantings.
11	The structure is reseeded to enhance the growth of vegetation.	1	The structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	2	The channel has many areas that are accessed and littered.
	Conformance Average	**1.92**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	4	There are some riparian/ river corridor features in this river channel to preserve.
14	There are landscape or natural features to preserve.	4	There are some natural river corridor features to preserve.
15	There are wildlife habitat areas to preserve.	4	There are some wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	4	There are some undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	4	The riparian areas of the channel are visually positive features to preserve.
18	There are panoramic views from the structure or zone.	3	There are views to the Agua Fria river and distant mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	3	There are some existing natural low-flow channels with meanders.
20	The structure or zone has naturally revegetated.	3	The river channel has partially 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 channel is unnaturally narrow.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	2	Some positive prop. -riparian, agric., residential. Some negative - industrial, rural, comm.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or retention areas.
27	The structure does not have negative on-site visual problems.	2	The channel is moderately barren with the exception of riparian areas.
28	There are no overhead electrical lines or utility towers.	2	There are several overhead electrical lines where major arterials cross the site.
29	There are not multiple maintenance roads within the zone	2	There are maintenance roads in the channel by the levee base.
30	There are no intersecting arterial streets.	2	There are many bridged arterial streets.
31	There are no noise impacts that need buffering.	2	There is noise from the arterial streets.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping is needed within the river channel.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	Enhancements can be added within the channel, by the ponding areas, + by the levee.
	Existing Aesthetic Features Average	**2.86**	
	Conformance and Aesthetic Features Average	**2.39**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone One - River Channel with Riparian Areas		
	Existing Multi-Use Features		
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 is accessed and used by off-road vehicles and pedestrians.
36	The zone 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).	2	There is space to meander the maintenance road.
40	There are no physical constraints to accessing the site.	2	There are some constraints with gated and sloped levees.
41	There are no constraints to multi-use retrofits due to site size.	5	There are no constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	2	There are constraints due to structural hazards such as weirs and erosion barriers.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are no constraints because the channel has a flat or gradual slope.
44	There are no constraints to multi-use retrofits due to earth mounds.	2	There are some constraints due to the uneven terrain of the braided channel.
	Existing Multi-Use Features Average	**2.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to the New River corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in the channel.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land can be acquired for special use enhancements and buffering.
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 would 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 in this zone.
58	There are opportunities for small-scale local park facilities.	3	There are some opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	4	There are many opportunities for riparian and desert wash enhancements.
60	There are opportunities for recharge basins or ponding areas.	4	There are opportunities for recharge basins and ponding areas.in the river channel.
61	There are opportunities for multi-use trails.	5	There are many opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are many opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.61**	
	Existing and Future Multi-Use Average	**3.26**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.82**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee Zone Two - Levee Structure and Bank Stabilization	*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 structures is mostly straight, but gradually curve along the river bank.
2	The profile or height of the structure varies to modulate the outline.	1	The profile or height of the levee and bank structures does not vary.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The sides of the levee are a uniform 4 to 1 slope, the bank structure is 3 to 1.
4	The structure is designed to blend into the contour of the natural terrain.	2	The levee or bank structures are not designed to blend into the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	2	There is some off-site screening in the river channel from existing plantings.
7	There is veneering or plating of the structure with indigenous rock.	2	The bank structure is constructed with indigenous river rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	The disturbed areas are graded but not replanted.
9	There are plantings used to provide erosion control and protect visual qualities.	1	There are no plantings used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	There are no aesthetic plantings.
11	The structure is reseeded to enhance the growth of vegetation.	1	The bank structure is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	2	The structures and maintenance roads have some weeds and debris.
	Conformance Average	**1.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash features to preserve.
14	There are landscape or natural features to preserve.	2	There are some landscape or natural features to preserve by the bank structure.
15	There are no 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 within this zone to preserve.	1	There are no scenic corridors within this zone to preserve.
18	There are panoramic views from the structure or zone.	3	There are panoramic views of the river channel.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is a no meandering low-flow feature.
20	The structure or zone has naturally revegetated.	2	Portions of the bank structure have naturally revegetated.
21	The existing plantings match the community character.	3	The existing plantings by the bank structure match the riparian character.
22	The structure's size and scale are proportional to its surroundings.	3	The levee height is out of proportion.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	2	These include: riparian, agric., residential. Some negative -commercial, industrial, rural.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or retention areas.
27	The structure does not have negative on-site visual problems.	2	The levee structure has no screening.
28	There are no overhead electrical lines or utility towers.	2	There are several overhead electrical lines where major arterials cross the site.
29	There are not multiple maintenance roads within the zone	2	There are maintenance roads on top of the levee.
30	There are no intersecting arterial streets.	2	There are many intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There are noise impacts from the arterial streets that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape treatments are needed to screen the structures.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	The structures would be enhanced with aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.05**	
	Conformance and Aesthetic Features Average	**1.82**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Two - Levee Structure and Bank Stabilization		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	The north portion of the site has been left natural w/ a low sloping and vegetated levee.
35	There are existing multi-use features.	3	This zone has existing multi-use features, an unimproved trail on top the levee.
36	The zone is currently accessible for multi-use.	2	The levee is accessible in certain areas but is limited because of fences and gravel roads.
37	Multi-use features could be added without impeding design function.	5	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 the safety concerns of the arterials.
39	There is space to meander the access/ maintenance road(s).	2	There is limited space to meander the access/ maintenance roads.
40	There are no physical constraints to accessing the site.	2	Accessing the levee is constrained due to gates and the frequent arterial crossings.
41	There are no constraints to multi-use retrofits due to site size.	5	There are no constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits 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 retrofits due to existing slopes.	2	There are constraints due to existing slopes, the levee has 4 to 1 side slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	1	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**2.82**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to the New River corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	4	There are opportunities for special use commercial areas along the levee.
53	Site property could be sold to allow for special use commercial areas.	2	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land can be acquired for special use enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	4	The adjacent land has positive features that could be part of an 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 in this zone.
58	There are opportunities for small-scale local park facilities.	1	There are no opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for additional multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.39**	
	Existing and Future Multi-Use Average	**3.10**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.46**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Open Space Areas		**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.	3	The alignment of the open space areas meander to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	3	The profile of the open space areas vary to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The side slopes of the open space areas vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	4	The open space areas blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening with trees and shrubs to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	3	There is some off-site screening with plantings.
7	There is veneering or plating of the structure with indigenous rock.	3	There is veneering of this zone with existing indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	3	Some of the disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	4	The existing plantings provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	The plantings do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	1	The open space areas are not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The open space areas are mostly kept free of weeds and debris.
	Conformance Average	**3.42**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	3	There are some desert wash features features to preserve.
14	There are landscape or natural features to preserve.	3	There is some existing desert vegetation to preserve.
15	There are wildlife habitat areas to preserve.	2	There are wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	3	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	2	There are some scenic corridors within this zone to preserve.
18	There are panoramic views from the structure or zone.	2	There are panoramic views from the structure or zone.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	2	The structure or zone has naturally revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	4	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Some positive properties -residential, agricultural. Some negative -commercial, freeway.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	3	There is some disturbed land in the open space areas.
28	There are no overhead electrical lines or utility towers.	2	There are several overhead electrical lines where major arterials cross the zone.
29	There are not multiple maintenance roads within the zone.	5	There are not multiple maintenance roads within the zone.
30	There are no intersecting arterial streets.	4	There are many intersecting arterial streets.
31	There are no noise impacts that need buffering.	4	There are noise impacts from the arterial streets and freeway that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	The open space areas could become enhanced city gateways or trailhead locations.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.86**	
	Conformance and Aesthetic Features Average	**3.14**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee Zone Three - Open Space Areas	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	4	The riparian areas 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 zone is currently accessible for multi-use.	2	This area is not 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 access/ maintenance road(s).	5	There are no access/ maintenance roads.
40	There are no physical constraints to accessing the site.	2	The levee slope and a water could constrain access.
41	There are no constraints to multi-use retrofits due to site size.	2	This zone has limited space for multi-use due to the existing riparian plantings.
42	There are no constraints to multi-use retrofits due to structural hazards.	3	There are no constraints due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are some constraints due to the wet terrain.
44	There are no constraints to multi-use retrofits due to earth mounds.	3	There are some constraints due to existing earthwork mounds and rip-rap.
	Existing Multi-Use Features Average	**3.00**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to the New River corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**3.42**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.28**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Agricultural Heritage Landscape		**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 in this zone does not vary, this is an agricultural heritage landscape.
2	The profile or height of the structure varies to modulate the outline.	2	The height or profile in this zone does not vary, this is an agricultural heritage landscape.
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 heritage landscape.
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 heritage landscape.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6	There is 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	The disturbed areas are graded and replanted to match the surrounding area.	3	The disturbed area are graded and replanted, but the perimeter edges are not blended.
9	There are plantings used to provide erosion control and protect visual qualities.	4	The existing plantings provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	4	The existing plantings do not cause an impedance to design function.
11	The structure is reseeded to enhance the growth of vegetation.	3	This zone is reseeded, it is an agricultural area.
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	**2.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash features to preserve.
14	There are landscape or natural features to preserve.	4	The existing agricultural fields are positive visual elements 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 within this zone to preserve.	3	There are some scenic corridors within this zone to preserve.
18	There are panoramic views from the structure or zone.	2	There are distant views to the foothills.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow features.
20	The structure or zone has naturally revegetated.	3	The area is revegetated, it is an agricultural heritage landscape.
21	The existing plantings match the community character.	4	The existing agriculture fields match the surrounding community character.
22	The structure's size and scale are proportional to its surroundings.	5	The area's size and scale are proportional, this is an agricultural area.
23	The attendant flood control facility structures blend into the 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.	3	There is existing on-site flood irrigation from agriculture canals.
26	There are water recharge or floodwater 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 or utility towers.	2	There are some overhead electrical lines where major arterials cross the site.
29	There are not multiple maintenance roads within the zone	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.	3	There are noise impacts from the arterial streets that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	The agricultural areas could become enhanced city gateways.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**2.90**	
	Conformance and Aesthetic Features Average	**2.74**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Channelization and Camelback Ranch Levee	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Four - Agricultural Heritage Landscape		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	4	The existing agricultural fields would be beneficial for a greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The zone is currently accessible for multi-use.	3	The 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	1	There is space to meander the maintenance road(s).
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 retrofits due to site size.	5	There are no constraints to multi-use retrofits due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.00**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to the New River corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	2	Special use commercial areas could be located on suitable agricultural parcels.
53	Site property could be sold to allow for special use commercial areas.	5	Some of this property could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	5	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.	2	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 or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins.
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.	4	There are some opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.61**	
	Existing and Future Multi-Use Average	**3.81**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.27**	

New River Dam

Facility Location, Description and Zone Delineation

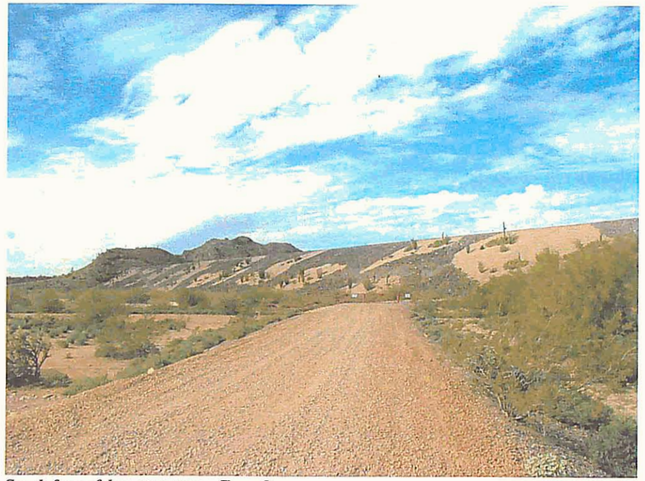
New River Dam is located in the north valley, within the City of Peoria, and spans New River approximately four miles north of Loop 101 and six miles west of Interstate 17. The dam is constructed of compacted earth-fill and provides protection to downstream land uses along New River and Aqua Fria River by detaining floodwaters and conveying regulated flows into the New River. This dam was also designed to decrease peak inflows into New River to offset the effect of diverting flows from the Cave Creek drainage area to New River when the Arizona Canal Diversion Channel was constructed. The dam is veneered on both sides but with different types of rock. The north side is veneered with river rock while the south face of the dam is veneered with rock of contrasting color and size, and landscaped with several varieties of cacti.

Site visits by Carter and Burgess identified four zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Dam and Emergency Spillway Structures*, which includes the earthen dam structure, emergency spillway and principal outlet box channel; see photos bottom right and left. *Zone Two* was identified as the *Mountain Areas* that are located on either side of the dam structure; see photo bottom center. *Zone Three*, the *Impoundment Area,* is located upstream of the dam structure and includes a desert wash. The *Impoundment Dike*, which is located upstream of the dam, was identified as *Zone Four*.

See Site Map for zone locations.

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

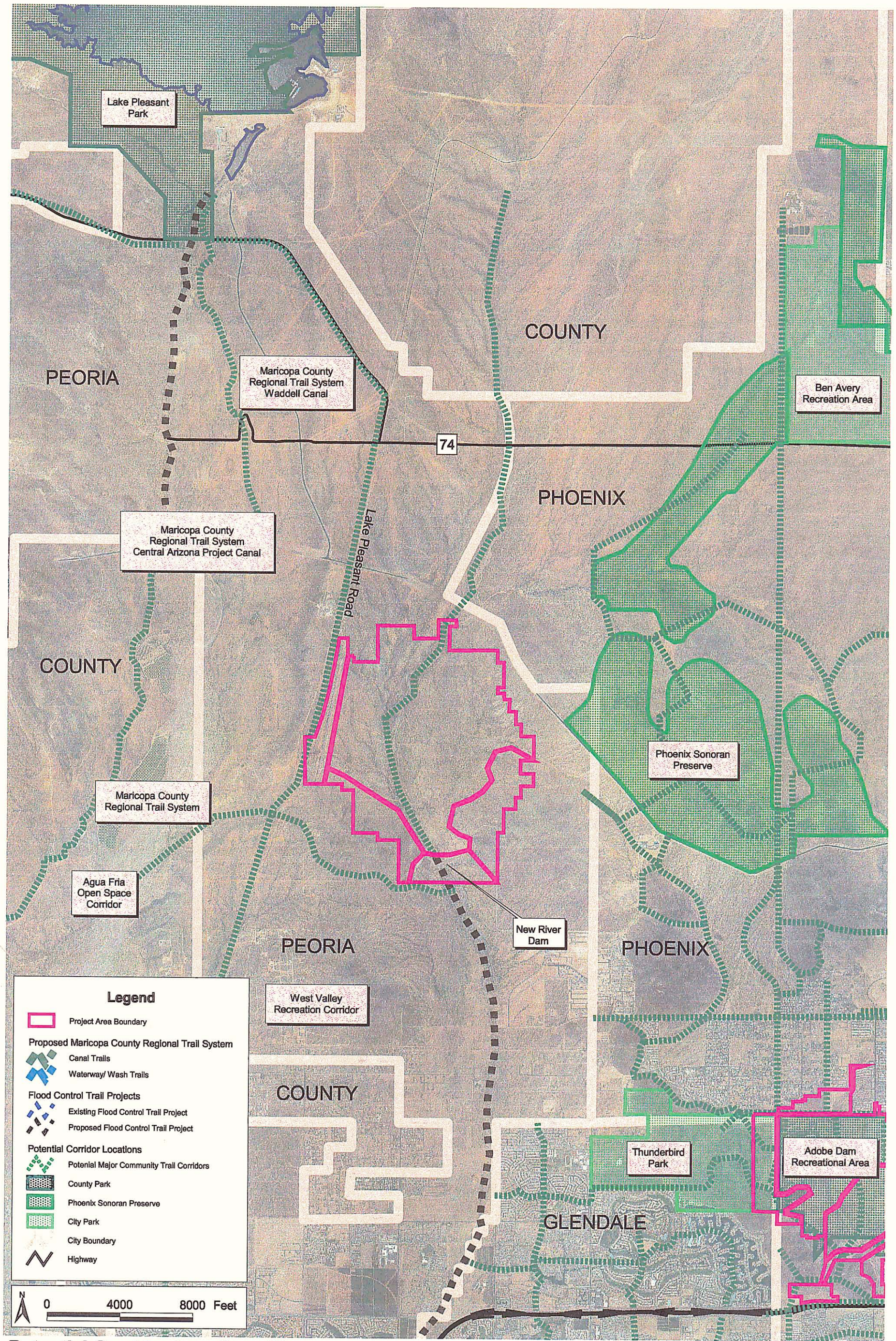
The size of the project area and quality of natural resources provides a significant opportunity for the New River Dam property to serve as a destination site for passive outdoor recreation activities and enjoyment. The proximity to the Phoenix Sonoran Preserve suggests a possibility for complimentary management of the regionally scaled open space facilities. There are several opportunities for connections to regional trail systems such as the Maricopa County Regional Trail System primary northern link of the Central Arizona Project Canal. To the east of the site, the Phoenix Sonoran Preserve contains a network of trail corridors that potentially link it to recreational opportunities including the Adobe Dam Recreational Area. Additionally, the City of Peoria has developed a comprehensive Rivers Master Plan, for the planning, design and implementation of trails and land uses adjacent to river corridors. Lastly, the site is located within the West Valley Recreation Corridor Master Plan area, a regional master plan for recreational uses along the prominent watercourses of the New River and Aqua Fria River



South face of dam structure – Zone One

Surface contrast between dam in Zone One and adjacent foothill in Zone Two

Principal outlet channel – Zone One

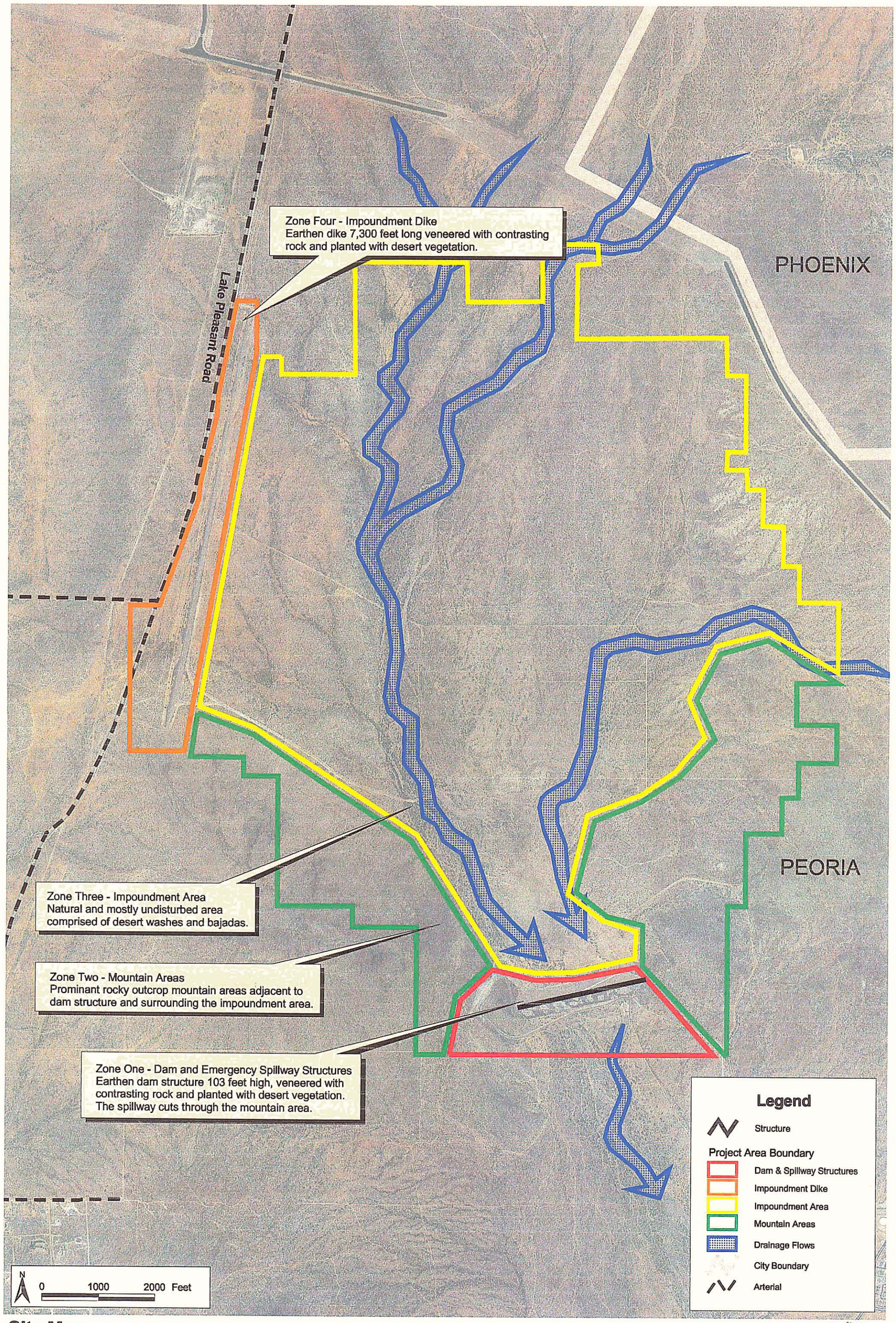


Potential Corridor Locations Map

New River Dam

Carter-Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY



Site Map

New River Dam

Carter-Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

from Lake Pleasant to the Gila River.

See Potential Corridor Locations Map for identified connection opportunities.

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing the evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One - Dam and Emergency Spillway Structures

The dam and emergency spillway structures do conform to aesthetic policy for the following reasons:

- The plantings uses will not cause an impedance to design function.
- There is veneering of the structure with indigenous rock.
- The structure and maintenance roads are kept free of weeds and debris.

The structures do not conform to policy for the following reasons:

- The alignment of the structure does not meander to vary from a straight line.
- The profile or height of the structure does not vary to modulate the outline.
- The structure is not designed to blend into the contour of the natural terrain.
- The disturbed areas have not been graded nor replanted to match the surrounding area.
- There is no off site screening with plantings or earthwork buffers.

See photos bottom left and center.

Zone Two - Mountain Areas

The mountain areas conform to aesthetic policy for the following reasons:

- The alignment of the mountain areas meanders to vary from a straight line.
- There is on-site natural screening with trees and shrubs.

The mountain areas do not conform to policy for the following reasons:

- The disturbed areas have not been graded and replanted to match surrounding area.
- There are not plantings used to provide erosion control and protect visual qualities.

Zone Three - Impoundment Area

The impoundment area does conform to aesthetic policy for the following reasons:

- The alignment of the impoundment area meanders to vary from a straight line.

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

- The disturbed areas are not graded and replanted to match surrounding area.
- No off-site screening with plantings or earthwork buffers were used.
- Mp plantings were used to provide erosion control and protect visual qualities.
- The impoundment area is not re-seeded to enhance the growth of vegetation.

See photo bottom right.

Zone Four - Impoundment Dike

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

- There is veneering of the structure with indigenous rock.
- The structure and maintenance roads are kept free of weeds and debris.

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

- The alignment of the structure does not meander to vary from a straight line.
- The height or profile of the structure does not vary to modulate the outline.
- The side slopes of the structure are not varied to simulate the natural terrain.
- The structure is not designed to blend into the contour of the natural terrain.
- The disturbed areas have not been graded nor replanted to match the surrounding area.
- There is no off-site screening with plantings or earthwork buffers used.
- No plantings are used to provide erosion control and protect visual qualities.

Plantings, rock and gravel on south face of dam structure – Zone One

Emergency spillway cut into foothills – Zone One

Impoundment area with standing water – Zone Three

Surrounding Site Character

Zone One - Dam and Emergency Spillway Structures

A small range of mountains and foothills surround the immediate vicinity of the dam and emergency spillway structures. The area south of the dam is primarily a desert riparian environment along the New River corridor. To the southeast of the dam are several new residential developments and the development generally appears to be growing towards the site. To the south of the site are existing rural residential neighborhoods.

Zone Two - Mountain Areas

The mountain areas zone is located at the southern end of the property. This zone is bordered by the impoundment area and dam structure on one side and undeveloped desert areas beyond the property boundary. Some adjacent land uses are visible from portions of this zone such as, the Central Arizona Project Canal and Lake Pleasant Road. The adjacent dam structure visually dominates the mountain areas that are located at the southern tip of the property because of the dam's strong contrast in color and shape to these adjacent areas.

Zone Three - Impoundment Area

The southern portion of the impoundment area is encircled by mountains, foothills and rock outcrops with desert upland vegetation such as creosote and bursage. The north portion of the impoundment area is surrounded by undisturbed desert open spaces and riparian washes. The Hayden Rhodes Aqueduct portion of the Central Arizona Project Canal intersects this open space area to the northeast and then is piped underground when it crosses New River, the canal then daylights to the west, beyond New River. Because the impoundment area is at a lower elevation than the other zones, land uses and natural features beyond the property limits are not generally visible. See photo, bottom center.

Zone Four – Impoundment Dike

The surrounding site character by the impoundment dike is desert open space, the riparian environment of the impoundment area, and to the south the West Wing Mountains. The dike also defines the western edge of the impoundment area as it runs parallel to Lake Pleasant Road.

See the Site Analysis Map for land uses and zone locations.

Site Impressions

Zone One - Dam and Emergency Spillway Structures

The New River Dam is a large and uniformly sloped structure that is located between two small-scale mountains. The dam has been aesthetically treated with a camouflage pattern of two contrasting colors of rock. Within the lighter rock areas, there are vegetation groupings of a variety of cacti such as saguaros and ocotillos. This aesthetic treatment contrasts sharply with the natural color and texture of the surrounding landscape. The dam structure, partly because of its size and uniform height and partly because of its contrasting rock treatment, is highly visible from beyond the site. See photo, bottom left. There is an emergency spillway structure, located west of the dam, which consists of a V-shaped cut through the adjacent hillside that is visible from a distance due to its contrast with adjacent darker-colored, undisturbed hillsides. The primary outfall channel is a concrete lined channel located at the southeast corner of the base of the dam structure. The channel also strongly contrasts the adjacent natural hillsides and because of its large size and contrast to the landscape, it is visible from a long distance.

Zone Two - Mountain Areas

The West Wing Mountains, Keefer Hill and adjacent foothills comprise the mountain areas. The West Wing Mountains extend northwest between the New River corridor and Lake Pleasant Road. Keefer Hill is located to the northeast of the East Wing Mountains. The mountains surround the impoundment area with a variety of multi-colored rocky outcrops, boulders, and a broad range of upland desert vegetation including saguaros and creosote. The mountain areas have been scarred somewhat by off road vehicle use in areas where there is an absence of large boulders to prohibit access. See photo, bottom right.

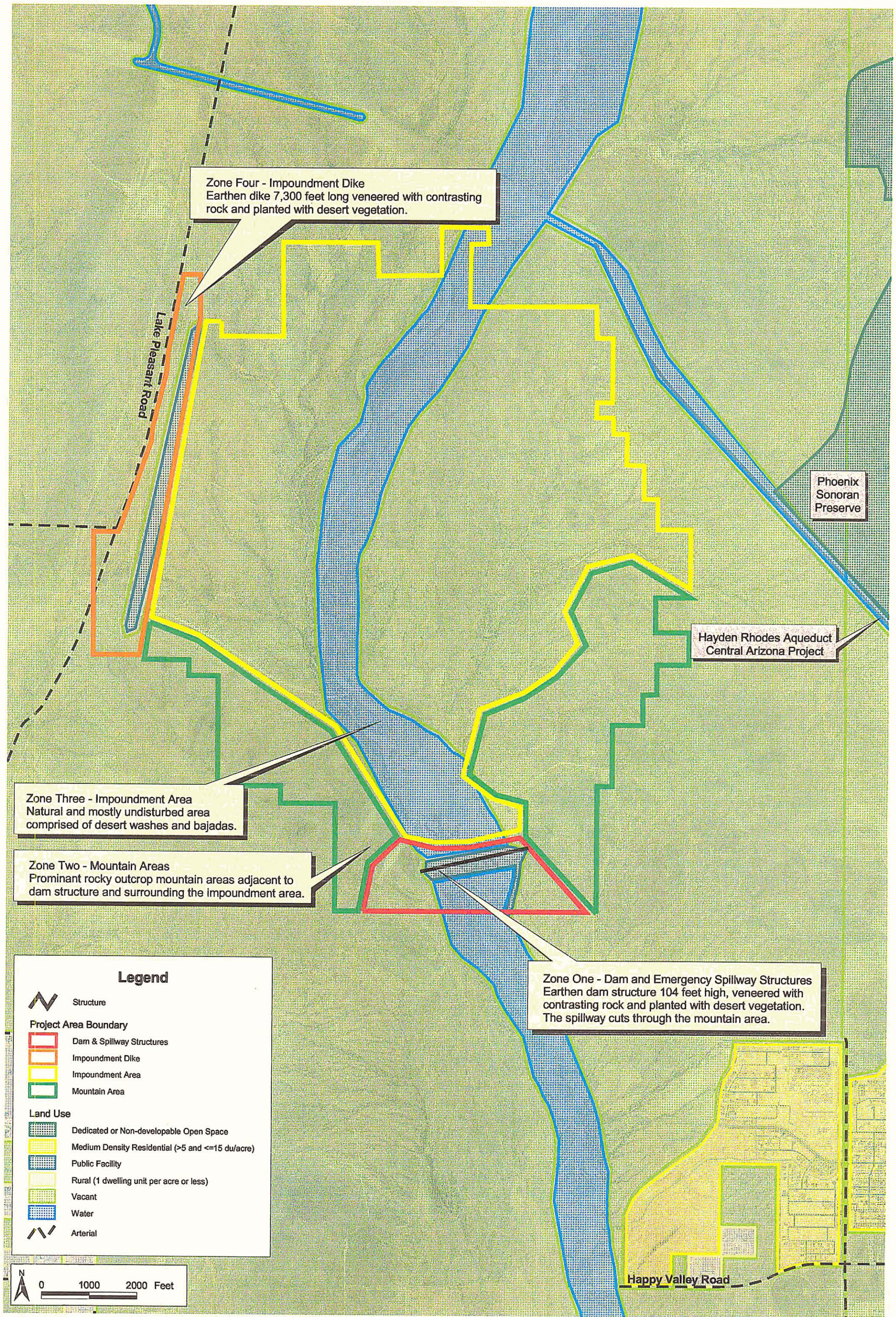
Zone Three - Impoundment Area

The impoundment area is the largest zone of the New River site. The impound-

View of dam structure and impoundment area – Zone One

View of north side of dam and impoundment area – Zone Three

View of mountain area foothills and impoundment area – Zone Two



Site Analysis Map

New River Dam

Carter+Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ment area contains the New River corridor and numerous desert washes that support lush riparian habitats. This zone is predominantly a natural and mostly undisturbed desert environment with the exception of the southern portion by the dam, which has been disturbed by sediment excavation and off road vehicle use. This area also has an area with a water basin that was observed by Carter and Burgess as a wildlife attractant.

Zone Four - Impoundment Dike

The impoundment dike (#1) is located along the western edge of the impoundment area and extends from the West Wing Mountains up towards the Central Arizona Project Canal along the east side of Lake Pleasant Road. The impoundment dike is a linear structure with uniform side slopes. The impoundment dike has a similar surface treatment as the dam structure with the use of contrasting rock colors and cacti planting. The structure's height is lower than the dam structure and is set back far enough from the Lake Pleasant Road to be only moderately visible.

Opportunities and Constraints for Retrofit Treatments

Zone One - Dam and Emergency Spillway Structures

There is an opportunity to aesthetically renovate the dam to blend with the surrounding hillsides. Because of the immense size of the structure, cost for renovation is considered a constraint. Renovating the existing dam aesthetic treatment could be met with opposition, because the aesthetic treatment, constructed in 1985 by the Army Corps of Engineers, received numerous internal design awards. The emergency spillway cut into the hillside could benefit from a treatment to age the rock lining the sides to make it appear more naturalistic and the primary outfall channel could aesthetically benefit from construction of a naturalistic looking rock-drop structure and dry waterfall.

Zone Two - Mountain Area

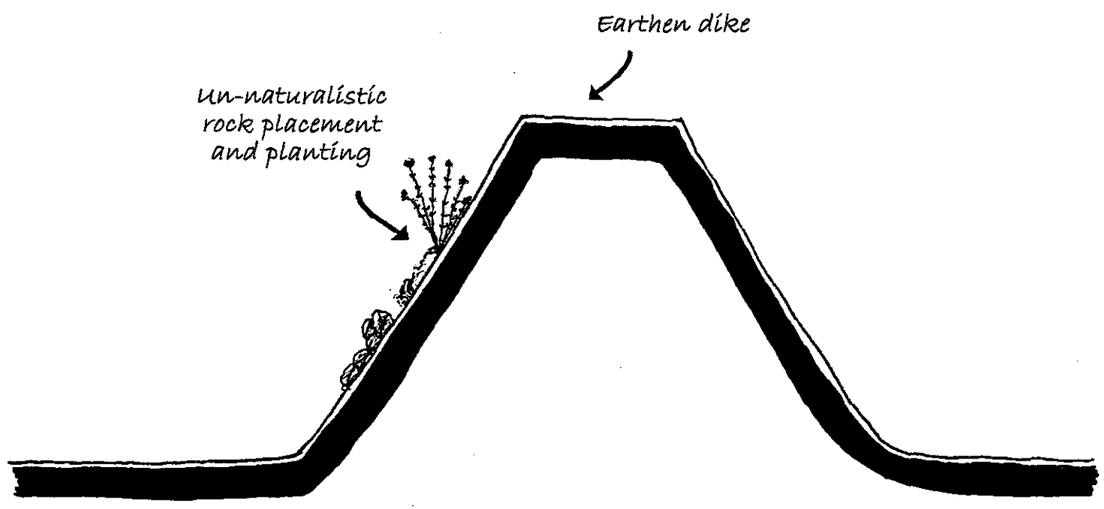
There is an opportunity for the undisturbed mountain areas to be preserved for wildlife viewing and to provide panoramic views of the adjacent desert open spaces. There is also an opportunity to consolidate multiple trails and re-vegetate closed trails and areas damaged by off-road vehicle use. There are two predominant constraints to retrofit efforts. The cost of re-vegetating trails and damage could be quite high and there is also a challenge to create trail access and viewing points in a manner that does not negatively impact the views of the mountains from below.

Zone Three - Impoundment Areas

The impoundment area offers opportunities to develop environmental interpretive centers and wildlife viewing points to appreciate the natural open space areas and the desert washes with indigenous plants. Because this area was identified in this report as a significant greenway corridor, there is an opportunity to preserve the zone and provide additional connections to off-site passive recreational amenities. There is a constraint for the impoundment area located immediately behind the dam, this area is in need of a plan that includes restoration and revegetation, but allows for occasional sediment removal and other operations and maintenance activities. There is the potential of using short-term, regulated sand and gravel operations for the excavation of a lake area in this zone.

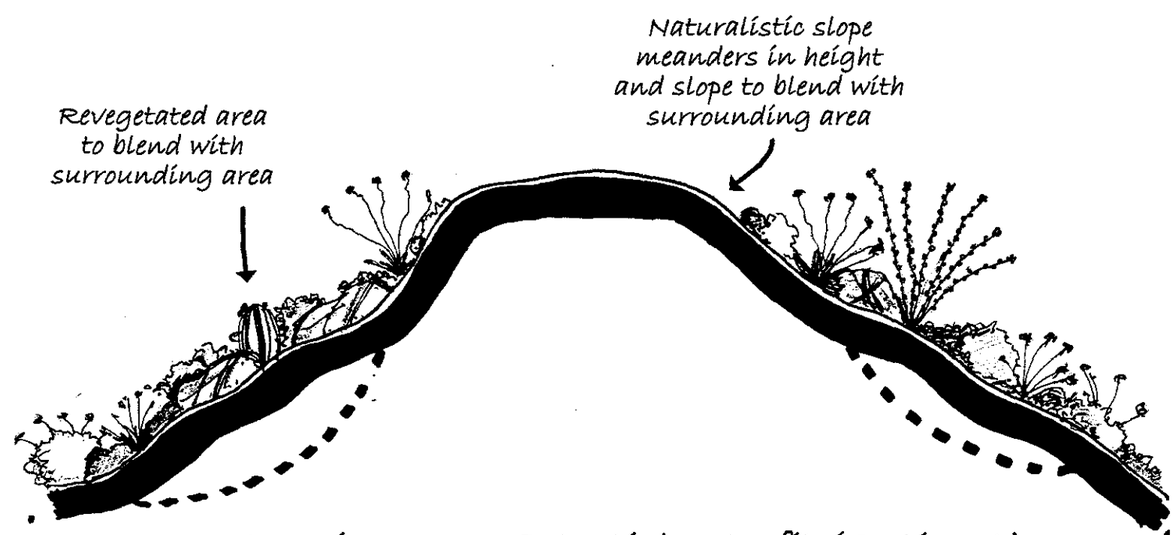
Zone Four - Impoundment Dike

There is an opportunity for the dike to be aesthetically retrofit to blend the structure into the contour of the natural terrain. Cost is a constraint to retrofit efforts because of the length and scale of the structure. Since the impoundment dike has the same aesthetic treatment as the dam structure, renovation efforts could also be met with opposition by the Army Corps of Engineers, which has awarded the project numerous internal design awards.



New River Dam - Existing Conditions (Section A)

Not to scale



New River Dam - Potential Retrofit (Section A)

Not to scale

Landscape Aesthetic and Multi-use Treatment Recommendations

See concept graphic on page 141. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One - Dam and Emergency Spillway Structures

Due to the contrast of the dam and emergency spillway structures to the surrounding natural mountains, the retrofit concept proposes to modify the structures to blend with their surroundings. The treatment would include the construction of irregular overbuilding on the dam structure to lessen its uniform appearance, and the placement of rock and shrubs along the side slopes that match the visual adjacent desert character. Tree and shrub plantings adjacent to the dam would also provide visual screening. In addition, the concept proposes treatment of the emergency spillway area to reduce the visibility of the V-cut through the mountains. The concept also proposes color treatment of the primary outfall channel to blend it with the adjacent desert washbasin color. Because of the height of the dam structure, the concept proposes development of a Flood Control interpretive center that provides a key vantage point for viewing the site and surrounding desert. The center would highlight the mission and overall function of the Flood Control District. Other retrofits to the zone include preservation of the existing maintenance road to accommodate multi-use trail users, replacement of existing gates with bollards, and construction of an equestrian staging area in the vicinity.

Aesthetic Treatment Retrofit Opportunities

Irregular earth and rock placement on the top and both sides of the dam structure.
Aesthetic treatment of the principal outlet channel with rough-surfaced colored concrete and boulders.
Treatment of the emergency spillway structure to age and blend the rock with the adjacent mountains.

Landscaping Treatment Retrofit Opportunities

Seeding and shrub plantings along the dam sides.
Seeding, tree and shrub plantings near both sides of the dam structure for visual screening.
Limited landscape irrigation of key areas, seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Meander existing maintenance road and install fixed and removable bollards.
Flood Control interpretive center near the top of the dam structure.
Equestrian staging area south of dam structure.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two - Mountain Areas

The retrofit concept for the mountain areas is to preserve and protect the undisturbed desert vegetation and wildlife habitats while providing a positive nature experience for users. The concept seeks to consolidate existing trails, provide new trails where needed and to mask trails from view of the impoundment area below through the use of landscaping and earthwork buffers. Trails are to be clearly marked to discourage off-trail use. The trails connect to a viewing point, where the user could observe the panoramic scenic corridor of the New River area and the mountains beyond. The concept also provides for remediation of areas damaged by off-road vehicle use.

Aesthetic Treatment Retrofit Opportunities

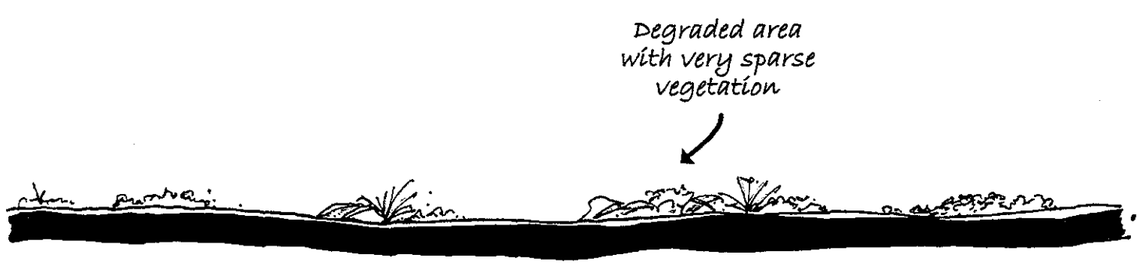
Recontour closed trails in foothills area.
Earthwork berms for remaining and new trails.

Landscaping Treatment Retrofit Opportunities

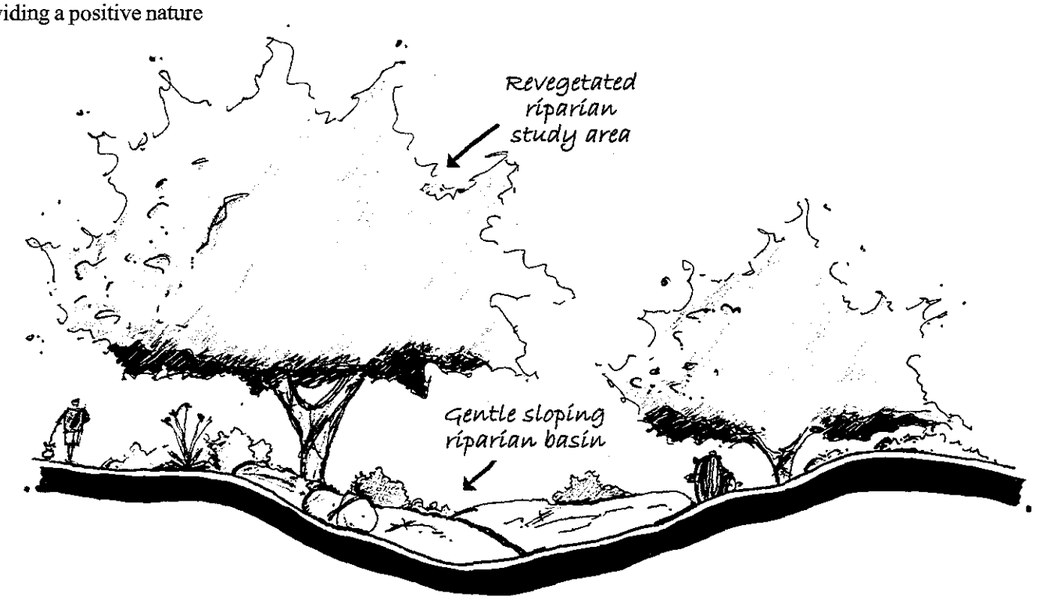
Additional landscaping to provide shade and visual screening for trails.
Limited landscape irrigation of key areas, seeded areas not to receive irrigation.
Native desert seed mixes for closed trails.

Multi-Use Treatment Retrofit Opportunities

Trail establishment and connections through mountain areas.
Viewing point located in mountain areas, west of the impoundment area.



New River Dam - Existing Conditions (Section B)
Not to scale



New River Dam - Potential Retrofit (Section B)
Not to scale

C.A.P. Canal
Lake Pleasant Road
Trail Connection to Maricopa County Trail and Phoenix Sonoran Preserve
Levee Structure Aesthetically Renovated to Blend Into Adjacent Hillsides
New River
Wildlife and Vegetation Preservation Area
Section A
Trail Connection to Peoria Trail System
Day or Overnight Campsites
Viewing Point
Section B
Revegetation and Riparian Restoration Study Area And Possible Lake
Trail Connection to West Valley Recreation Corridor
Emergency Spillway Aesthetically Treated to Age Exposed Rock
Dam Structure Aesthetically Renovated to Blend Into Adjacent Hillsides
Pinnacle Vista Drive
Section C
Equestrian Staging
Revegetation Area Principal Outlet
75th Avenue
Design Guidelines for Future Development
Jomax Road
Trail Connection to West Valley Recreation Corridor
NORTH
0
.25
.5
GRAPHIC SCALE IN MILES
Carter=Burgess
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
NEW RIVER DAM CONCEPT

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Three - Impoundment Area

Due to the mostly undisturbed condition of the impoundment area, the retrofit concept proposes establishing a preservation area to protect the existing desert vegetation and wildlife habitat that comprise the majority of this area. The concept proposes creation of a lake and wetlands located in the degraded area adjacent to the dam. The lake and wetland basin areas are to be designed with varying contours for a diversity of environments and habitats. This area would become a revegetation and riparian restoration demonstration project. Recreational enhancements in this portion of the zone would be low-impact uses such as environmental education study, open-air wildlife center, limited day or overnight camping and low-impact trails with viewing nodes. The concept also proposes trail consolidation, separated equestrian use trails and re-vegetation of disturbed areas.

Aesthetic Treatment Retrofit Opportunities

Construct lake and wetland areas.
Recontour closed trails.

Landscaping Treatment Retrofit Opportunities

Seeding, tree and shrub planting around lake area.
Limited landscape irrigation of key areas, seeded areas not to receive irrigation.
Native desert seed mixes for disturbed areas and closed trails.

Multi-Use Treatment Retrofit Opportunities

Separated-use trails.
Education center for riparian restoration study area facilities
Small scale day or overnight campsite facilities located in the southwest area of the impoundment zone.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Impoundment Dike

The retrofit concept proposes blending the dike structure into the contour of the natural terrain and re-seeding with native plant species. Additional overbuilding is recommended particularly for the southern portion of the dike closest to the mountains. Landscape treatments with indigenous shrubs to match the surround color and texture, and tree and shrub plantings near both sides of the structure to provide visual screening. The concept also proposes trail connections from the impoundment area to this zone.

Aesthetic Treatment Retrofit Opportunities

Irregular rock and earth placement on the top and both sides of the dike structure.

Landscaping Treatment Retrofit Opportunities

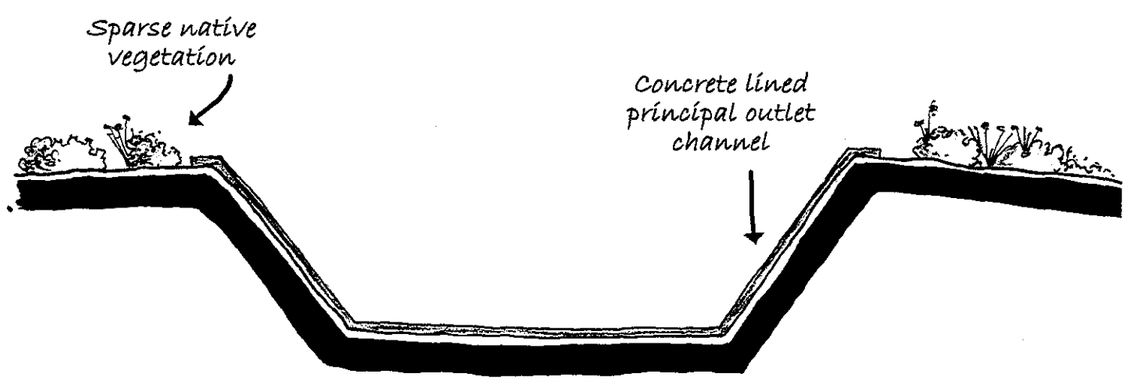
Re-seeding the sides of the dike structure with native plant species.
Tree and shrub plantings at key areas at the base of the structure for visual screening.
Limited landscape irrigation of key areas, seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft surface trail connection.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.



New River Dam - Existing Conditions (Section C)

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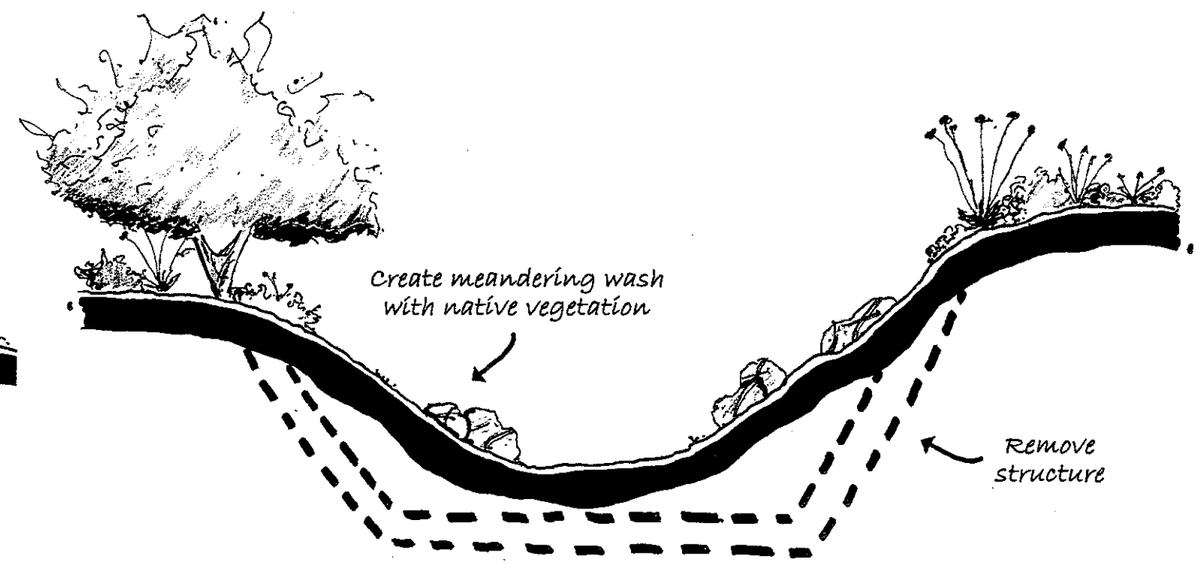


New River Dam - Potential Retrofit (Section C)

Not to scale

Hydrologic Engineering Synopsis of Structure

Project Title: New River Dam

Watershed and Relationship to Other Structures: To provide protection to residents, businesses and other land uses along the New and Agua Fria River by detaining floodwaters and conveying controlled releases from the dam to New River.

Part of the Corps of Engineers' flood control plan known as "Phoenix, Arizona and Vicinity (including New River)". Will decreases peak inflow into New River, offsetting the effect of diverting flows from the Cave Creek drainage area to New River when he ACDC is constructed.

Location: T5N, R1E, Sections 22, 23, 2, 426, 34, and 35

Located on New River approximately 1 mile north of Jomax Road at 83rd Avenue.

Authorization: Flood Control Act of 1965 (Public Law 89-198, 89th Congress)

Federal Sponsor: U.S. Army Corps of Engineers

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: The dam will trap floodwaters moving in the New River rapidly from the north, detain them and slowly release time into the New River below the structure.

Project Features:

Type of structure Zoned earth fill

Top of structure elevation 1487.7 to 1,488.0 elevation

Length of structure 2,327 linear feet

Maximum height 103.5 feet

Top crest width 20 feet (12 feet AC width)

Spillway crest elevation 1,456.2

Spillway capacity 62,000 cfs

Drainage area 164 square miles

Storage capacity 43,520 acre feet

Maximum water surface elevation 1,482.5 elevation

Freeboard 5.5 feet

Peak outflow 2,665 cfs

Peak inflow 48,000 cfs

Drawdown Time 13.4 days

Principal outlet structure Box structure 6'-3" W x 9' – 6" H x 465' linear feet

Dike #1 Length 7,475 linear feet

Height 36 feet

Top width 20 feet

Base width 50 feet

Dike #2 Length 256 linear feet

Height 9 feet

Top width 12 feet

Base width 30 feet

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Dam and Emergency Spillway Structures		
	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 structure meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	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.	2	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.	1	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	2	On-site screening with trees and shrubs are not used to blend the structure.
6	There is 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.	5	There is no veneering or plating of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match surrounding area.	1	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	2	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	2	The structure's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.33**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	2	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	2	There are wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	1	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	3	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views from the structure.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is not a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The structure or area has revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	3	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	2	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	5	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	2	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The structure does not have negative on-site visual problems.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines or utility towers.
29	There are not multiple maintenance roads within the site.	3	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.	5	There are noise impacts that need buffering.
32	There is a need for additional aesthetic landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofits.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**3.00**	
	Conformance and Aesthetic Features Average	**2.67**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone One - Dam and Emergency Spillway Structures		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	2	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	2	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	2	The area is not 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 public safety.
39	There is space to meander the maintenance road(s).	1	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	2	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits 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 retrofits 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 retrofits due to existing slopes.	2	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**2.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to the New River, Agua Fria, Sonoran Preserve, and Lake Pleasant.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections east to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	Possible connections to the West Valley Recreation Corridor and the Sonoran Preserve.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**3.37**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.02**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Two - Mountain Areas		
	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 structure meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	5	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.	5	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	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	On-site screening with trees and shrubs are not used to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	4	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 of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match surrounding area.	1	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The structure's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	3	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**3.08**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	5	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	5	There are wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	5	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	5	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	5	There are panoramic views from the structure.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is not a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	3	The structure or area has revegetated.
21	The existing plantings match the community character.	5	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
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 and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	5	The structure does not have negative on-site visual problems.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines or 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.	5	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**3.86**	
	Conformance and Aesthetic Features Average	**3.47**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Two - Mountain Areas		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	4	The area is not 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the maintenance road(s).	1	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	2	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits 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 retrofits 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 retrofits due to existing slopes.	2	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**3.73**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to the New River, Agua Fria, Sonoran Preserve, and Lake Pleasant.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections east to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	Possible connections to the West Valley Recreation Corridor and the Sonoran Preserve.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**3.78**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.63**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Three - Impoundment Area		
	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 structure meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	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.	2	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.	2	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	2	On-site screening with trees and shrubs are not used to blend the structure.
6	There is 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 of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match surrounding area.	3	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The structure's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	3	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.00**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	5	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	5	There are wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	5	There are undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	5	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	3	There are panoramic views from the structure.
19	There is a meandering low-flow feature modeled on riparian washes.	2	There is not a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	4	The structure or area has revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	2	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
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 and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	5	The structure does not have negative on-site visual problems.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines or utility towers.
29	There are not multiple maintenance roads within the site.	3	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 noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**3.86**	
	Conformance and Aesthetic Features Average	**2.93**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Impoundment Area		**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	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	1	The area is not 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 public safety.
39	There is space to meander the maintenance road(s).	3	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	3	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits 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 retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	4	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**3.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to the New River, Agua Fria, Sonoran Preserve, and Lake Pleasant.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections east to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	Possible connections to the West Valley Recreation Corridor and the Sonoran Preserve.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**3.69**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.31**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Impoundment Dike		**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 structure meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	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.	1	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.	1	The structure is designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	On-site screening with trees and shrubs are not used to blend the structure.
6	There is off-site screening with plantings or earthwork buffers are used.	3	There is no off-site screening with plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	5	There is no veneering or plating of the structure with indigenous rock.
8	The disturbed areas are graded and replanted to match surrounding area.	2	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	2	The structure's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure and maintenance roads are kept free of weeds and debris.
	Conformance Average	**1.92**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	1	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	2	There are wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	1	There are undisturbed open space elements to preserve.
17	There are scenic corridors to preserve within this zone.	4	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	4	There are panoramic views from the structure.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is not a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	2	The structure or area has revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	3	The structure's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	4	The adjacent properties positively impact the site.
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 and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	1	The structure does not have negative on-site visual problems.
28	There are no overhead electrical lines and utility towers.	2	There are no overhead electrical lines or 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.	1	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**2.57**	
	Conformance and Aesthetic Features Average	**2.24**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - New River Dam	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Impoundment Dike		**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 existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	2	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	4	The area is not currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	3	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 without compromising public safety.
39	There is space to meander the maintenance road(s).	1	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	3	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	2	There are no constraints to multi-use due to site size.
42	There are no constraints to public multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**2.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to the New River, Agua Fria, Sonoran Preserve, and Lake Pleasant.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections east to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	Possible connections to the West Valley Recreation Corridor and the Sonoran Preserve.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**3.37**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.81**	

Skunk Creek Channel & Levee

Facility Location, Description and Zone Delineation

Skunk Creek Channel and Levee is located in the north valley within the City of Phoenix limits, near Interstate 17, just north of Jomax Road. The site is bounded by the Hayden Rhodes Aqueduct portion of the Central Arizona Project (CAP) Canal and extends just south of the interstate towards Happy Valley Road. The structure was designed to gather floodwaters from Skunk Creek and convey the flows under Interstate 17. The levee structures line both sides of the wash and funnel Skunk Creek wash into a narrow channel that passes through a concrete drop structure under the highway.

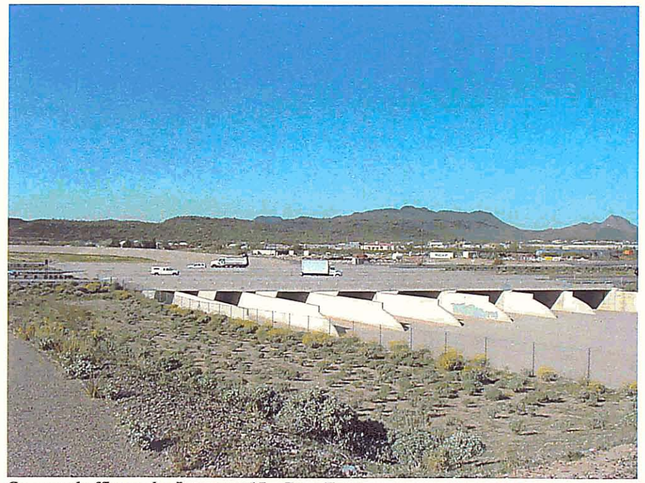
Site visits by Carter and Burgess identified four zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Natural Wash Area,* which is the wash area that comprises the portion of the channel before the channel narrows and is constricted on both sides by the levee structures. *Zone Two* was identified as the *Channel Area* which is the portion of the wash area located on both sides of the interstate that is narrow and shows signs of erosion from fast flowing water, see photo bottom center. The uniformly sloped, veneered embankments that line the channel were identified as *Zone Three*, the *Levee Structure*, see photo bottom right. The *Concrete Drop Structure Area*, which is a concrete partition located upstream, under and downstream of the interstate, was identified as *Zone Four*, see photo, bottom left.

See Site Map for zone locations.

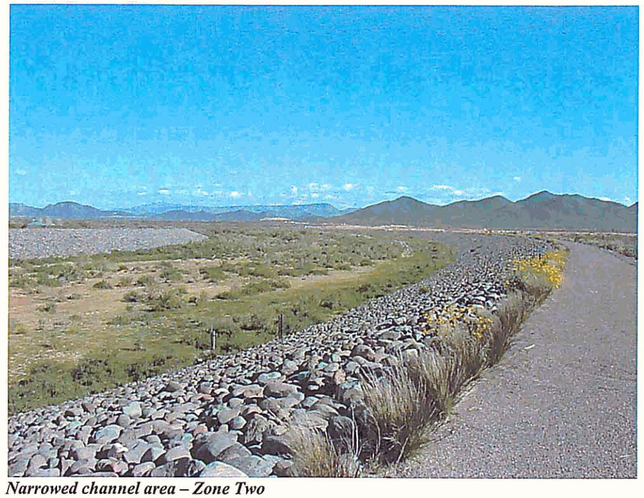
Potential Significance to Provide Regional, Community or Local Open Space Amenities

Because Skunk Creek Channel and Levee connects upper Skunk Creek with the lower portion of Skunk Creek that connects with the Adobe Dam Recreation Area, this site was identified by Carter and Burgess as providing a significant opportunity for connection to recreational areas. This site is also located immediately adjacent to the Maricopa County Regional Trail System primary corridor of the Central Arizona Project Canal. The Maricopa County Regional Trail System is planned to connect to the Phoenix Sonoran Preserve, located to the southeast of the site. The Phoenix Sonoran Preserve is a master-planned recreation area with goals to preserve diverse desert lands, habitats, and river ways, and contains a network of trail corridors.

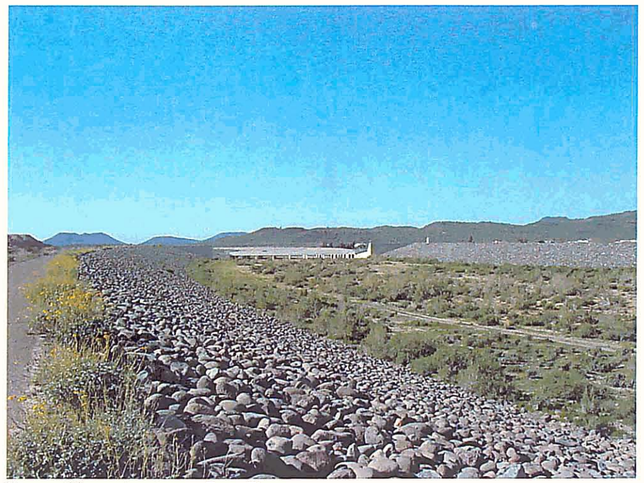
See Potential Corridor Locations Map for identified connection opportunities.



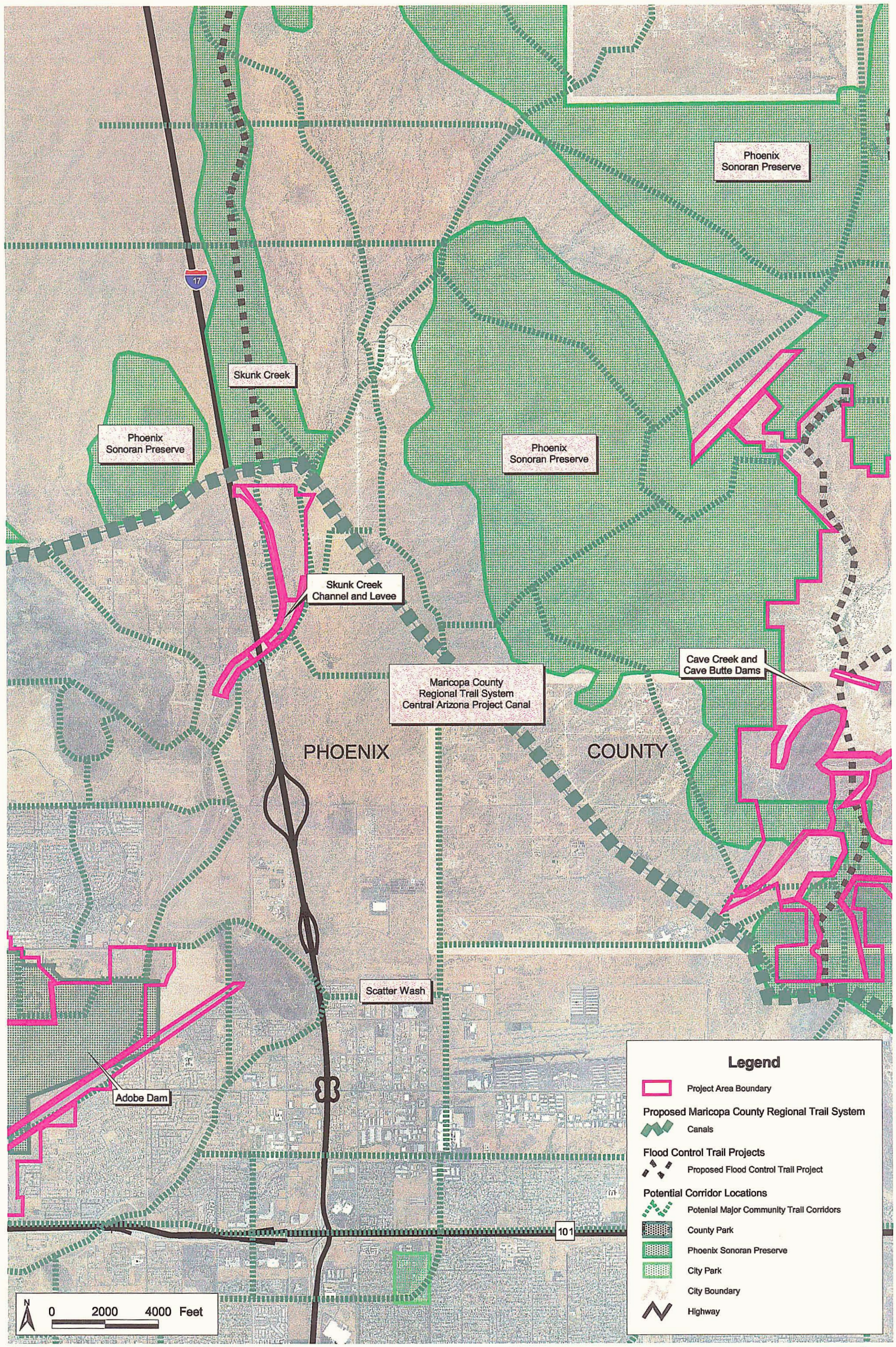
Concrete baffles under Interstate 17 – Zone Four



Narrowed channel area – Zone Two



Veneered levee structures – Zone Three



Potential Corridor Locations Map

Skunk Creek Channel and Levee

Carter&Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing the evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One - Natural Wash Area

The natural wash area conforms to aesthetic policy for the following reasons:

- The alignment of the wash meanders to vary from a straight line.
- The profile or height of the wash varies to modulate the outline.
- The side slopes of the wash are varied and are natural terrain.
- There are plantings to provide erosion control and protect visual qualities.
- There is off-site screening with plantings or earthwork buffers.
- The plantings will not cause an impedance to design function.

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

- There is no veneering or plating of the wash with indigenous rock.
- The disturbed areas are not graded and replanted to match the surrounding area.
- The wash is not re-seeded to enhance the growth of vegetation.
- The wash is not kept free of weeds and debris.

See photos, bottom left and center.

Zone Two - Channel Area

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

- There is off-site screening with plantings or earthwork buffers are used.

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

- There is not veneering or plating of the channel with indigenous rock.
- There are no plantings used to provide erosion control and protect visual qualities.
- The channel is not re-seeded to enhance the growth of vegetation.
- The channel is not kept free of weeds and debris.

Zone Three - Levee Structure

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

- The alignment of the levee meanders to vary from a straight line.
- There is off-site screening with plantings or earthwork buffers are used.
- The levee and maintenance roads are kept free of weeds and debris.

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

- The profile or height of the structure does not vary to modulate the outline.
- The structure is not re-seeded to enhance the growth of vegetation.

See photo, bottom right.

Zone Four - Concrete Drop Structure Area

The concrete drop structure conforms to aesthetic policy for the following reasons:

- The alignment of the structure meander to vary from a straight line.
- The structure is kept free of weeds and debris.

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

- The profile or height of the structure does not vary to modulate the outline.
- The structure is not re-seeded to enhance the growth of vegetation.
- The disturbed areas are not graded and replanted to match the surrounding area.

Surrounding Site Character

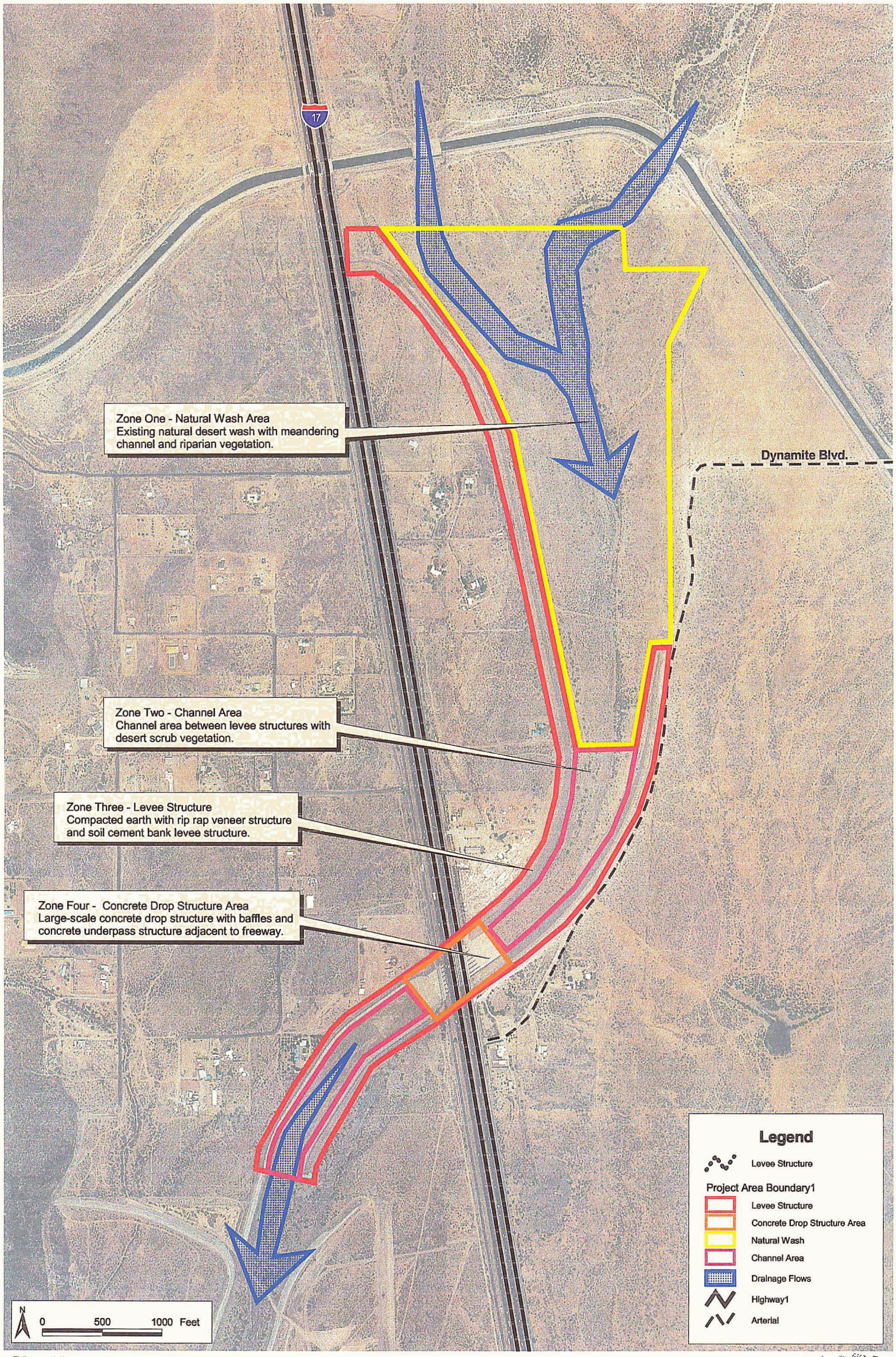
Zone One - Natural Wash Area

The natural wash area is surrounded by undisturbed open spaces with desert washes to the north as Skunk Creek Wash connects to the site. To the east, undisturbed desert open space encompasses this zone. The Central Arizona

Skunk Creek Natural Wash – Zone One

Surrounding natural wash area – Zone One

Levee structures and channel area – Zones Two and Three



Site Map

Skunk Creek Channel and Levee

Carter+Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Project (CAP) Canal is visible from higher elevation points in this zone as is Dynamite Boulevard, which runs along the eastern border of the site. The levee to the west conceals views to homestead ranches along Interstate 17. The interstate is audible but not generally visible from this zone except at the northwestern most point. The Union Hills are visible to the east and also to the east, there are areas of desert currently being cleared for residential development.

Zone Two - Channel Area

Because the channel area is at a lower elevation than the surrounding land, the character beyond the site is not generally visible from this zone. The undisturbed desert open spaces and adjacent ranch homes are not visible beyond the levee structures from the channel bottom. The levees flanking each side of the channel, the concrete drop structure area with interstate bridge above it all combine to block views.

Zone Three - Levee Structure

Surrounding hillsides and desert open spaces are visible from the top of the levee embankments. At this vantage point, the strong contrast between the undisturbed desert areas and the uniform shape of the channel area is apparent. The encroaching development and the existing ranch homes are visible to the east and west of this zone. The interstate is audible from most portions of the zone and is visible within several hundred feet of the bridge on either side. Both the bridge structure and concrete drop structure area dominate the visual character in this portion of the zone and strongly contrasts the native open spaces. At the southern terminus of the levee structure, there is a public landfill site with some associated land disturbance and maintenance roads.

Zone Four – Concrete Drop Structure Area

The concrete drop structure area is most visually impacted by the interstate and bridge because of their large size. This zone is also impacted by noise from the interstate. Views are restricted to the channel area as it extends north and south along Skunk Creek by the levee embankments. The character of the landscape beyond the levee embankments is not visible. Sections of the channel zone are visible approximately 1500 feet to the north and south until the channel curves at each end.

See the Site Analysis Map for land uses and zone locations.

Site Impressions

Zone One - Natural Wash Area

This zone is an undisturbed desert wash with meandering channel and a variety of indigenous vegetation. It is quite wide with undulating landforms that have been formed by floodwater flows. There are areas in the northern portion of this zone that have been damaged by off-road vehicle use. The northern area is wide with multiple washes that combine into one larger wash at the southern end. Also, at the southern end, there is a concentration of riparian vegetation along the furrowed, consolidated wash.

Zone Two - Channel Area

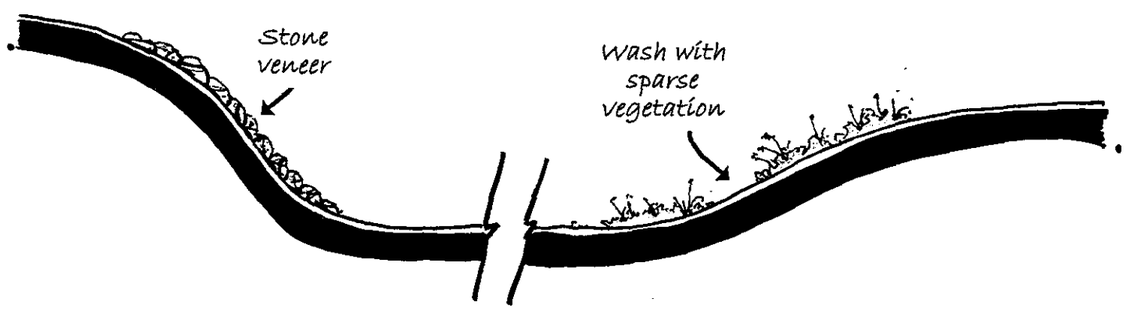
The channel is an area where the natural wash has been funneled into a narrower space by the levee structures as it curves to flow under the interstate. Besides the curved portion under the interstate, the channel is uniformly shaped. There is evidence of scouring from fast storm water flows. The water's speed has deterred the growth of riparian vegetation and most of the channel in this area is void of vegetation with the exception of non-native grasses and weeds.

Zone Three - Levee Structure

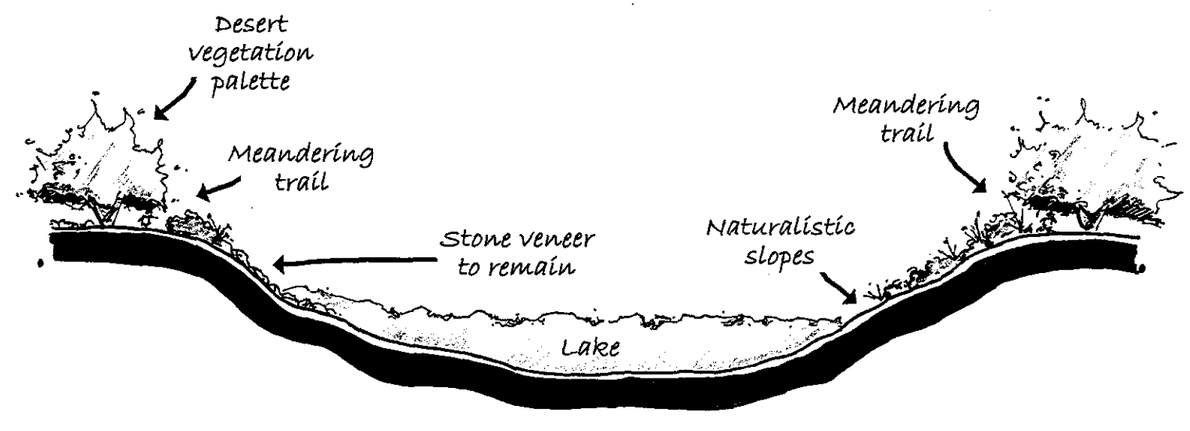
The west side of levee structure begins south of the CAP canal and extends just past the freeway, and the east side begins south of Dynamite Boulevard to just past the freeway. Northeast of the freeway, the levee is a compacted earthfill structure with river rock veneer on the upstream side and some vegetation on the downstream side. Southwest of the freeway, the levee is compacted earthfill with soil cement. The levees begin at ground level and taper up to 25 feet high and their alignment is a sweeping curve. The surrounding area is grand in scale and there are panoramic views from atop the levee. To the north and west are Middle Mountain, Pyramid Peak, and Deems Hills, and to east are the Union Hills. Unfortunately, the noise of vehicles from the highway can be heard throughout the site.

Zone Four - Concrete Drop Structure Area

The concrete drop area consists of a large concrete structure. The bottom and sides of the channel are lined with concrete on either side of the interstate bridge and large concrete baffles support the bridge structure with spaces in between to allow water to pass under the bridge. The concrete color is very light and it contrasts the color and texture of the adjacent desert area. Although the area is fenced on both sides with chain link, the fencing has not been effective in preventing graffiti painting on the concrete bridge supports.



Skunk Creek Channel and Levee - Existing Conditions (Section A)
Not to scale



Skunk Creek Channel and Levee - Potential Retrofit (Section A)
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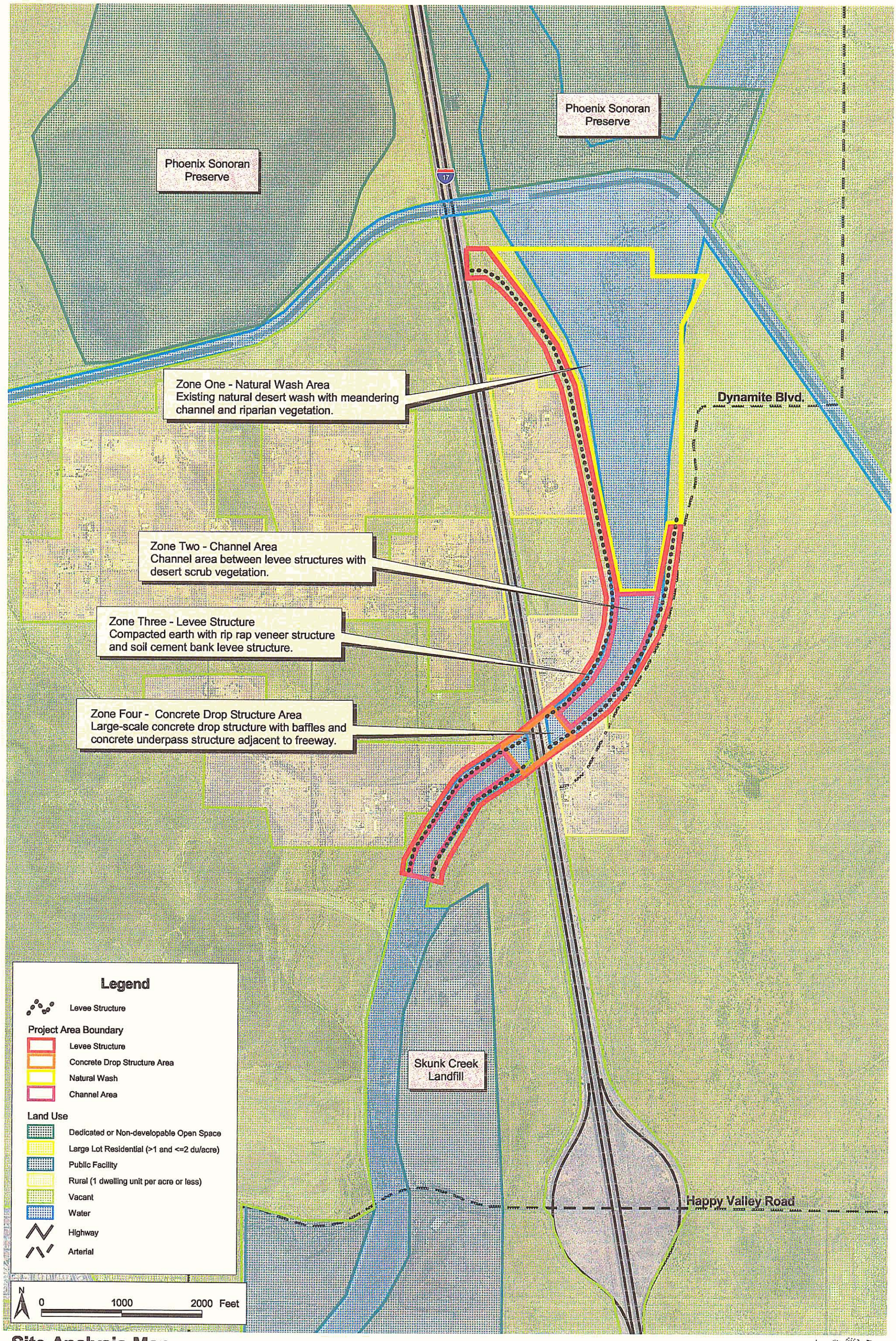


Site Analysis Map

Skunk Creek Channel and Levee

Carter+Burgess

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Opportunities and Constraints for Retrofit Treatments

Zone One - Natural Wash Area

The natural wash area would benefit from restricted vehicle access at the northern end to prevent further off-road vehicle damage. There is an opportunity to create a connection from this site to the Central Arizona Project (CAP) Canal that connects to the Phoenix Sonoran Preserve. There is also an opportunity to construct an equestrian trail connection through the site. The braided wash area would benefit from re-vegetation of disturbed areas to enhance the potential for re-creation of a riparian habitat. This zone's existing riparian habitat could also be further enhanced by construction of rock drop structures that slow water flows and reduce wash scouring. The areas riparian character could also be further enhanced by the creation of a lake. Constraints to retrofit efforts include the feasibility of constructing a lake within the wash that would not hamper flood control requirements and the costs of construction.

Zone Two - Channel Area

The retrofit opportunities for the channel area focus on slowing water flows to prevent additional scouring damage and fostering development of multiple braided channels to handle minor drainage flows. This zone has the opportunity to aesthetically blend with the natural wash area while still providing flood control functions by creating areas of slower flowing water to foster the re-growth of riparian vegetation. In this area, like the natural wash area, there is an opportunity to provide trail linkages to recreational areas north and south of the site.

Zone Three - Levee Structure

Although the levee structures are currently functioning as designed for flood control purposes, the structures would aesthetically benefit from modification of the side slopes to mimic natural wash banks. Reduction of the slope of the embankments in some areas with overburden would enable re-seeding with native plant species to help blend the site into the natural surroundings. There is an opportunity to remove portions of the grouted riprap and replace with native rocks and boulders to create ledges along the embankments for vegetation and meandering trails. The primary identified constraint to retrofit opportunities is cost because of the size and length of the levee structures. There are also engineering concerns regarding removal of portions of the grouted riprap because of the apparent volume and velocity of floodwater that historically passes through the site.

Zone Four - Concrete Drop Structure Area

There were two opportunities identified to aesthetically retrofit the concrete drop structure area. The first involves veneering the existing concrete baffles and bridge supports with faux stone boulders to help blend the structure with the natural desert wash environment. Additionally, the concrete lining along this area could be stained to blend with the desert wash floor. The second opportunity involves applying an aesthetic treatment to the bridge supports that builds upon their unique sculptural shape. Constraints to aesthetically retrofitting the area are cost and faux stone, concrete stain, and bridge art treatment durability as well as construction of retrofit treatments that do not hinder designed flood control functions.

Landscape Aesthetic and Multi-Use Treatment Recommendations

See concept graphic on page 159. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One - Natural Wash Area

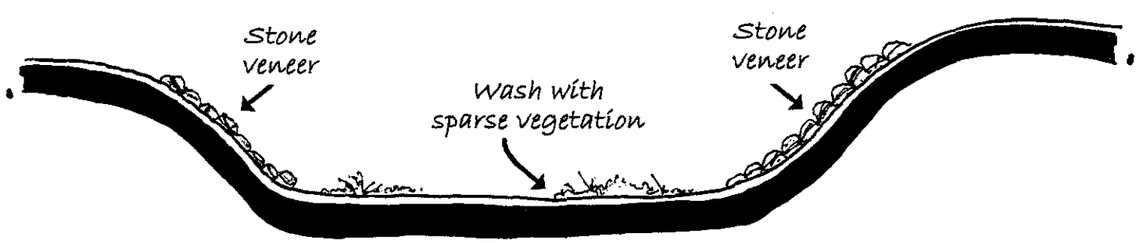
The retrofit concept proposes re-vegetation of degraded areas and creation of a lake with adjoining wetland areas. A series of naturalistic rock drop structures would retain lake water at the southern end and also create wetland areas. The north edge of the lake would taper off into additional wetland areas. The area around the lake would be re-vegetated with indigenous plant materials to re-establish riparian and wetland habitats. Equestrian and multi-use trails would connect this zone with the remainder of the site and also connect north to the Central Arizona Project (CAP) Canal and New River. The lake would be available for passive recreation uses such as bird watching and other wildlife viewing.

Aesthetic Treatment Retrofit Opportunities

Construct lake and wetlands area.
Construct naturalistic rock drop structures to form the southern edge of the lake.

Landscaping Treatment Retrofit Opportunities

Re-seeding of disturbed areas and enhancement of constructed wetlands area



Skunk Creek Channel and Levee - Existing Conditions (Section B)
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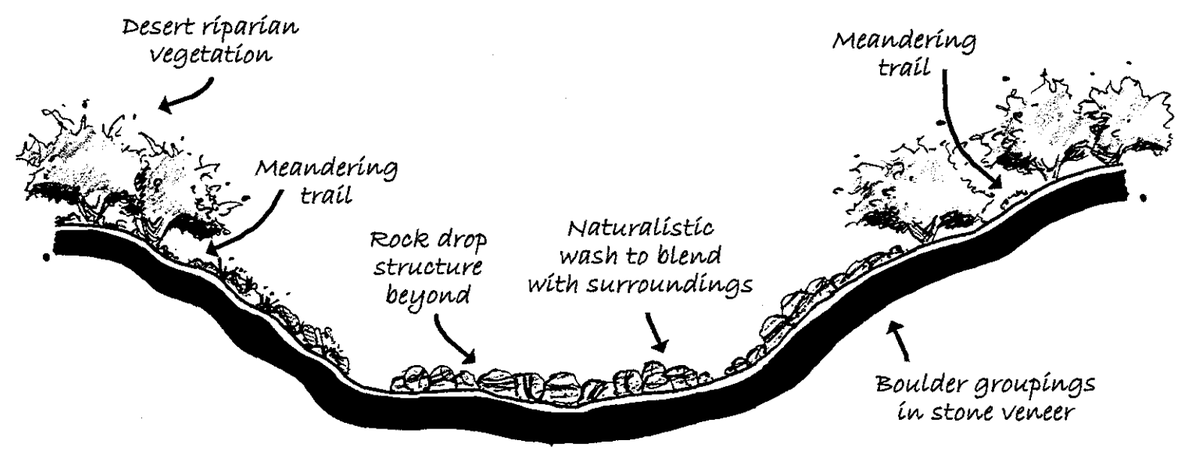

Skunk Creek Channel and Levee - Potential Retrofit (Section B)
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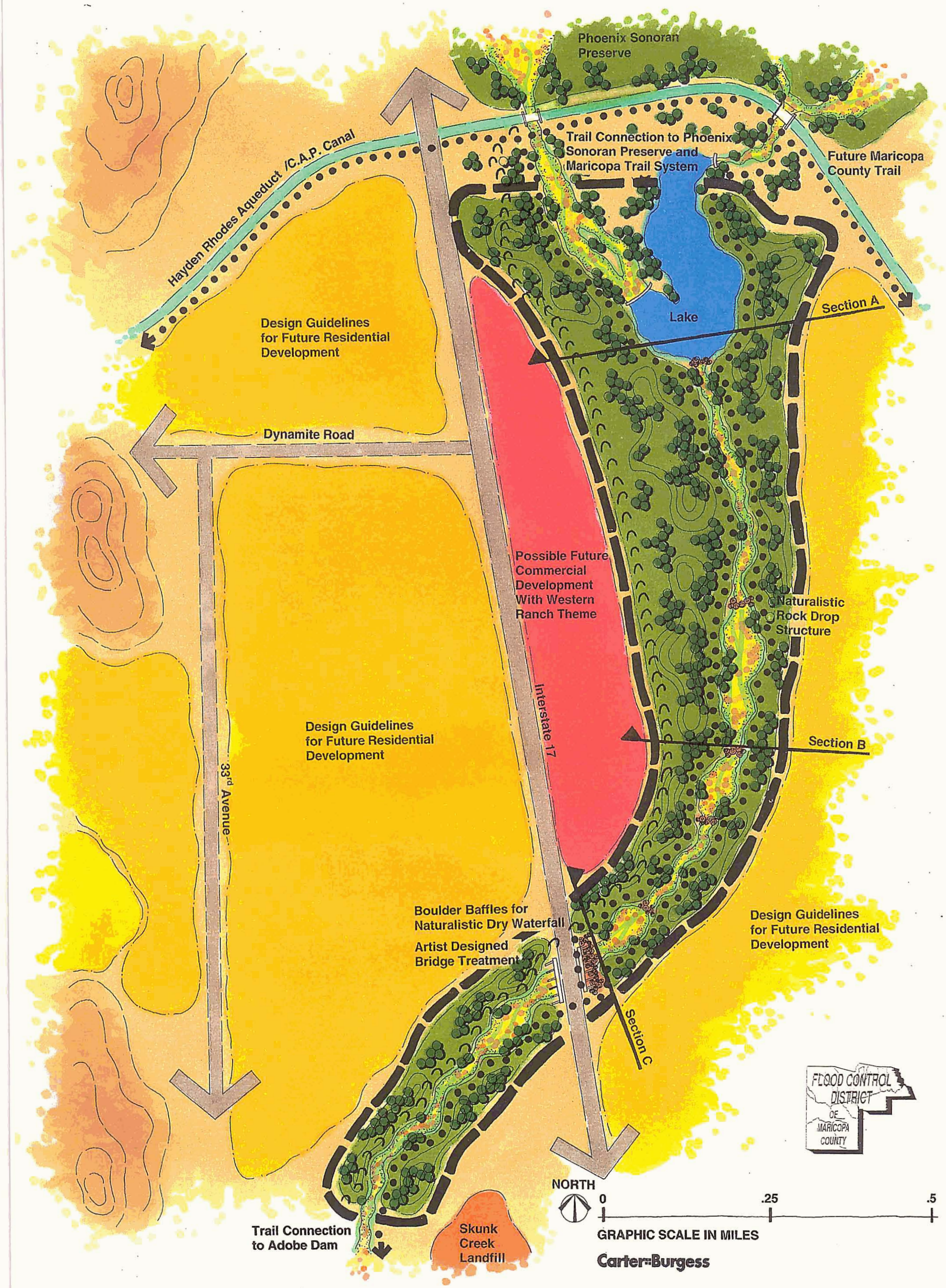


SKUNK CREEK CHANNEL AND LEVEE CONCEPT

with native riparian shrub and tree species.
Re-seeded areas are not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft surface trails on both sides of the lake that connect to the Phoenix Sonoran Preserve via the Central Arizona Project (CAP) Canal and cross the zone just below the lake.
Equestrian trail through site.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two - Channel Area

The retrofit concept focuses upon slowing water flows by construction of naturalistic rock drop structures. The slower flowing water would have more of an opportunity to foster the development of multiple washes with associated native riparian vegetation. Meandering multi-use trails along the wash banks would provide both wildlife viewing opportunities and connections through the site to other outdoor recreational areas.

Aesthetic Treatment Retrofit Opportunities

Re-contour of channel bottom to create multiple washes.
Placement of rock drop structures to slow water flows.

Landscaping Treatment Retrofit Opportunities

Re-seeding of disturbed areas and enhancement of wash areas with native riparian shrub and tree species.
Re-seeded areas are not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft surface trails through channel area with connections across channel and to other zones.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Three - Levee Structure

The retrofit concept for the levee proposes the addition of overburden of earth and rock to transform the levee from a uniformly shaped structure to a shape that simulates natural landforms. The structure would also be re-seeded to blend the side slopes with the native desert. Multi-use trail connections from the channel and wash areas are proposed to transport users out of the wash bottom to a pedestrian bridge crossing over the interstate. Equestrians would be provided an alternate connection under the interstate bridge through the concrete drop structure area that continues beyond the property boundary.

Aesthetic Treatment Retrofit Opportunities

Irregular placement of earth and rock on the levee structures.
Removal of portions of grouted riprap and replacement with irregularly sized native rock.

Landscaping Treatment Retrofit Opportunities

Re-seeding of re-contoured areas with native shrub and tree species.
Re-seeded areas are not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Multi-use soft surface trail connection through zone.
Equestrian trail through zone.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Concrete Drop Structure Area

The retrofit concept for this area proposes veneering the concrete baffles with faux stone to create a waterfall feature. The concrete lining in the area would be stained and treated with a texture that matches the wash banks adjacent to it. The bridge supports themselves will become large-scale public art elements with a western theme inspired by the ranch homes located to the east of the interstate. A pedestrian bridge over the interstate would be designed using a coordinating theme and the bridge would also function as a gateway feature for this area.

Aesthetic Treatment Retrofit Opportunities

Install faux stone and rock veneer over concrete baffles.
Stain and treat concrete lining with texture to match native soil.
Artist designed aesthetic treatment of bridge supports.

Landscaping Treatment Retrofit Opportunities

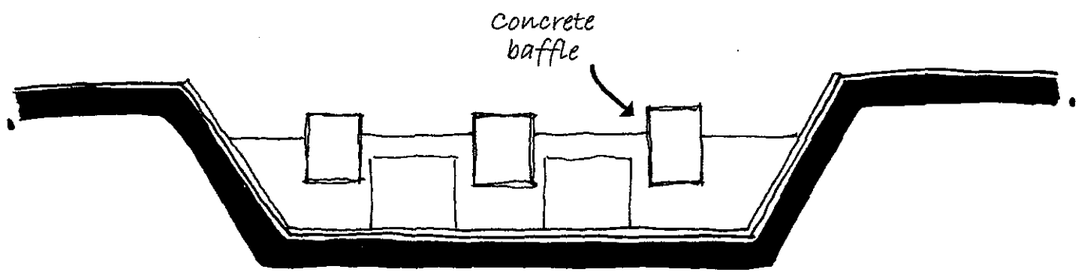
None identified.

Multi-Use Treatment Retrofit Opportunities

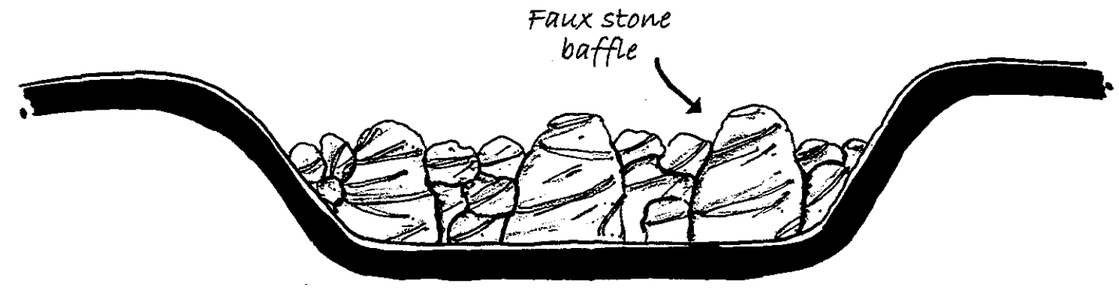
Artist designed pedestrian bridge gateway feature over interstate.
Equestrian trail crossing under interstate bridge.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.



Skunk Creek Channel and Levee - Existing Conditions (Section C)
Not to scale



Skunk Creek Channel and Levee - Potential Retrofit (Section C)
Not to scale

Hydrologic Engineering Synopsis of Structure

Project Title: Skunk Creek Channel @ I-17

Watershed and Relationship to Other Structures: Skunk Creek Channel was designed to gather flood waters upstream of Adobe Dam and convey them safely under Black Canyon Highway.

Location: T5N, R2E, Sections 25,26, 35 and 36

Access from I-17 and north of Happy Valley Road off ramp.

Authorization: Flood Control Act of 1965 (Public Law 89-198, 89th Congress)

Federal Sponsor: U.S. Army Corps of Engineers

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: To gather floodwaters upstream of Adobe Dam and convey them under Black Canyon Highway.

Project Features:

Type of levees	Earth fill levees
Length of project	8,900 lf.
Height	25 feet maximum
Width of channel	241 to 1,700 feet
Top width	14 feet
Standard project flood	54,000 cfs

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Natural Wash Area		
	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 meanders, this is an open space area.
2	The profile or height of the structure varies to modulate the outline.	5	The profile of the natural wash varies to modulate the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes of the natural wash are varied to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	5	The natural wash blends into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is on-site screening from the existing native trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the existing native plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	1	There is existing natural indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	The disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	The existing native plants provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	4	The existing native plants do not cause an impedance to design function.
11	The structure is re-seeded to enhance the growth of vegetation.	1	This zone is not reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	1	This zone and the maintenance roads are not kept free of weeds and debris.
	Conformance Average	**3.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	This zone has numerous desert wash features to preserve.
14	There are landscape or natural features to preserve.	5	This zone has desert vegetation and natural landforms to preserve.
15	There are wildlife habitat areas to preserve.	5	This zone has many wildlife habitats 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 within this zone to preserve.	5	This zone is a scenic corridor, the area is comprised of native landforms and vegetation.
18	There are panoramic views from the structure or zone.	5	There are panoramic views of the surrounding foothills and desert open spaces.
19	There is a meandering low-flow feature modeled on desert washes.	4	The natural wash area has many natural meandering low-flow features.
20	The structure or zone has naturally revegetated.	4	Some of the disturbed areas have naturally revegetated.
21	The existing plantings match the community character.	4	The existing plantings match the desert and riparian community character.
22	The structure's size and scale are proportional to its surroundings.	5	The natural wash area's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Mostly positive properties -open space, foothills, residential. Some negative - industrial.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	2	There are some natural water recharge or floodwater retention areas.
27	The structure does not have negative on-site visual problems.	4	Most of the natural wash area is visually positive, except for impacted areas.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	1	There are multiple roads and tracks within the natural wash area.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	5	There are no noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Aesthetic and landscape retrofits will restore disturbed areas.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for aesthetic and landscape retrofit treatments.
	Existing Aesthetic Features Average	**3.81**	
	Conformance and Aesthetic Features Average	**3.70**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Natural Wash Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	5	There are existing natural wash features that are beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are some existing multi-use features, horseback riding and off-road trails.
36	The zone is currently accessible for multi-use.	3	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.	4	Multi-use features could be added after addressing water flow issues.
39	There is space to meander the access/ maintenance road(s).	3	There is space to meander the access/ maintenance roads.
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 retrofits due to site size.	5	There are no constraints to multi-use retrofits due to site size, this zone is large.
42	There are no constraints to multi-use retrofits due to structural hazards.	5	There are no constraints to multi-use retrofits due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are some constraints to multi-use retrofits due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	4	There are some constraints to multi-use retrofits due to earth mounds.
	Existing Multi-Use Features Average	**4.18**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve and Union Hills.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Adobe Dam Rec. Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.17**	
	Existing and Future Multi-Use Average	**4.17**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.94**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Channel Area		**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 river channel has some gradual bends.
2	The profile or height of the structure varies to modulate the outline.	2	The river channel has some height variety.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The northern portion of the channel has natural terrain levees.
4	The structure is designed to blend into the contour of the natural terrain.	3	The northern site channel blends w/ natural river terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Including: arterial intersections, commercial parking, and top of levee.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering only concrete where necessary.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are graded but not replanted.
9	There are plantings used to provide erosion control and protect visual qualities.	1	The existing plantings provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	The existing plantings do not cause an impedance to design function.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The river channel is not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	1	The channel has many areas that are accessed and littered.
	Conformance Average	**1.83**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	3	There is a low flow channel in the river channel to preserve.
14	There are landscape or natural features to preserve.	3	There are some natural river corridor features in the north site to preserve.
15	There are wildlife habitat areas to preserve.	3	There are some wildlife habitat areas to preserve in the north site.
16	There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	2	The north site near Adobe Dam Rec. Area needs to be preserved.
18	There are panoramic views from the structure or zone.	2	Channel - views to the Hedgepeth Hills(North site) that run through Thunderbird Park.
19	There is a meandering low-flow feature modeled on desert washes.	2	There is a low-flow channel that runs straight through unnatural environment.
20	The structure or zone has naturally revegetated.	1	The river channel has not revegetated where it has been disturbed.
21	The existing plantings match the community character.	2	The are no existing plantings within the channel except North site areas.
22	The structure's size and scale are proportional to its surroundings.	4	Its size is exaggerated without plant material.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Potentially the residential and recreational facilities could bring life to the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater 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 very barren with the exception of North site areas.
28	There are no overhead electrical lines or utility towers.	1	Overhead electrical lines run parallel to the channel and cross with major arterials.
29	There are not multiple maintenance roads within the zone.	1	There are two maintenance roads where possible along the channel edges.
30	There are no intersecting arterial streets.	1	There are more than 7 major arterial intersections and one highway .
31	There are no noise impacts that need buffering.	1	There is noise from transportation corridors.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping is needed within the river channel.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	Enhancements can be added by the low flow channel.
	Existing Aesthetic Features Average	**2.10**	
	Conformance and Aesthetic Features Average	**1.96**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Channel Area		**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.	2	The North site has some natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	4	There are sidewalks and ramps down to the channel.
36	The zone is currently accessible for multi-use.	4	This zone is currently 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 of water flows.
39	There is space to meander the access/ maintenance road(s).	3	There is space to meander the maintenance road.
40	There are no physical constraints to accessing the site.	3	There are some constraints with sloped levees.
41	There are no constraints to multi-use retrofits due to site size.	4	There are no constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are slight constraints due to structural hazards such as weirs and erosion barriers.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints because the channel has a flat or undesirable slope.
44	There are no constraints to multi-use retrofits due to earth mounds.	2	There are some constraints due to the uneven terrain of braided channels in North site.
	Existing Multi-Use Features Average	**3.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve and Union Hills.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Adobe Dam Rec. Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.17**	
	Existing and Future Multi-Use Average	**3.86**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.91**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	*1 to 5*	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Three - Levee Structure		
	Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1	The alignment of the structure meanders to vary from a straight line.	4	The levee is mostly straight w/ some bends
2	The profile or height of the structure varies to modulate the outline.	1	The height of the levee structure is constant at any given area.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The sides of the levee are veneered and concrete in the S. and vegetated earth in the N.
4	The structure is designed to blend into the contour of the natural terrain.	3	The levee blends where it is earthen/vegetated and in natural surroundings(N.).
5	There is on-site screening with trees and shrubs used to blend the structure.	2	The levee has been landscaped in the S. across from the Peoria Sports Complex.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Including: arterial intersections and commercial parking.
7	There is veneering or plating of the structure with indigenous rock.	3	The concrete levee in the S. has set rock on its surface.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are graded and replanted in the Hedgepeth Hills area.
9	There are plantings used to provide erosion control and protect visual qualities.	2	In the Hedgepeth, existing plantings provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	The landscaped and existing plantings do not cause any impedance to design function.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The levee is not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The levee is generally free of weeds and debris.
	Conformance Average	**2.50**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian or 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	2	The north site near Hedgepeth Hills needs to be preserved.
18	There are panoramic views from the structure or zone.	2	Levee - views to the Hedgepeth Hills(North site) that run through Thunderbird Park.
19	There is a meandering low-flow feature modeled on desert washes.	1	The structure or area has not revegetated.
20	The structure or zone has naturally revegetated.	1	The levee has not revegetated where it has been disturbed.
21	The existing plantings match the community character.	2	The are no existing plantings on the levee except the Hedgepeth Hills area..
22	The structure's size and scale are proportional to its surroundings.	3	Its size is exaggerated without plant material to diffuse the view.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	The residential and recreational facilities bring life to the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The levee is very barren with the exception of the Hedgepeth Hills area.
28	There are no overhead electrical lines or utility towers.	1	Overhead electrical lines run parallel to the channel and cross with major arterials.
29	There are not multiple maintenance roads within the zone.	1	There are usually two maintenance roads where possible along the levee edges.
30	There are no intersecting arterial streets.	1	There are more than 7 major arterial intersections and one highway .
31	There are no noise impacts that need buffering.	1	There is noise from transportation corridors.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping is needed atop the levee.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	Enhancements can be added near walks and at levee base.
	Existing Aesthetic Features Average	**1.76**	
	Conformance and Aesthetic Features Average	**2.13**	

Site Criteria

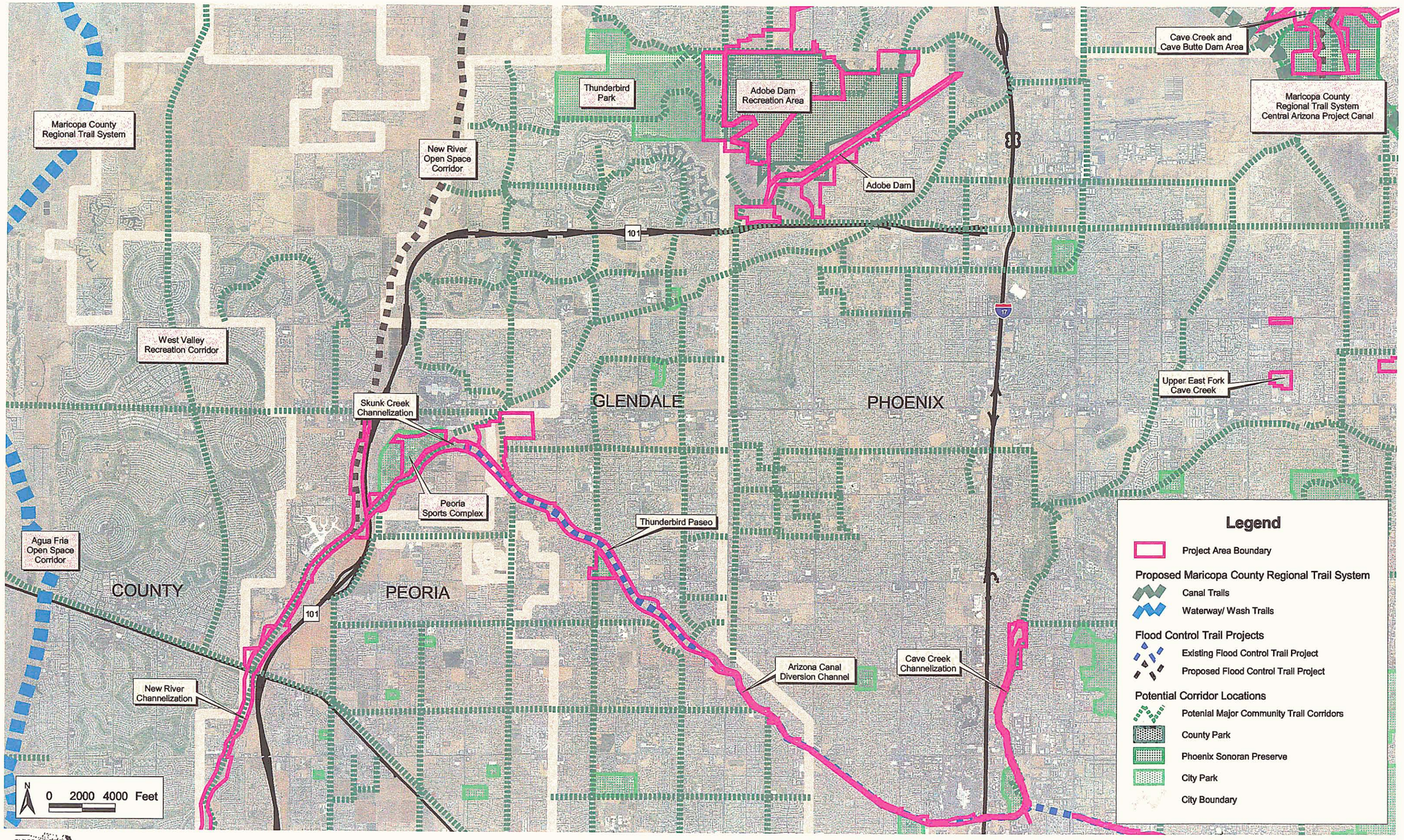
#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Three - Levee Structure		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	2	The Hedgepeth Hills site has some natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	4	There are sidewalks and ramps down to the channel.
36	The zone is currently accessible for multi-use.	4	This zone is currently 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 over levee slope.
39	There is space to meander the access/ maintenance road(s).	2	There is very little space to meander the maintenance road atop the levee.
40	There are no physical constraints to accessing the site.	2	There are some constraints due to walled neighborhoods and road crossings.
41	There are no constraints to multi-use retrofits due to site size.	2	There are some constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	3	There are slight constraints due to structural hazards such as gates and levee slope.
43	There are no constraints to multi-use retrofits due to existing slopes.	1	There are constraints because the levee's steep slope.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints due to earth mounds.
	Existing Multi-Use Features Average	**2.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve and Union Hills.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Adobe Dam Rec. Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.17**	
	Existing and Future Multi-Use Average	**3.54**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.83**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Concrete Drop Structure Area		**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.	4	The concrete drop structure does not meander.
2	The profile or height of the structure varies to modulate the outline.	1	The height of the drop structure is constant at any given area.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The sides of the drop structure are concrete.
4	The structure is designed to blend into the contour of the natural terrain.	3	The drop structure blends where it is earthen/vegetated and in natural surroundings(N.).
5	There is on-site screening with trees and shrubs used to blend the structure.	2	The drop structure has been landscaped in the S. across from the Peoria Sports Complex.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Including: arterial intersections and commercial parking.
7	There is veneering or plating of the structure with indigenous rock.	3	The concrete levee in the S. has set rock on its surface.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are graded and replanted in the Hedgepeth Hills area.
9	There are plantings used to provide erosion control and protect visual qualities.	2	In the Hedgepeth, existing plantings provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	The landscaped and existing plantings do not cause any impedance to design function.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The levee is not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The levee is generally free of weeds and debris.
	Conformance Average	**2.50**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian or 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	2	The north site near Hedgepeth Hills needs to be preserved.
18	There are panoramic views from the structure or zone.	2	Levee - views to the Hedgepeth Hills(North site) that run through Thunderbird Park.
19	There is a meandering low-flow feature modeled on desert washes.	1	The structure or area has not revegetated.
20	The structure or zone has naturally revegetated.	1	The levee has not revegetated where it has been disturbed.
21	The existing plantings match the community character.	2	The are no existing plantings on the levee except the Hedgepeth Hills area..
22	The structure's size and scale are proportional to its surroundings.	3	Its size is exaggerated without plant material to diffuse the view.
23	The attendant flood control facility structures blend into the surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	The residential and recreational facilities bring life to the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The levee is very barren with the exception of the Hedgepeth Hills area.
28	There are no overhead electrical lines or utility towers.	1	Overhead electrical lines run parallel to the channel and cross with major arterials.
29	There are not multiple maintenance roads within the zone.	1	There are usually two maintenance roads where possible along the levee edges.
30	There are no intersecting arterial streets.	1	There are more than 7 major arterial intersections and one highway .
31	There are no noise impacts that need buffering.	1	There is noise from transportation corridors.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscaping is needed atop the levee.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	Enhancements can be added near walks and at levee base.
	Existing Aesthetic Features Average	**1.76**	
	Conformance and Aesthetic Features Average	**2.13**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channel and Levee	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Four - Concrete Drop Structure Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	2	The Hedgepeth Hills site has some natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	4	There are sidewalks and ramps down to the channel.
36	The zone is currently accessible for multi-use.	4	This zone is currently 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 over levee slope.
39	There is space to meander the access/ maintenance road(s).	2	There is very little space to meander the maintenance road atop the levee.
40	There are no physical constraints to accessing the site.	2	There are some constraints due to walled neighborhoods and road crossings.
41	There are no constraints to multi-use retrofits due to site size.	2	There are some constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	3	There are slight constraints due to structural hazards such as gates and levee slope.
43	There are no constraints to multi-use retrofits due to existing slopes.	1	There are constraints because the levee's steep slope.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints due to earth mounds.
	Existing Multi-Use Features Average	**2.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the Sonoran Preserve and Union Hills.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Phoenix Sonoran Preserve and Adobe Dam Rec. Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The Union Hills and Sonoran Preserve have many positive natural features.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land needs design guidelines for development to preserve desert features.
57	There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities in this zone.
58	There are opportunities for small-scale local park facilities.	5	There are opportunities for small-scale local park facilities in this zone.
59	There are opportunities for riparian or desert wash areas.	5	There are opportunities for additional desert washes in this zone.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**4.17**	
	Existing and Future Multi-Use Average	**3.54**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.83**	



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter-Burgess

Potential Corridor Locations Map

Skunk Creek Channelization

Skunk Creek Channelization

Facility Location, Description and Zone Delineation

Skunk Creek Channelization is located in the northwest valley east of New River Channelization. The property is located in the City of Peoria and extends from 75th Avenue south of Bell Road to where it joins with New River, just south of Greenway Road. Skunk Creek Channelization conveys floodwaters from the Arizona Canal Diversion Channel (ACDC) through Thunderbird Paseo Park, and from Skunk Creek Wash located to the northeast to New River Channelization to the west. The channel consists of levees lined with a combination of compacted earth and soil cement. The channel is approximately two hundred feet wide and one mile in length.

Site visits by Carter and Burgess identified four zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Channel Area,* which encompasses the channel basin area, see photo bottom right. *Zone Two* was identified as the *Levee Structure,* which are the side embankments that line both sides of the channel, see photo bottom center. *Zone Three*, the *Sports Complex Area,* is located within the property boundary and includes a portion of the Peoria Sports Complex. See photo, bottom left. The *Open Space Areas*, identified as *Zone Four*, are two undeveloped portions of land that flank both sides of the channel as it extends south to meet with New River Channelization.

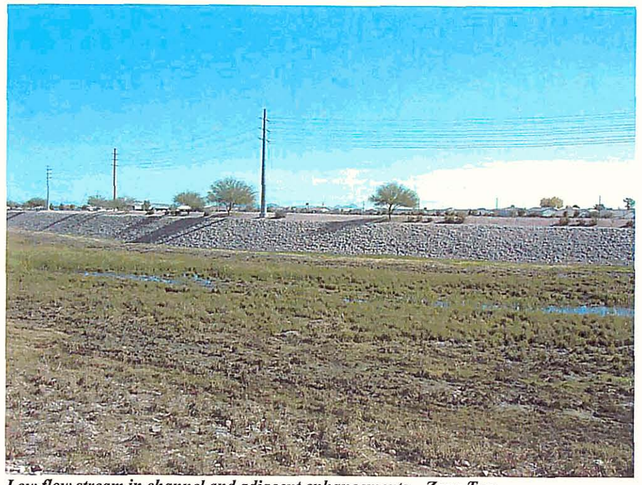
See Site Map for zone locations.

Potential Significance to Provide Regional Community or Local Open Space Amenities

Because of the location of this site between the Thunderbird Paseo, which is a portion of the Arizona Canal Diversion Channel, and New River Channelization, Carter and Burgess identified the site as a highly significant recreational corridor. Additionally, the property is located within the West Valley Recreation Corridor, a regional master plan for recreational uses along the prominent watercourses of the New River and Aqua Fria River, extending from Lake Pleasant to the Gila River. There are also multiple opportunities to introduce connections to nearby recreational facilities at key points along Skunk Creek to the north and to connect with a network of local trails and city parks. In addition, the City of Peoria has a comprehensive Rivers Master Plan, for the planning, design and implementation of lands adjacent to river corridors.

See Potential Corridor Locations Map for identified connection opportunities.

Channel structure adjacent to sports complex – Zone Three



Low flow stream in channel and adjacent enhancements – Zone Two

Drop structure in channel – Zone One

Aesthetic Treatment and Landscaping Policy Conformance

After the formulation of zone areas, each zone was rated utilizing the evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

Zone One – Channel Area

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

- The alignment of the structure meanders to vary from a straight line.
- There is off-site screening with plantings or earthwork buffers are used.
- The channel maintenance roads are kept free of weeds and debris.

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

- The side slopes of the channel are not varied to simulate natural terrain.
- There is no veneering or plating of the structure with indigenous rock.
- The plantings used will cause an impedance to design function.
- The structure is not re-seeded to enhance the growth of vegetation.

See photos, bottom left and right.

Zone Two - Levee Structure

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

- The alignment of the structure meanders to vary from a straight line.
- There is veneering or plating of the structure with indigenous rock.
- The structure and maintenance roads are kept free of weeds and debris.

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

- The profile or height of the structure does not vary to modulate the outline.
- The side slopes of the structure are not varied to simulate the natural terrain.
- The structure is not designed to blend into the contour of the natural terrain.
- There is no on-site screening with plantings or earthwork buffers used.
- The disturbed areas are not graded and replanted to match the surrounding area.
- There are no plantings used to provide erosion control and protect visual qualities.
- The structure is not re-seeded to enhance the growth of vegetation.

See photo, bottom center.

Zone Three – Sport Complex Area

The sports complex area conforms to aesthetic policy for the following reasons:

- The alignment of the area meanders to vary from a straight line.
- The profile or height of the area varies to modulate the outline.
- There is on-site screening with trees and shrubs used to blend the area.
- There is off-site screening with plantings or earthwork buffers are used.
- The area and maintenance roads are kept free of weeds and debris.

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

- The side slopes of the area are not varied to simulate natural terrain.
- There is no veneering or plating in the area with indigenous rock.
- The plantings used will cause an impedance to design function.
- The area is not re-seeded to enhance the growth of vegetation.

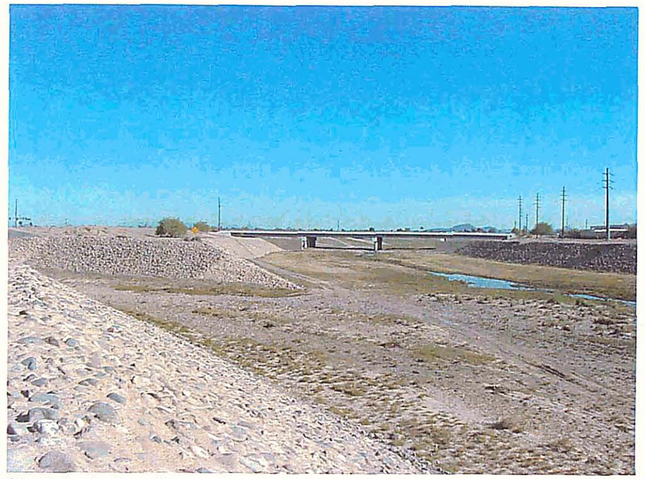
Zone Four – Open Space Areas

The open space areas conform to aesthetic policy for the following reasons:

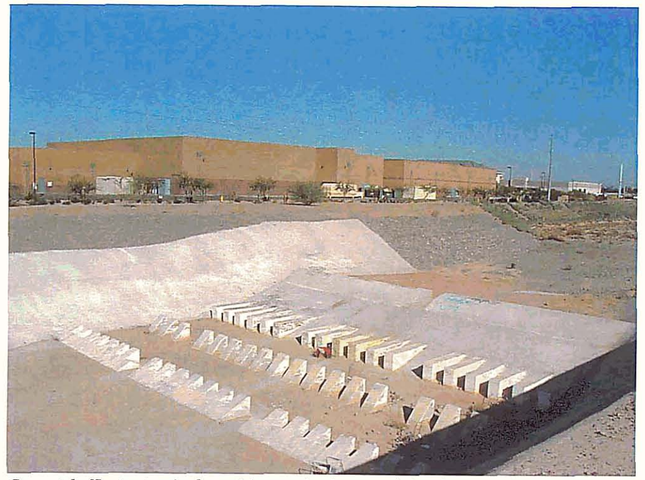
- There is on-site screening with trees and shrubs used to blend the area.
- There is off-site screening with plantings or earthwork buffers are used.
- The disturbed areas are graded and replanted to match the surrounding area.

The open spaces area do not conform to policy for the following reasons:

- The slopes within the area are not varied to simulate natural terrain.
- There are no plantings used to provide erosion control and to protect visual qualities.
- The area is not re-seeded to enhance the growth of vegetation.

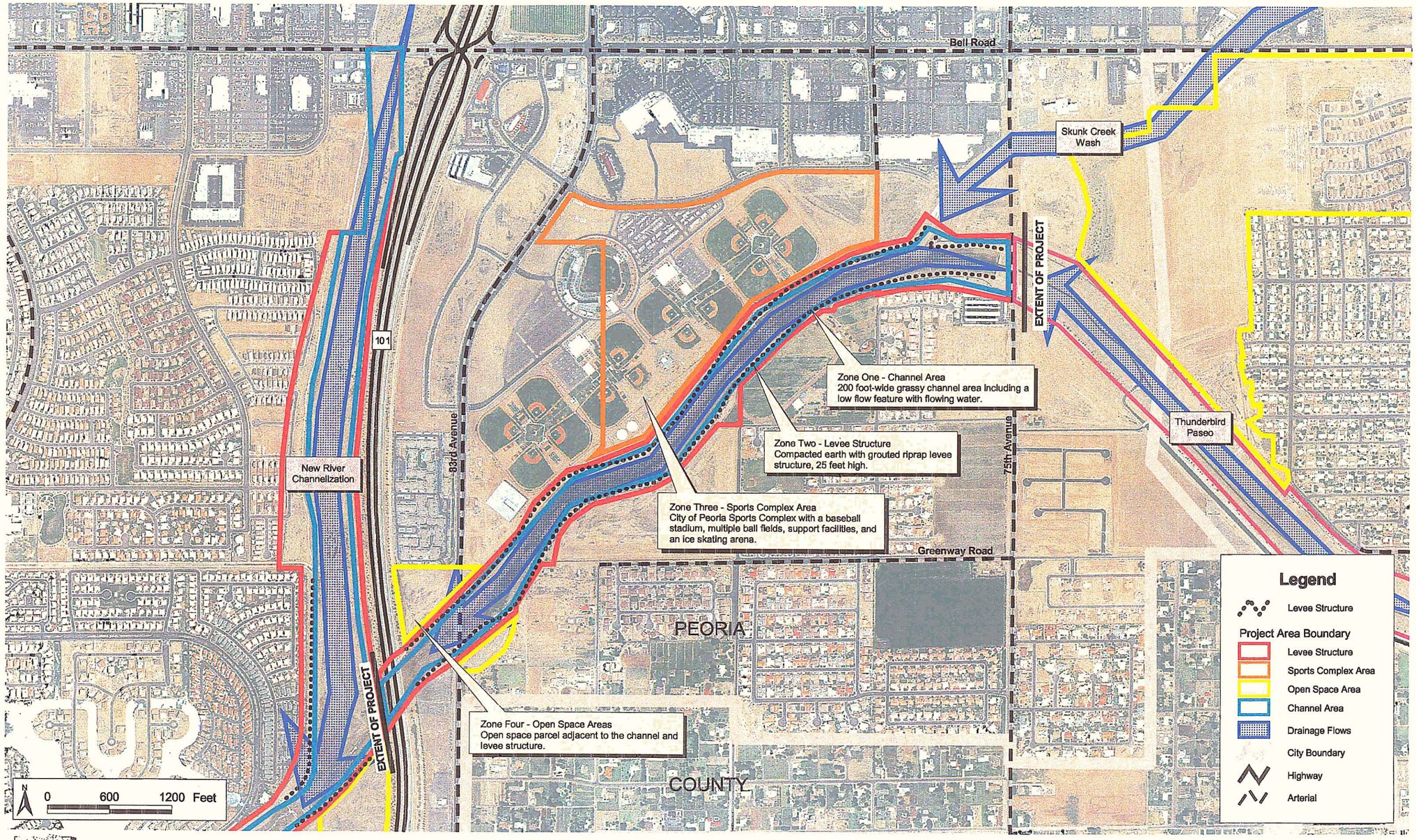


Skunk Creek channel connection with Thunderbird Paseo – Zone One



Concrete baffle structure in channel, levee embankment and shopping center beyond – Zone Two

Earthen channel through residential area – Zone One



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter+Burgess

Site Map

Skunk Creek Channelization

Surrounding Site Character

Zone One - Channel Area

Because the channel area zone is at a lower elevation than the adjacent land, most of the surrounding land uses beyond the property boundary are not visible from this zone with the exception of tall buildings, residential development walls, electrical transmission lines, and the light poles located at the sports complex area. The levee structure zone has the most visual impact on the channel because the height and uniformity of its slopes dominate views.

Zone Two - Levee Structure

The levee structure is bounded on one side with the channel area and the property boundary on the other side. From the levee structure embankment, residential development is predominantly visible. The neighborhoods consist of single-family homes ranging in age from new master planned developments to older farm-houses located on remnant agricultural fields. The medium-to-high-density residential neighborhoods adjacent to the levee structure are located between 67th and 59th Avenue and 51st and 43rd Avenue. There are warehouse buildings located at the northern edge of the site and a commercial shopping area located across from Arrowhead Towne Center Shopping Mall is visible to the north. Commercial property, remnant agricultural land and recreational developments are predominantly concentrated where Skunk Creek joins the New River east to 67th Avenue and then again between 59th Avenue eastward to 51st Avenue. There is an equestrian training track located to the east of the levee bank as well as an elementary school located nearby at Greenway Road and 79th Avenue. The Hedgepeth Hills, which are located to the west of Adobe Dam, can be seen to the north of the levee. Highway Loop 101 is located just to the west of the site and is visible and audible at the southern tip of this zone.

Zone Three - Sport Complex Area

The Peoria Sports Complex area is bounded by 83rd Avenue and highway Loop 101 to the west. Both the channel and levee structures visually dominate views to the southeast. Beyond the property boundary, there are areas of undeveloped open space and commercial developments such as the shopping mall opposite of Arrowhead Towne Center. A portion of the surrounding residential developments is visible from this zone but, generally, the residential developments are not noticeable because the width of the channel and the landscape buffer along the levee that masks views.

Zone Four - Open Space Areas

The two undeveloped areas located at the southern end of the site are impacted most by highway Loop 101. There is a multi-family residential development located north of this zone. The land beyond the property boundary towards the other directions has similar character as this zone. These areas consist of remnant or discontinued agriculture uses and vacant land. The channel and levee banks are very visible from this zone because of the lack of vegetation buffers.

See the Site Analysis Map for land uses and zone locations.

Site Impressions

Zone One - Channel Area

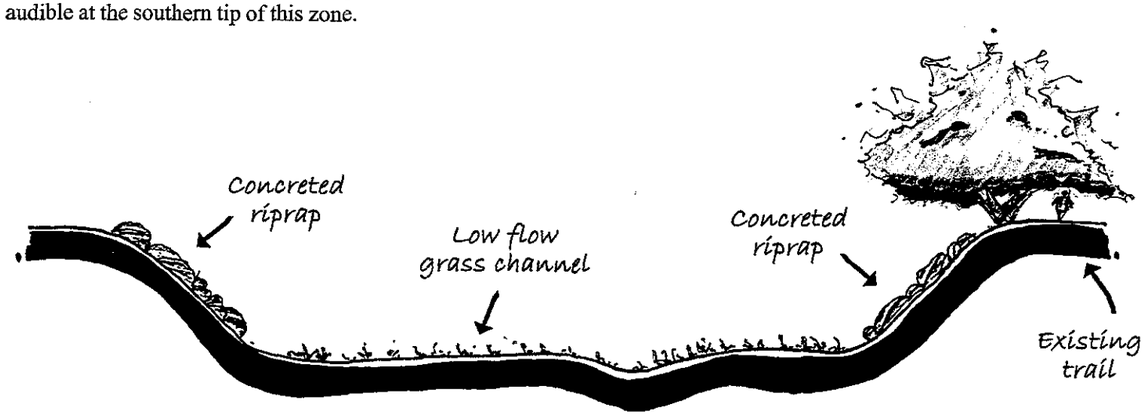
The channel area is a sparsely vegetated, meandering earthen channel with patches of grass and weeds. The bottom of the channel is uniformly flat with the exception of an area located upstream of the point at which Skunk Creek's flows join the channel. The upstream portion has a riparian washbasin and wetlands that have naturally formed because of a weir located downstream to control flows and erosion. Additionally, the runoff from the Arizona Canal Diversion Channel (ACDC) provides a continuous source of water flowing through a low flow channel. Concrete drop structures intersect the channel at regular intervals, approximately 1500 feet apart

Zone Two - Levee Structure

The levee structures that line both sides of the channel are approximately twenty-five feet high, and are constructed of compacted earth with soil cement and riprap in areas where there is a need to prevent erosion. Portions of the levee structures without soil cement or riprap lining have naturally re-vegetated with both native shrub species and weeds. Both the lined and re-vegetated areas are uniformly sloped throughout the site. Unpaved maintenance roads are located on either side of the channel above the levee structure slopes.

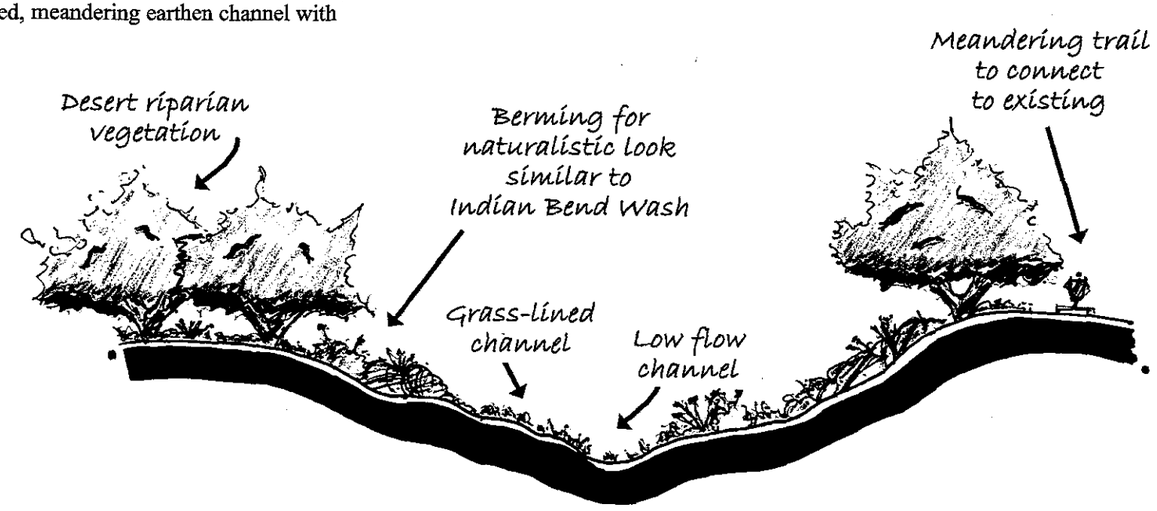
Zone Three - Sports Complex Area

The Peoria Sports Complex is a large sports park with a baseball stadium, a dozen baseball fields, an ice arena, parking lot, and supporting building facilities. The ice arena is open to the public. The sports complex is used for professional baseball spring training and exhibition games. The baseball stadium lies separate from the



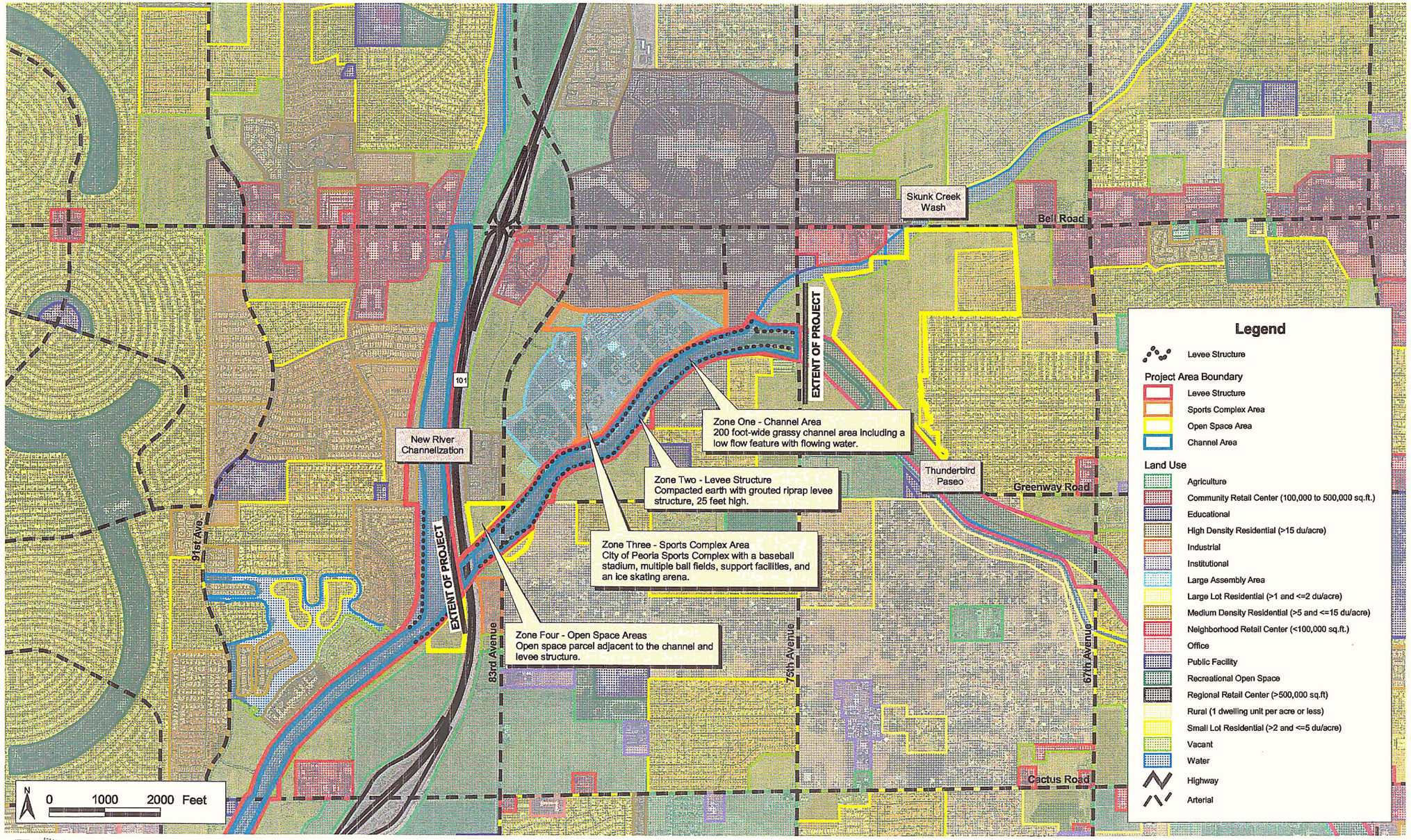
Skunk Creek Channelization - Existing Conditions (Section A)

Not to scale



Skunk Creek Channelization - Potential Retrofit (Section A)

Not to scale



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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Site Analysis Map

Skunk Creek Channelization

other fields and has seating for eleven thousand fans. There are concessions buildings, and admission buildings off the parking areas. The other baseball fields and associated buildings are used for practice and training of both the San Diego Padres and the Seattle Mariners. The stadium is also used to host arts and craft shows, boat shows and high school baseball playoffs.

Zone Four – Open Space Areas

The two open space areas are remnant pieces of disturbed land. Both patches of land seem isolated from the sports complex area and adjacent neighborhoods but share a close visual relationship with the channel area. Highway Loop 101 impacts this area with noise and is a visual barrier to neighborhoods located beyond the freeway. While 83rd Avenue provides a potential connection point to the site, noise from the avenue combines with noise from the highway to make this zone quite loud and unpleasant to be in.

Opportunities and Constraints for Retrofit Treatments

Zone One - Channel Area

Because of the channel's location between two recreational corridors, it has the potential to provide a recreational corridor link between the Arizona Canal Diversion Channel (ACDC) and New River. The channel is wide enough in several areas to provide recreation opportunities that coordinate with the sports complex baseball theme or expands the types of recreation amenities available. There is also a potential to build upon the existing wetlands area to develop a series of wash connections or lakes. Constraints to retrofit treatments include creation of a recreation improvement plan that does not hinder the channel's flood control function and retrofit treatment costs.

Zone Two - Levee Structure

The levee's most significant opportunity is development of a multi-use transportation corridor that links the Arizona Canal Diversion Channel (ACDC) with New River. Also, because there are currently equestrian trail opportunities and an equestrian training track nearby, this zone would benefit from a separated use equestrian trail that provides a connection from the training facility north to the Thunderbird Paseo portion of the ACDC and south to New River. Because the area outside of the property boundary has undeveloped areas, there is a potential for commercial development that serves the recreation uses located within the channel and levee zones. There is also an opportunity to retrofit the embankments to recreate a more naturalistic meandering form that conforms to the 1992 aesthetic guidelines. Constraints to multi-use and aesthetic improvements include design and construction cost of providing path linkages under major roadways such as 83rd Avenue and the cost of removal of large portions of the riprap veneer and soil cement embankments.

Zone Three - Sports Complex Area

Since the sports complex area is fully developed, potential retrofit treatments are limited. There is a potential to enhance the edges that abut the levee channel structures to create opportunities for alternative transportation connections to the sports complex area from the channel and vice versa. Visitors to the facility, whether to see a spring training game or attend an arts and crafts festival, would then have the opportunity to travel to the game using an alternative mode of transportation and avoid traffic congestion.

Zone Four – Open Space Areas

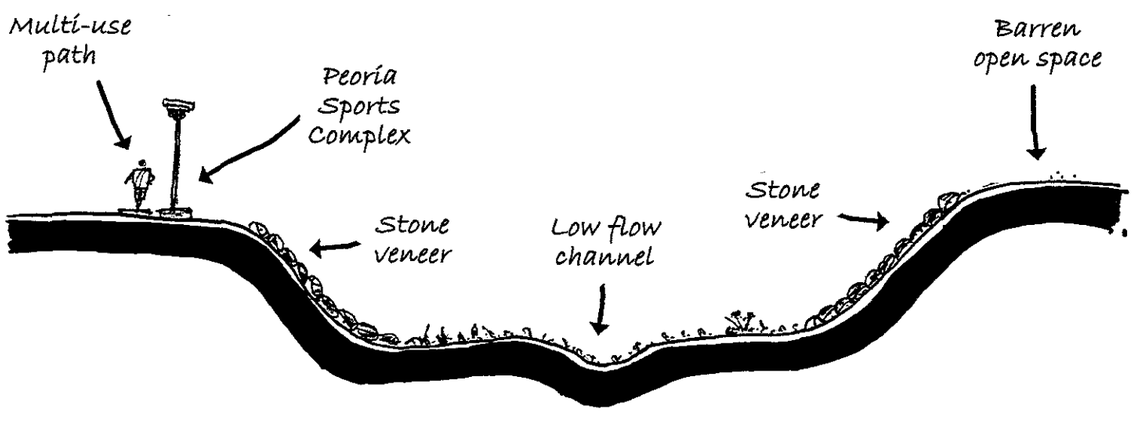
Both of the open space areas have opportunity to become parking access points to recreational amenities developed in and along the channel area. The areas, because they are located along a major thoroughfare, have potential to be sold or leased for commercial development. Because of the land's noisy location between 83rd Avenue and highway Loop 101, residential development is not recommended.

Landscape Aesthetic and Multi-use Treatment Recommendations

See concept graphic on page 177. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One - Channel Area

The concept advocates development of the channel by creation of a greenway corridor with a series of lakes that offer a variety of recreational uses. The lakes would be created using naturalistic earthwork and boulders to provide dams on the



Skunk Creek Channelization - Existing Conditions (Section B)

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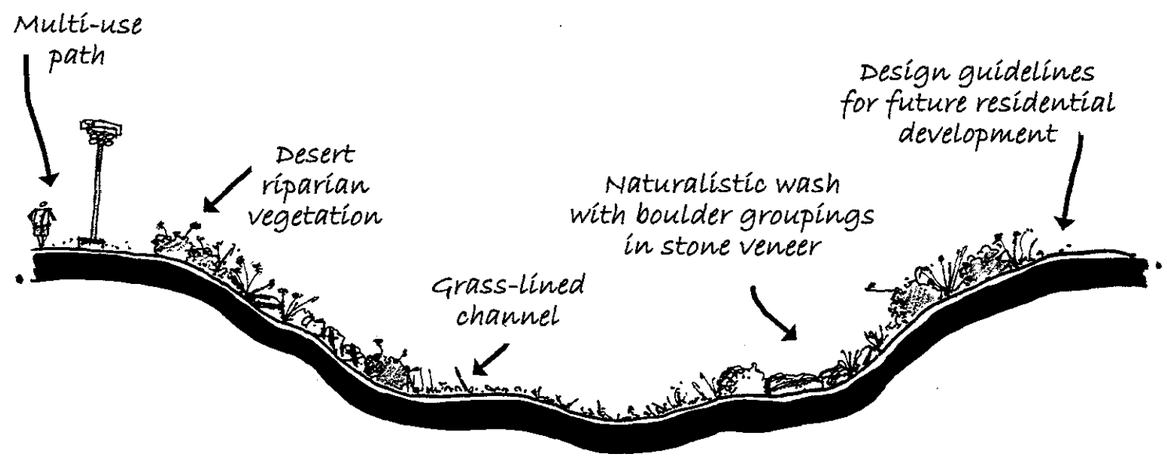

Skunk Creek Channelization - Potential Retrofit (Section B)

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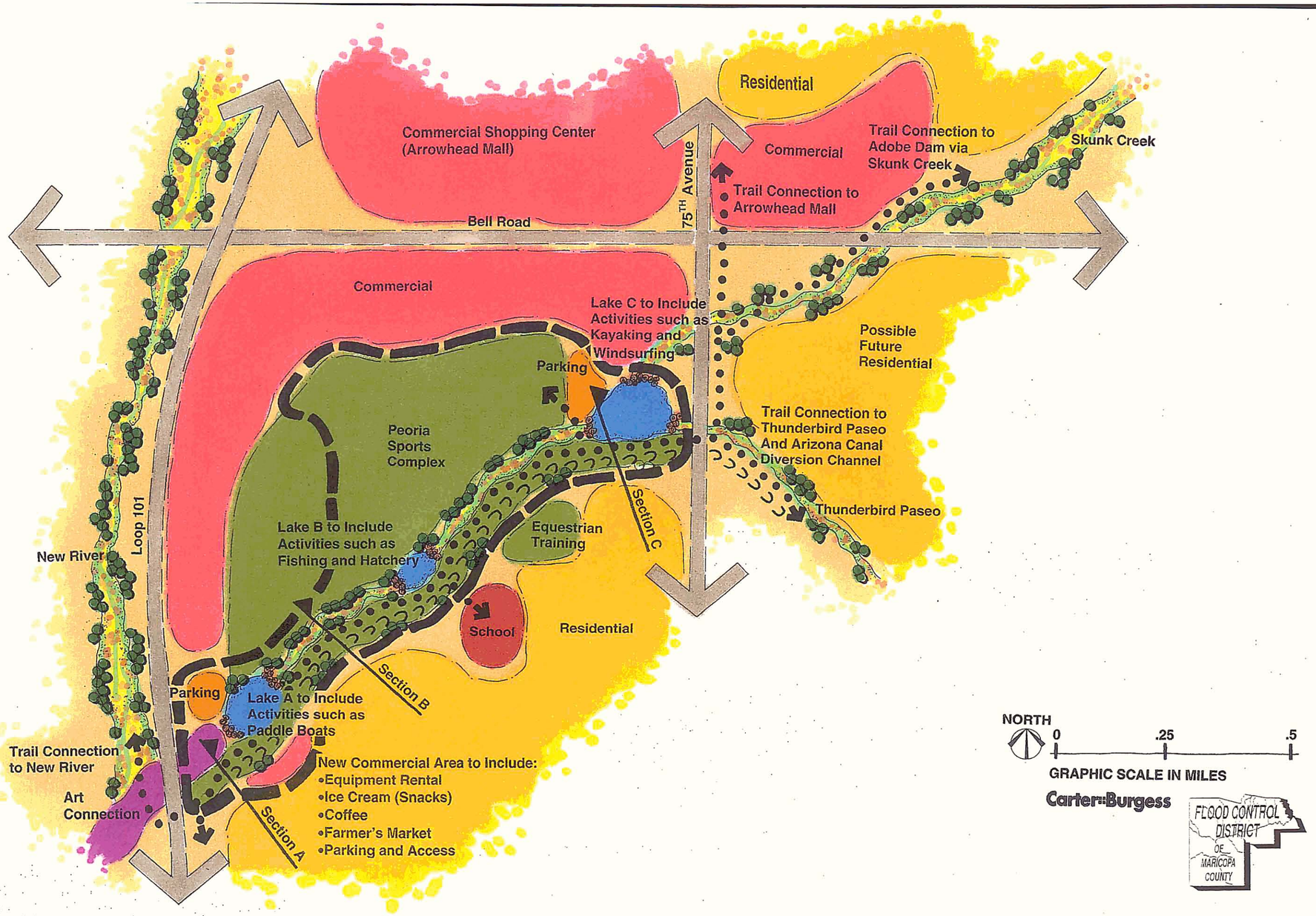


SKUNK CREEK CHANNELIZATION CONCEPT

upstream and downstream sides of the channel; wetlands areas and washes would connect the lakes. The northern most lake offers active use recreation such as kayaking and windsurfing, the middle lake, because it is located near an elementary school, is a learning and passive recreation lake with a hatchery and fishing available, the southern most lake offers family recreation opportunities such as paddle boats.

Aesthetic Treatment Retrofit Opportunities

Construct lake areas and enhance/create wetlands and wash areas.
Seven naturalistic looking rock drop structures that contain the lakes' water.

Landscaping Treatment Retrofit Opportunities

Re-seeding of disturbed areas with native shrubs and trees.
Tree and shrub landscape in key areas.
Irrigation of key landscaped areas, re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Soft surface separated-use trails within the channel area.
Gateway features at the trail connection points at New River, Skunk Creek, and ACDC.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two - Levee Structure

The concept focuses upon development of a multi-use transportation corridor that meanders along the top and upper portions of the levee embankment. The levee side slopes would also be re-contoured to allow vegetation enhancement, trail placement and to aesthetically blend the edges of the levee with the surrounding landscape. The multi-use corridor would include a separate use equestrian trail on the opposite levee as the sports complex that connects to an equestrian track. On the levee nearest the sports complex, the concept proposes re-contouring the levee side slopes into tiers and also creating a boardwalk to view the proposed lakes and wetlands areas.

Aesthetic Treatment Retrofit Opportunities

Remove the top portion of north levee near the sports complex and construct a tiered levee.
Add a lower tier to the south levee structure for equestrian trails.
Re-contour levee slopes to mimic natural landforms.
Removal of portions of riprap and soil cement areas.

Landscaping Treatment Retrofit Opportunities

Re-seeding of disturbed and re-contoured slopes with native shrubs and trees.
Tree and shrub landscape along boardwalk area.
Irrigation of landscape at boardwalk area, re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Equestrian trail along the southern levee.
Multi-use pathway along the northern levee.
Underground pathway connection at 75th and 83rd Avenues.
Special uses park facilities located along the levee embankments that serve the lakes.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Three - Sport Complex Area

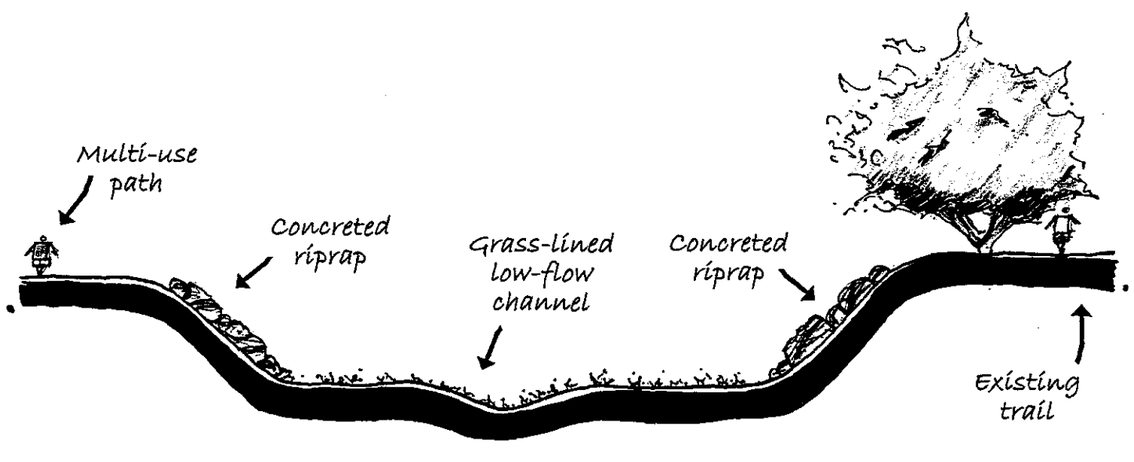
Because this zone is already developed, the concept proposes minor enhancements to help visually integrate the complex with the proposed open space amenities. The concept also utilizes a currently undeveloped portion of this zone, located to the east of the existing complex parking as additional parking and equipment drop off area for the kayaking and windsurfing lake.

Aesthetic Treatment Retrofit Opportunities

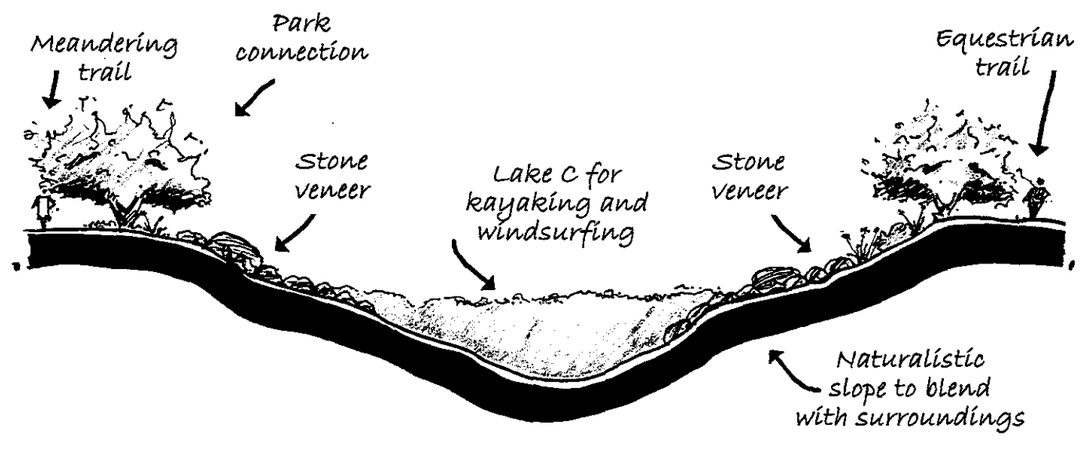
None identified.

Landscaping Treatment Retrofit Opportunities

Re-seeding of disturbed areas to blend this zone with the channel area.
Tree and shrub landscape at key areas, such as, the entry to the lake facility.
Irrigation of landscape at key areas, re-seeded areas not to receive irrigation.



Skunk Creek Channelization - Existing Conditions (Section C)
Not to scale



Skunk Creek Channelization - Potential Retrofit (Section C)
Not to scale

Multi-Use Treatment Retrofit Opportunities

Parking and loading facilities that serve the kayaking and windsurfing lake.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Open Space Areas

Since the open space areas are easily accessible from 83rd Avenue and adjacent the proposed paddleboat lake, the concept utilizes the area as parking and a boat rental facility.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

Re-seeding of disturbed areas.
Tree and shrub landscape at key areas, such as, the entry to the boat rental facility.
Irrigation of landscape at key areas, re-seeded areas not to receive irrigation.

Multi-Use Treatment Retrofit Opportunities

Parking area for boat rental and site access.
Paddleboat rental building.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Hydrologic Engineering Synopsis of Structure

Project Title: Skunk Creek Bank Stabilization

Watershed and Relationship to Other Structures:

Location: T3N, R1E, Sections 2, 11

83rd Avenue and Greenway Road at the southwest end of 75th Avenue and south of Bell Road on the northeast end.

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: To prevent erosion at the confluence of Skunk Creek and the ACDC.

Project Features:

Total Length	1 mile
Grouted rip/rap southeast bank	0.8 mile – 16,244 square yards
Base width	200 feet
Height	30 feet

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone One - Channel Area		**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 channel meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	2	The profile of the channel does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the channel do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	2	The channel is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	2	On-site screening with trees and shrubs are not used to blend the channel.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the channel with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	2	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The channel sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The channel and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.33**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	4	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	3	There are 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 within this zone to preserve.	3	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	3	There are panoramic views from the channel.
19	There is a meandering low-flow feature modeled on desert washes.	5	There is a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	3	The channel has revegetated.
21	The existing plantings match the community character.	3	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The channel size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	The channel does not have negative on-site visual problems.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	1	There is an intersecting arterial street.
31	There are no noise impacts that need buffering.	1	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**2.86**	
	Conformance and Aesthetic Features Average	**2.60**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone One - Channel Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The 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 public safety.
39	There is space to meander the access/ maintenance road(s).	4	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	3	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are no constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**3.91**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to the New River corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in the channel.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land can be acquired for special use enhancements and buffering.
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 would 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 in this zone.
58	There are opportunities for small-scale local park facilities.	3	There are some opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	4	There are many opportunities for riparian and desert wash enhancements.
60	There are opportunities for recharge basins or ponding areas.	4	There are opportunities for recharge basins and ponding areas in the river channel.
61	There are opportunities for multi-use trails.	5	There are many opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are many opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.61**	
	Existing and Future Multi-Use Average	**3.76**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.18**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Two - Levee Structure		**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 levee meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the levee does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the channel do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The levee is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	On-site screening with trees and shrubs are not used to blend the levee.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	5	There is veneering or plating of the levee with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	1	Disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is reseeded to enhance the growth of vegetation.	1	The levee sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The levee and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.17**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian or 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 undisturbed open space elements to preserve.
17	There are scenic corridors within this zone to preserve.	3	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	3	There are panoramic views from the levee.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	1	The levee has not revegetated.
21	The existing plantings match the community character.	1	There is no existing planting.
22	The structure's size and scale are proportional to its surroundings.	5	The levee size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	1	The levee does have negative on-site visual problems.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	1	There are multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	1	There is an intersecting arterial street.
31	There are no noise impacts that need buffering.	1	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	4	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**1.81**	
	Conformance and Aesthetic Features Average	**1.99**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Two - Levee Structure		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	1	There are not existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	2	There are physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	2	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	2	There are constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**3.55**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to this corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in the channel.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional site property that could be sold to allow for special use areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	4	Adjacent land can be acquired for special use enhancements and buffering.
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 would 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 in this zone.
58	There are opportunities for small-scale local park facilities.	3	There are some opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	4	There are many opportunities for riparian and desert wash enhancements.
60	There are opportunities for recharge basins or ponding areas.	4	There are opportunities for recharge basins and ponding areas in the river channel.
61	There are opportunities for multi-use trails.	5	There are many opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	5	There are many opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.61**	
	Existing and Future Multi-Use Average	**3.58**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.78**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Three - Sports Complex Area		**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 riparian area meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	5	The profile of the riparian area does vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the riparian area do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The riparian area is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	On-site screening with trees and shrubs are used to blend the riparian area.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the levee with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	2	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The riparian area's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The riparian area and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.92**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	2	There are 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 within this zone to preserve.	3	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	3	There are panoramic views from the riparian area.
19	There is a meandering low-flow feature modeled on desert washes.	5	There is a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	3	The riparian area has 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.	5	The riparian size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	The riparian area does not have negative on-site visual problems.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	1	There is an intersecting arterial street.
31	There are no noise impacts that need buffering.	1	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**2.76**	
	Conformance and Aesthetic Features Average	**2.84**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Three - Sports Complex Area		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	3	There are physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	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	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	There are possible connections to other recreation areas.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**4.01**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.42**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone Four - Open Space Areas		**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.	3	The alignment of the open space areas meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	3	The profile of the open space areas vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The side slopes of the open space areas vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The open space areas are designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	4	On-site screening with trees and shrubs are used to blend the riparian area.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the levee with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	4	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	2	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The riparian area's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The riparian area and maintenance roads are kept free of weeds and debris.
	Conformance Average	**2.67**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	5	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	2	There are 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 within this zone to preserve.	3	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	3	There are panoramic views from the riparian area.
19	There is a meandering low-flow feature modeled on desert washes.	5	There is a meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	3	The riparian area has 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.	5	The riparian size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	3	The riparian area does not have negative on-site visual problems.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	1	There is an intersecting arterial street.
31	There are no noise impacts that need buffering.	1	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**2.76**	
	Conformance and Aesthetic Features Average	**2.71**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Skunk Creek Channelization	***1 to 5***	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Four - Open Space Areas		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	3	There are physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	5	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	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	There are possible connections to open space.	5	There are possible connections to the New River and Agua Fria corridors.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There are possible connections south to the Agua Fria and north to the CAP Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	4	There are possible connections to the surrounding neighborhoods.
49	There are possible connections to recreation areas.	4	The Peoria Sports Complex is adjacent to this corridor.
50	There are possible connections to multi-modal facilities.	3	The areas adjacent to arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are existing commercial areas and future development may provide more nodes.
52	There are opportunities for special use commercial areas.	5	There are opportunities for special use commercial areas in these open spaces.
53	Site property could be sold to allow for special use commercial areas.	4	Property could be sold to allow for special use areas adjacent to the river channel.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	The surrounding land is mostly developed, some land could be acquired for enhancements.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	There is some adjacent land that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	3	Design guidelines for development could create positive links with a retrofitted 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.	5	There are opportunities for small scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	3	There are opportunities for riparian or desert wash areas in this zone.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins or ponding areas in this zone.
61	There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails in this zone.
62	There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails in this zone.
	Future Multi-Use Features Average	**3.83**	
	Existing and Future Multi-Use Average	**4.01**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.36**	

Upper East Fork Cave Creek & Paradise Valley Detention Basin

Facility Location, Description and Zone Delineation

The Upper East Fork Cave Creek facilities include four multi-use parks that function as basins in times of flooding. The parks include Quail Run, Turtle Rock, Grover Park, and Coyote Basin Park. Coyote Basin Park is located at the corner of Beardsley and 26th Street. This basin park receives floodwaters from culverts beneath Loop 101. There is an earthen channel that extends south from the Coyote Basin Park and extends to Union Hills Drive to a private property channel that flows into Grovers Park. Grovers Park is located at Cave Creek Road and Grovers Avenue. This basin park is split by Grovers Avenue and collects floodwaters from the surrounding roads and residences. Turtle Rock Basin is located at 9th Street and just south of Grovers Avenue. This basin park collects floodwaters from surrounding areas. Quail Run Basin is located at 9th Street and Union Hills Drive. This basin park collects floodwaters from the residential neighborhood to the south. The Paradise Valley Detention Basin is located adjacent to Paradise Valley Community College near the intersection of Union Hills Drive and 32nd Street. The basin is located to the southwest of the college and retains floodwaters from the surrounding residential and recreational areas. The basins are successful examples of facilities that have been developed to function as both flood control and to also provide recreational open space for the surrounding neighborhoods, schools and businesses. See photos along bottom.

Site visits by Carter and Burgess identified three zones. The zones are areas of land that have similar traits and qualities. The zone format established for each site was utilized to conduct a visual assessment and provide recommendations for each of the Flood Control facilities in this report. *Zone One* was identified as the *Detention Basins and Community Parks,* which includes the collection of basins used as parks: Quail Run, Turtle Rock, Grovers Park and Coyote Basin Park, see photos along bottom. *Zone Two* was identified as the *Earthen Channel Area,* which is a channel that connects Coyote Basin Park with Grovers Park. *Zone Three*, the *Detention Basin and Community College* includes a portion of the Paradise Valley Community College facility and its adjacent open space area basin.

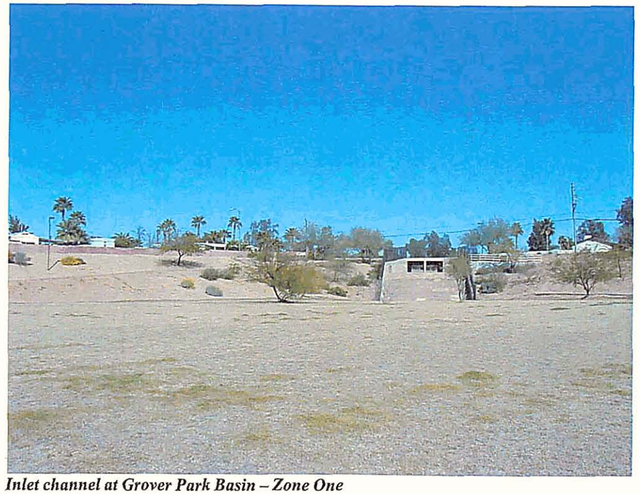
See Site Map for zone locations.

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

Through site visits and research regarding recreational opportunities accessible from this site, Carter and Burgess has found that this collection of basins currently provide significant neighborhood recreation opportunities. Additionally, the basins act as both connection and destination points for recreation because they are inter-dispersed between such larger recreation and open space areas such as the Phoenix Sonoran Preserve and North Mountain Preserve. The basins, particularly Coyote Basin Park, are located close to the planned Maricopa County Regional Trail System along the Central Arizona Project Canal. Two basins, Quail Run Basin Park and Turtle Rock Basin Park, are located just to the east of Cave Creek Wash corridor, which contains a potential connection to the Arizona Canal Diversion Channel (ACDC).

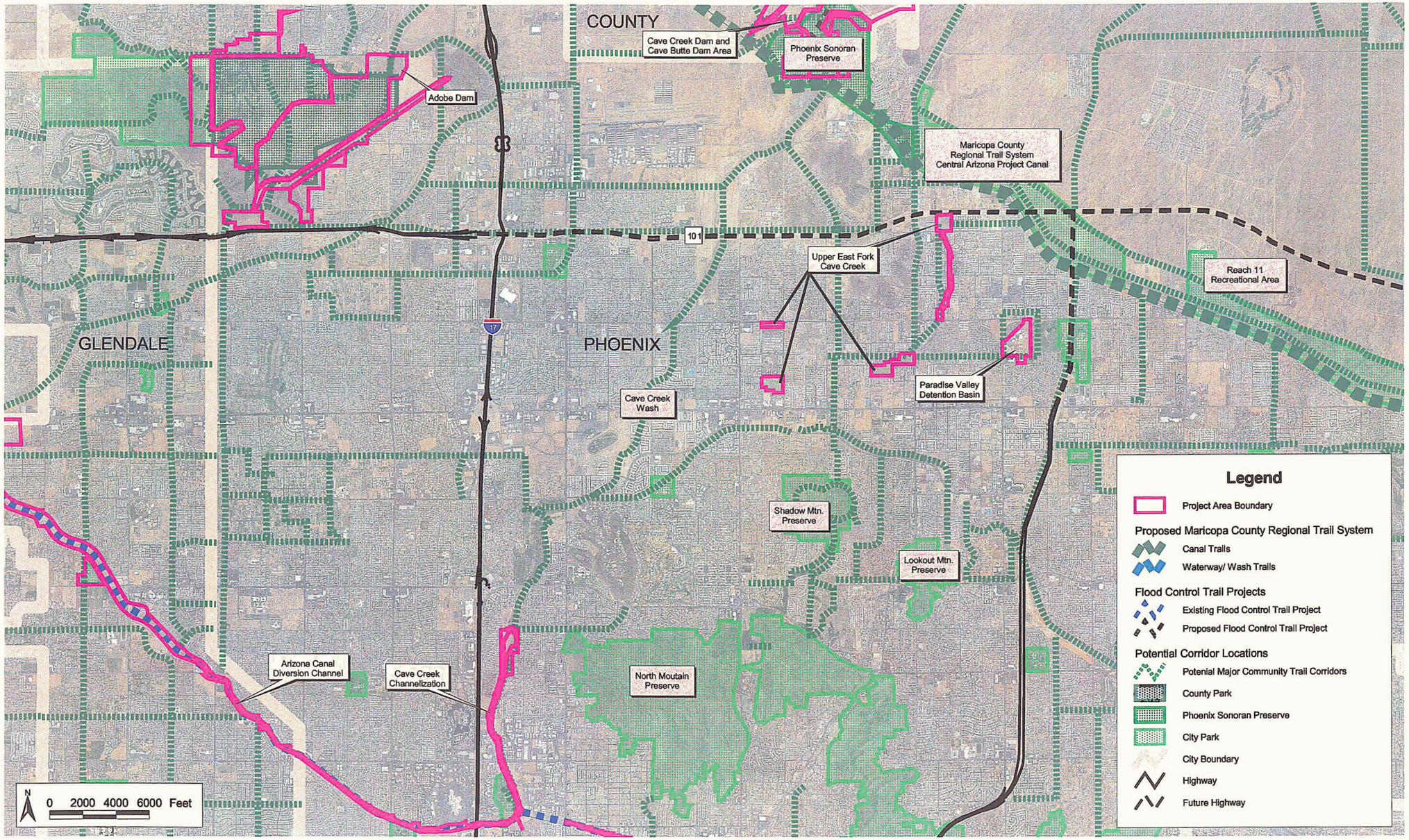
See Potential Corridor Locations Map for identified connection opportunities.

Coyote Basin Park – Zone One



Inlet channel at Grover Park Basin – Zone One

Grover Park Basin – Zone One



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter&Burgess

Potential Corridor Locations Map

Upper East Fork Cave Creek & Paradise Valley Detention Basin #4

Aesthetic Treatment and Landscaping Policy Conformance

Zone One – Retention Basins and Community Parks

After the formulation of zone areas, each zone was rated utilizing the evaluation criteria outlined on page 7 of this report. What follows is a brief description of each zones' conformance to the aesthetic policy established by the Flood Control District in 1992. See also the Site Evaluation Criteria located at the end of each structure section.

The retention basins and community parks conform to aesthetic policy for the following reasons:

- There is on-site screening with trees and shrubs used to blend the structure.
- The disturbed areas are graded and re-planted to match the surrounding area.
- There are plantings used to provide erosion control and protect visual qualities.
- The plantings used will not cause an impedance to design function.
- The basins are kept free of weeds and debris.

The retention basins and community parks do not conform to policy for the following reasons:

- The profile or height of the basin does not vary to modulate the outline.
- There is no off-site screening with plantings or earthwork buffers used.

Zone Two – Earthen Channel Area

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

- The alignment of the earthen channel area meanders to vary from a straight line.
- There is off-site screening with plantings or earthwork buffers are used.

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

- The profile or height of the channel does not vary to modulate the outline.
- The side slopes of the channel are not varied to simulate the natural terrain.
- The structure is not designed to blend into the contour of the natural terrain.
- There is no veneering of the channel with indigenous rock.
- Disturbed areas are not graded and replanted to match surrounding area.
- The channel is not re-seeded to enhance the growth of vegetation.
- There are not plantings used to provide erosion control and protect visual qualities.

Zone Three – Detention Basin and Community College

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

- The alignment of the basin meanders to vary from a straight line.
- There is on-site screening with trees and shrubs used to blend the structure.
- There is off-site screening with plantings or earthwork buffers are used.
- The plantings used will not cause an impedance to design function.

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

- The profile or height of the basin does not vary to modulate the outline.
- The side slopes of the basin do not vary to simulate natural terrain.
- The basin is not designed to blend into the contour of the natural terrain.
- The structure is not re-seeded to enhance the growth of vegetation.
- Disturbed areas are not graded and replanted to match the surrounding area.

Surrounding Site Character

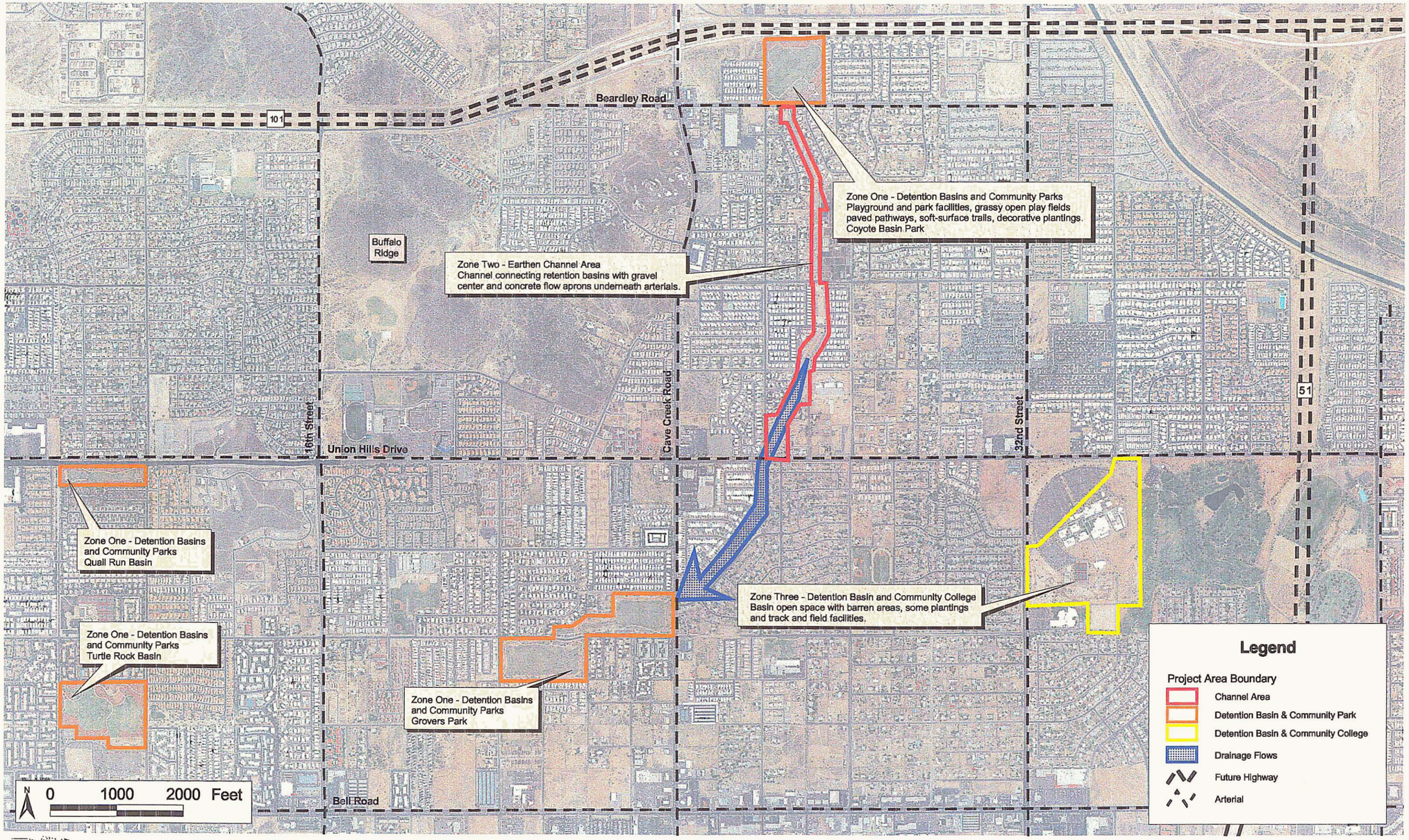
Zone One – Retention Basins and Community Parks

The basin parks were grouped together in one zone primarily because they shared the same internal character and surrounding character. While the character of the residential development surrounding the basin parks does vary, all of the basin parks in this zone are surrounded by residential land use. See photos along bottom. Coyote Basin Park is the most northern basin included in this site. The basin is surrounded on three sides with residential development. To the west is a mobile home park and to the east of the basin are older single-family homes, both developments are oriented away from the park. There is a small commercial center located to the southwest of the basin. Highway 101 borders the park to the north. The highway is quite audible and visible from the site. With the exception of the south side along Beardsley Road, walls surround the park. Grovers Park, located south along the earthen channel area is also encompassed by residential develop-

Turtle Rock Basin – Zone One

Surrounding character, Turtle Rock Basin – Zone One

Inlet channel at Quail Run Basin – Zone One



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ter-Burgess

Site Map

Upper East Fork Cave Creek & Paradise Valley Detention Basin

ment. Mobile home parks line the north and west sides. There are apartment buildings located directly south of the basin. Cave Creek Road borders the park's east side and is quite visible and audible. There are two schools located within a half mile. Turtle Rock Basin is located to the west of Grovers Park. The basin is surrounded by residential development on three sides. To the west are older single-family homes, to the north is a newer multi-family residential development and to the east are newer single-family homes. The apartment development to the north is walled and there is no way to access the park from the apartments. None of the residential developments are oriented towards the park basin. To the south, there is a large warehouse with loading dock for semi-trucks. This property is walled and there is one access point from the warehouse to the park basin. Lookout Mountain Preserve can be seen in the distance. Quail Run Basin is located to the north of Turtle Rock Basin. This park is has a long linear shape and it sits adjacent Union Hills Drive. The road is visible only from the outer edges of the site and not from the basin bottom. The basin is bordered to the east, south, and west by residential development. The single-family homes surrounding the basin are newer and well kept. See photo, bottom left.

Zone Two – Earthen Channel Area

The channel area connects Coyote Basin Park with Grovers Park. Both of these parks that adjoin the north and south ends of this zone are landscaped and well maintained. Between the north and south ends, the surrounding property consists of mostly residential development. The residential development character ranges from older single-family homes, homes with horses and mobile home parks. Commercial uses such as retail shops located near major street intersections are not visible from this zone. There is an elementary school to the east, adjacent to this zone, north of Union Hills Drive, which is visible from the channel area. Buffalo Ridge Hills, located directly to the west, are visible from the channel and consist of rocky, undeveloped desert hillsides.

Zone Three – Detention Basin and Community College

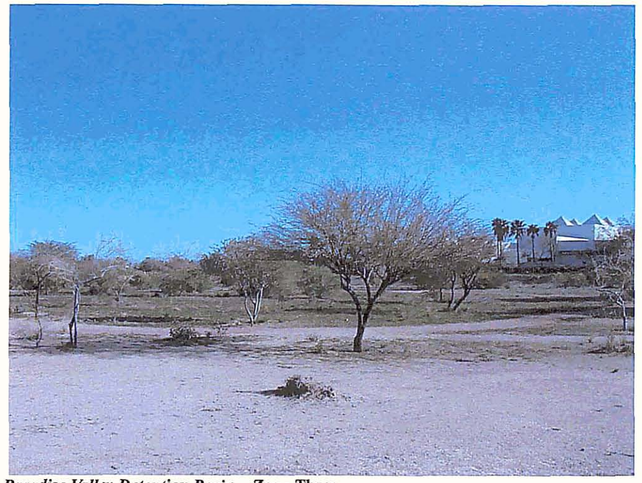
The detention basin is located adjacent to Paradise Valley Community College. The college and associated parking area is located to the north of the basin. Similar to the other, smaller basin parks, this basin is surrounded by residential development on three sides. Beyond the college and north of Union Hills Drive, are small single-family homes that are oriented away from the street. The homes located to the west and south of this zone are similar in character as the homes to the north. Both of these developments are also oriented away from the basin area. Also to the south of this zone is a public library. To the east, is Paradise Valley Park Golf Course and beyond the golf course is Paradise Valley Park. The turf and trees of the golf course are visible from the basin while the park beyond is not. See photos, bottom right and center.

Site Impressions

Zone One – Retention Basins and Community Parks

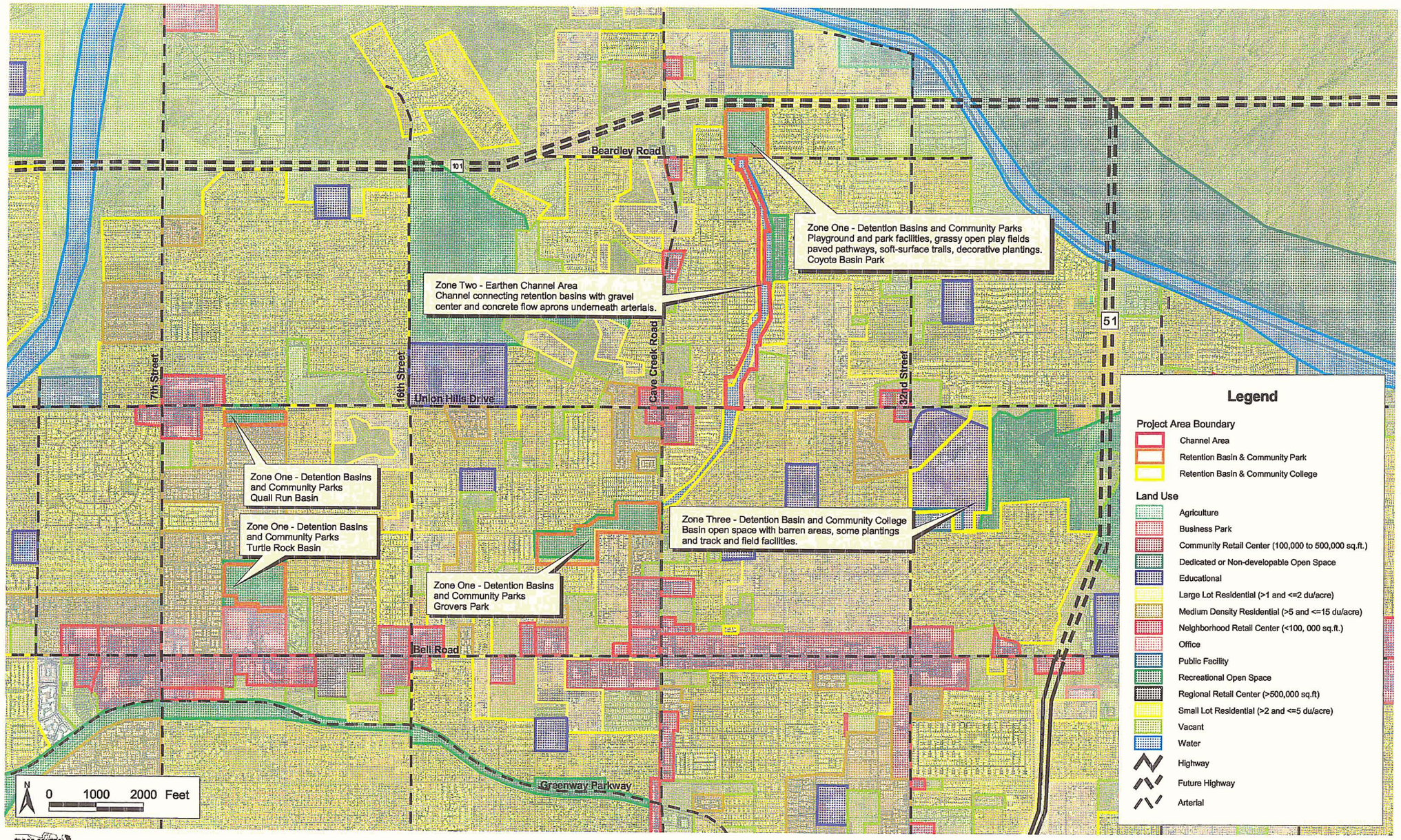
The park basins included in this site are all in moderately good condition and are well used by the neighboring communities. Although minor aesthetic improvements could be recommended, because of their condition and use, the basin parks are considered successful examples of combining flood control structures with recreational amenities. Coyote Basin Park has a large grassy basin area with trees and shrubs along the basin embankment sides and a concrete path loop around the periphery. There is a plaza area outside of the basin with a circular playground and picnic tables underneath a grid of trees. Parking for the park is located along the street or there is a parking lot located by the play area, outside of the basin. Grovers Park is made up of two basin areas that are connected under Grover's Avenue, which dissects the park. There is no pedestrian connection between the basins without climbing up the basin side slopes to access the other side. The basin sides are sparsely landscaped and have decorative rock cover. Because of the basin's steep side slope and lack of ground cover there is erosion along the banks of the basin. There is a concrete path loops around each basin, the basin side of the walk has turf while the sloped side of the walk has shrubs. There is a concrete flood control structure located in the northeast corner of the park, which is quite visible from the northern portion of the park because it strongly contrasts the side slope rock color and the basin turf texture. Turtle Rock

Quail Run Basin – Zone One



Paradise Valley Detention Basin – Zone Three

Paradise Valley Detention Basin – Zone Three



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Carter•Burgess

Site Analysis Map

Upper East Fork Cave Creek & Paradise Valley Detention Basin

Basin Park consists of a turf-lined basin with shrub and decorative rock lining the basin side slopes. Like Grovers Park, a perimeter concrete path separates the shrub and turf areas. There are parking facilities located at the southeast corner of the park and play equipment at the northeast corner. Quail Run Basin is a single basin linear shaped park. It has elevated play and picnic areas, and an organic form clay colored retention pool located on the west end of the basin. There are concrete culverts that feed floodwater into the basin located at the east end. While the landscaping along the basin edge screens the Union Hills Drive to the north, the concrete culverts are not well screened from view. There are, however, adequate landscape buffers used around the play and picnic spaces.

Zone Two – Earthen Channel Area

The earthen channel is covered with weeds and un-maintained grass. The channel's side slopes are uniform in shape and its un-maintained condition strongly contrasts that of the well-maintained park areas at each of the channel's ends. There are areas of the channel that are littered with debris, especially where the channel crosses under major roadways.

Zone Three – Detention Basin and Community College

Most of the area included in this zone consists of un-landscaped, disturbed land. The remainder of this zone includes the community college buildings, college recreational facilities and parking. Recreational facilities include a running track under construction, tennis courts, a weight training facility and handball courts located adjacent the north side of the detention basin. There is no clear connection between the college and the public library located to the south or from the public library to the neighborhoods beyond.

Opportunities and Constraints for Retrofit Treatments

Zone One – Retention Basins and Community Parks

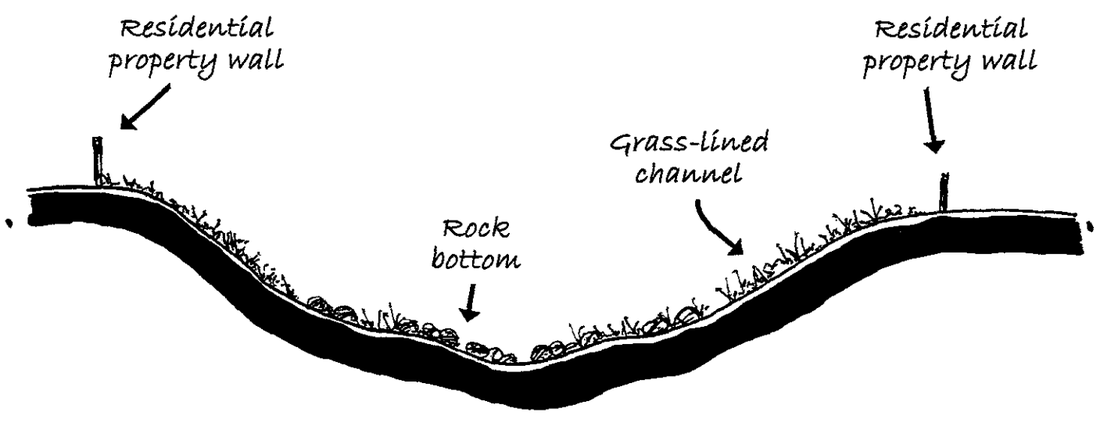
Because Coyote Basin is in such good condition, there is little opportunity for improvement. Also, because the park is located between Highway Loop 101 and Beardsley Road, expansion of the park would be costly and is not considered necessary at this time because of the availability of so many other parks within the area. The park could benefit from a safe connection to Grovers Park via the earthen channel and Grovers Park would also benefit from this connection. Grovers Park is also in good condition but would benefit from additional shrub and tree landscaping along the basin bank periphery and earthwork remediation to prevent and repair slope erosion. The park could also benefit from a safer and more accessible pedestrian connection from the north half to the south half over Grovers Avenue. Turtle Rock Basin and Quail Run Basin are in good condition and there is little room for improvement internally with the exception of additional shade trees and landscape buffers along basin side banks. There is an opportunity to foster greater connectivity to the adjacent neighborhood by removal of some of the walls that surround the Turtle Rock Basin or construction of gated access points. In addition to greater connectivity between the parks themselves, each park would also benefit from greater neighborhood connectivity through the construction of safe bike lanes and pedestrian walks. Lastly, all of the retention basin parks would aesthetically benefit from modification of the basin side slopes to help break up the uniformity of the side slopes.

Zone Two – Earthen Channel Area

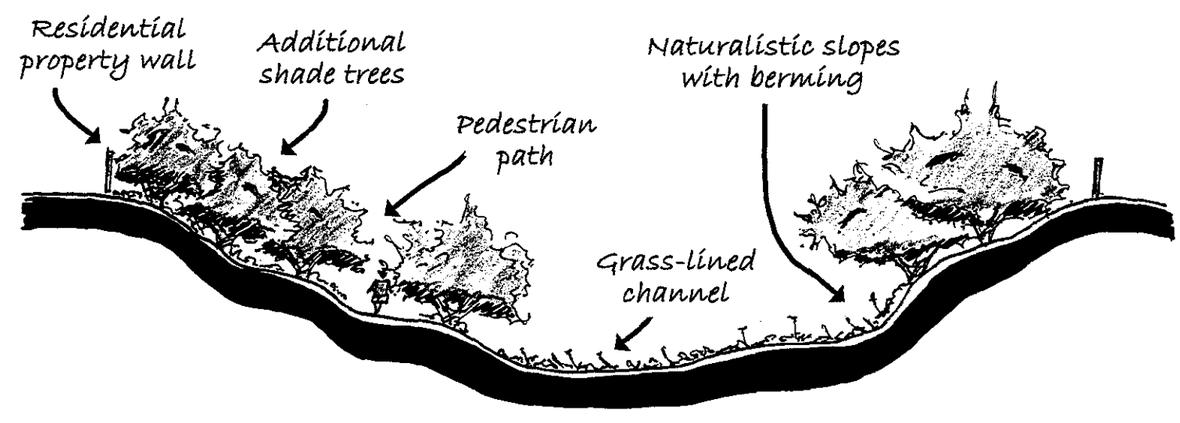
There is opportunity to create a linear park and trail corridor that connects Coyote Basin Park and Grovers Park. A primary constraint to creation of a path connection is that the Flood Control property actually ends just north of Union Hills Drive, several blocks north of Grovers Park. A secondary constraint to retrofit efforts would be security since the adjacent homes that line the channel are oriented away from it. There is an opportunity to clean up the discarded debris and discourage vehicular use of the channel, which would improve the visual quality of the surrounding community as well. Also, the concrete aprons located in the channel at street intersections would benefit from an aesthetic treatment and could perhaps become an opportunity for community identity art.

Zone Three – Detention Basin and Community College

There is a significant opportunity to provide pedestrian connections and outdoor spaces that unite the detention basin area with both the library and the community



Upper East Fork Cave Creek & Paradise
Retention Basin - Existing Conditions (Section A)
Not to scale



Upper East Fork Cave Creek & Paradise
Retention Basins - Potential Retrofit (Section A)
Not to scale

college. The connections could be expanded upon to include the surrounding neighborhoods. Creation of library or school related outdoor spaces are constrained by the function of the basin as floodwater storage.

Landscape Aesthetic and Multi-Use Treatment Recommendations

See concept graphic on page 196. Also refer to conceptual cross sections illustrating the existing conditions and potential retrofits. Refer to concept graphic for cross section locations.

Zone One – Retention Basins and Community Parks

Minimal retrofit improvements are proposed for the basin park zone. Within each park site, the concept proposes that the side slopes of the basins are re-graded to allow more variety of basin slope edge. The concept also advocates adding plant material, particularly trees for shade in rock and shrub areas and selected turf areas slightly above the basin bottom. At larger square shaped parks such as Coyote Basin Park, Turtle Rock Basin Park and the southern half of Grovers Park, delineated sports fields are proposed. Additional recreation facilities are to be added, particularly to Turtle Rock Basin Park. This park would also benefit from picnic areas to accommodate warehouse employee breaks and lunches from the building located to the south. Several parks require landscape screening to provide buffer from major roads and highways, such as Coyote Basin Park, which needs buffering from Beardsley Road; Quail Run Basin, which needs buffering from Union Hills Drive; and the east portion of Grovers Park, which needs buffering from Cave Creek Road. Lastly, the concept proposes a coordinated effort between the City of Phoenix and Maricopa County Flood Control District to create clearly delineated connections between all of the zones included in this site.

Aesthetic Treatment Retrofit Opportunities

Earthwork modification and repair of basin side slopes.

Landscaping Treatment Retrofit Opportunities

Additional tree and shrub plantings along basin side slopes.
Additional irrigation that ties to existing irrigation system.

Multi-Use Treatment Retrofit Opportunities

Delineation of sports fields.
Park connections to surrounding neighborhoods and businesses.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two – Earthen Channel Area

The concept's main focus is to create a safe and easily accessible pedestrian and bike connection between Coyote Basin Park and Grovers Park. The concept proposes removal of a portion of the rock along the bottom of the channel and replacing it with grass. The sides of the channel would be re-contoured to provide variety of slope shapes while not impeding storm water flows. A pedestrian path would meander along the sides of the channel, which would be lined with a variety of shrub material and trees for shade. The path's extension south of Union Hills Drive to Grovers Park would be a coordinated effort between the District and the City of Phoenix. The concept also advocates a community art element to be developed at the concrete aprons located at street intersections along the channel.

Aesthetic Treatment Retrofit Opportunities

Earthwork modification of the channel's side slopes.
Removal of existing rock in several key areas.

Landscaping Treatment Retrofit Opportunities

Trees and shrubs along both sides of channel for shade and visual interest.
Turf areas along the channel bottom.
Landscape irrigation.

Multi-Use Treatment Retrofit Opportunities

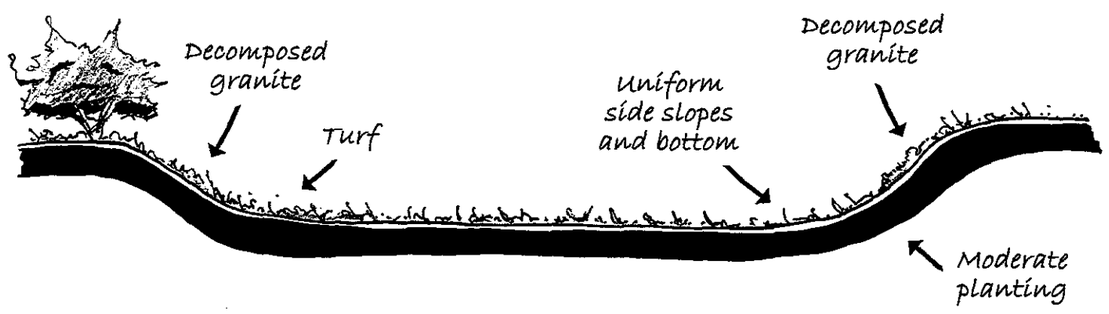
Path connection located on one side of channel.
Community identity art elements at concrete apron areas.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

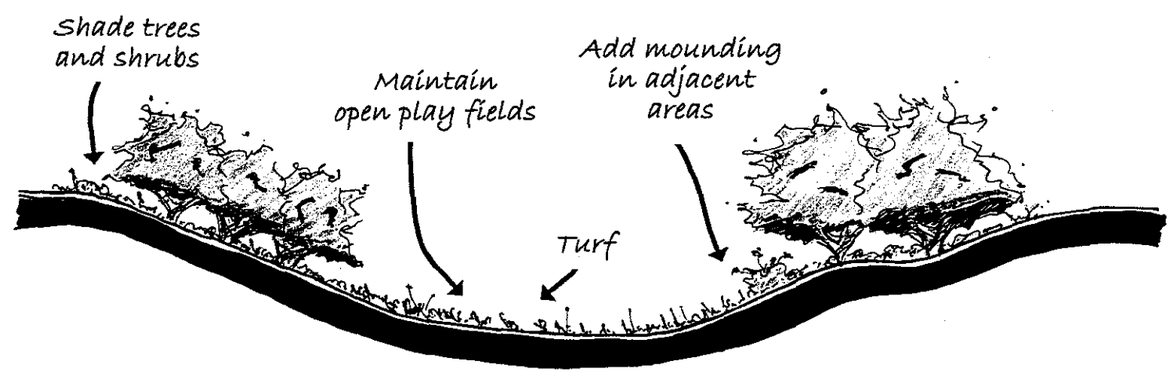
None identified.

Zone Three – Detention Basin and Community College

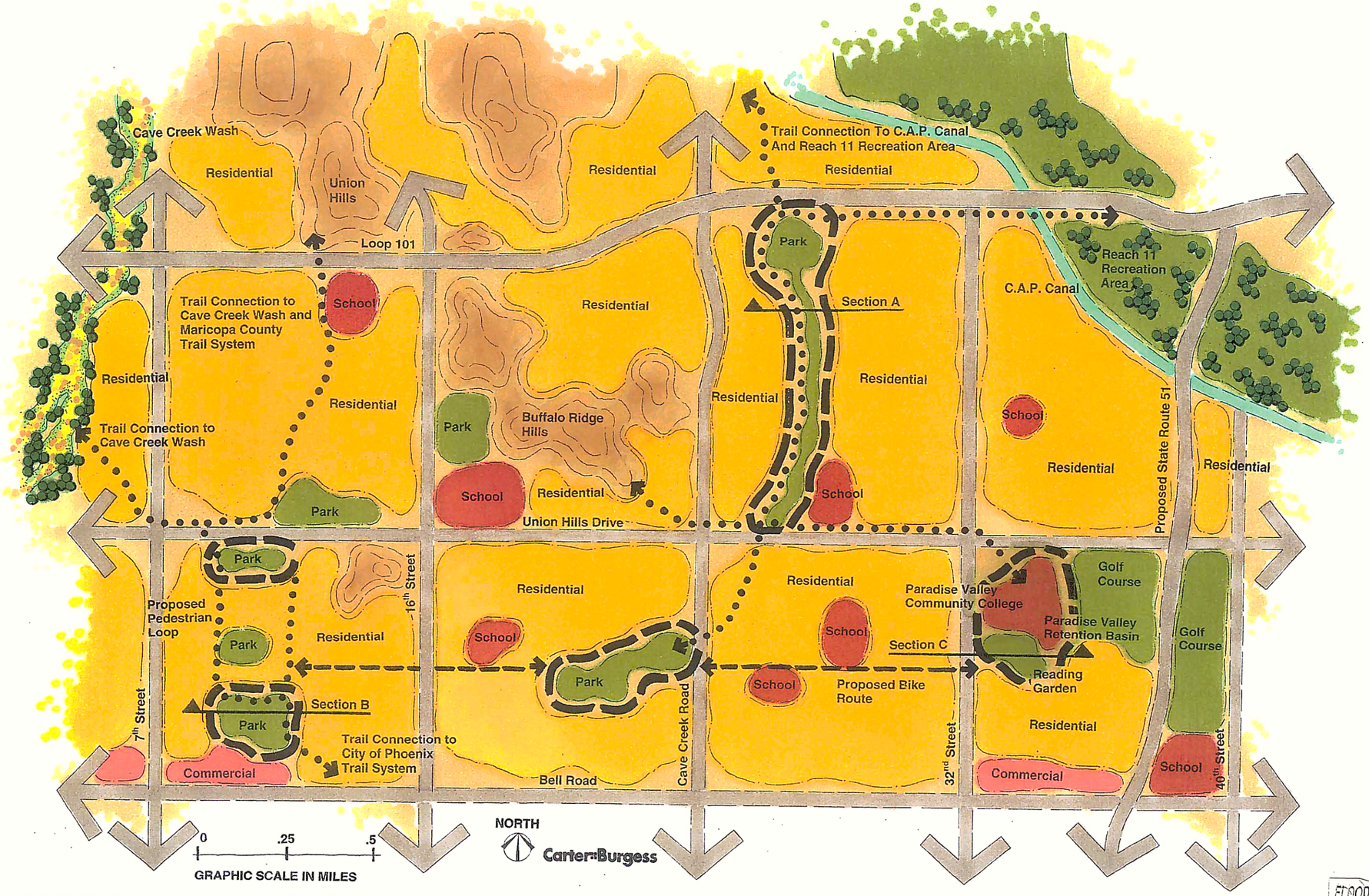
The concept proposes creation of a reading garden that connects the college with the library and the surrounding neighborhood. The reading garden would consist of a series of outdoor "rooms" with seating and shade. A path would loop around



Upper East Fork Cave Creek & Paradise
Detention Basin - Existing Conditions (Section B)
Not to scale



Upper East Fork Cave Creek & Paradise
Detention Basin - Potential Retrofit (Section B)
Not to scale



UPPER EAST FORK CAVE CREEK AND PARADISE RETENTION BASIN CONCEPT

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

the perimeter to allow connections and viewing opportunities of the adjacent golf course landscape. The area would have predominately shrub and tree areas with a limited amount of turf located in the basin bottom.

Aesthetic Treatment Retrofit Opportunities

Landscape berms along basin edges to add visual interest.

Landscaping Treatment Retrofit Opportunities

Tree and shrub plantings for shade and visual screening.
Turf areas in basin bottom.
Landscape irrigation.

Multi-Use Treatment Retrofit Opportunities

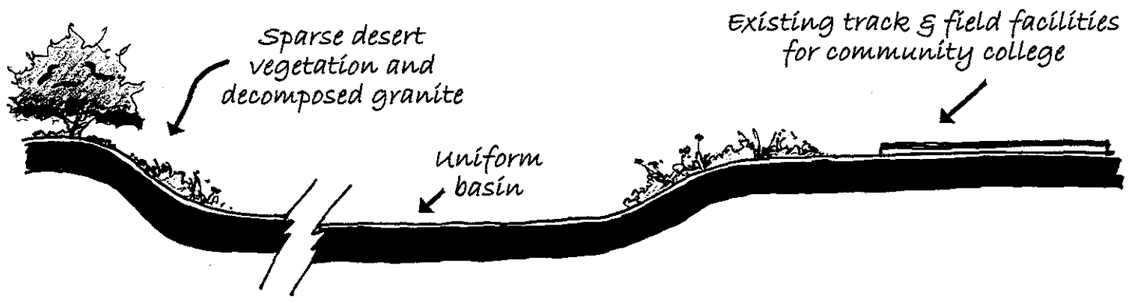
Path connection to college, reading garden, library and adjacent neighborhood.
Reading garden with seating and shade ramadas.

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

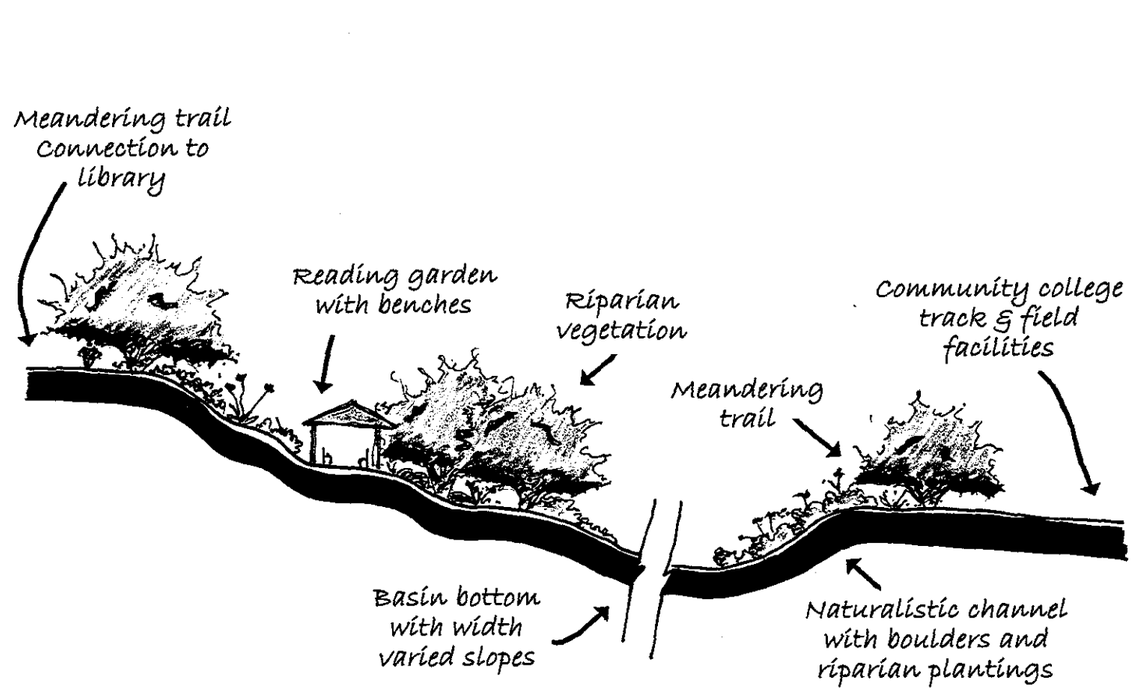
Hydrologic Engineering Synopsis of Structure

Not Available.



Upper East Fork Cave Creek & Paradise
Detention Basin - Existing Conditions (Section C)

Not to scale



Upper East Fork Cave Creek & Paradise
Detention Basin - Potential Retrofit (Section C)

Not to scale

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Upper East Fork Cave Creek & Paradise Valley Detention Basin	***1 to 5***	**1** Non-Conforming Element **4** Predominantly Conforming Element
	Zone One - Detention Basins and Community Parks		**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.	4	The alignment of the basin meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	2	The profile of the park varies to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The side slopes of the parks vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	3	The structure is moderately designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	There is some on-site screening with trees and shrubs to blend the basin.
6	There is off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the basin with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	5	Disturbed areas are graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	5	Plantings are used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	Plantings are used that will not cause an impedance to design function.
11	The structure is re-seeded to enhance the growth of vegetation.	4	The basin has been reseeded to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	5	The basin and maintenance roads are kept free of weeds and debris.
	Conformance Average	**3.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian corridor or desert wash features to preserve.
14	There are landscape or natural features to preserve.	5	There are the landscaped features to preserve.
15	There are wildlife habitat areas to preserve.	2	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 within this zone to preserve.	4	There are scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	2	There are no panoramic views from the parks.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	5	The park has been revegetated.
21	The existing plantings match the community character.	5	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The parks' size and scale are proportional to their surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	5	There is existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	5	There are water recharge and floodwater retention areas.
27	The structure does not have negative on-site visual problems.	4	The parks have minor negative on-site visual problems with erosion.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	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	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**3.67**	
	Conformance and Aesthetic Features Average	**3.63**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Upper East Fork Cave Creek & Paradise Valley Detention Basin Zone One - Detention Basins and Community Parks	***1 to 5***	**1** Non-Conforming Element **2** Slightly Conforming Element **3** Moderately Conforming Element **4** Predominantly Conforming Element **5** Fully Conforming Element
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	There are some existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the maintenance road(s).
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 retrofits due to site size.	4	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits 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 retrofits due to existing slopes.	4	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**4.64**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to local foothills, Reach 11, Cave Creek, & Sonoran Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	Adjacent land has natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	Adjacent land needs design guidelines for future development.
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 some opportunities for additional small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.61**	
	Existing and Future Multi-Use Average	**4.12**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.87**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Upper East Fork Cave Creek & Paradise Valley Detention Basin Zone Two - Earthen Channel 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.	4	The alignment of the channel meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the channel does not vary to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the channel do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The structure is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	1	On-site screening with trees and shrubs are not used to blend the channel.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the channel with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	1	Plantings are not used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	1	Plantings are not used.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The channel's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	2	The structure and maintenance roads are not kept free of weeds and debris.
	Conformance Average	**1.67**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	3	There are riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	3	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	3	There are 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 within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	2	There are no panoramic views from the basin.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	3	The channel has 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.	5	The channel's size and scale are proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	3	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	1	There are no water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	2	The channel does have negative on-site visual problems.
28	There are no overhead electrical lines or utility towers.	1	There are overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	1	There are intersecting arterial streets.
31	There are no noise impacts that need buffering.	1	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**2.33**	
	Conformance and Aesthetic Features Average	**2.00**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Upper East Fork Cave Creek & Paradise Valley Detention Basin Zone Two - Earthen Channel Area	*1 to 5*	**1** Non-Conforming Element **2** Slightly Conforming Element **3** Moderately Conforming Element **4** Predominantly Conforming Element **5** Fully Conforming Element
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	3	There are existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	3	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	4	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the maintenance road(s).
40	There are no physical constraints to accessing the site.	3	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use retrofits due to site size.	3	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits due to structural hazards.	4	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use retrofits due to existing slopes.	4	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**4.00**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to local foothills, Reach 11, Cave Creek, & Sonoran Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the community basin parks and the Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	Adjacent land has natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	Adjacent land needs design guidelines for future development.
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.	1	There are no opportunities for small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	2	There are limited opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.28**	
	Existing and Future Multi-Use Average	**3.64**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**2.82**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Upper East Fork Cave Creek & Paradise Valley Detention Basin	*1 to 5*	**1** Non-Conforming Element; **2** Slightly Conforming Element; **3** Moderately Conforming Element; **4** Predominantly Conforming Element; **5** Fully Conforming Element
	Zone Three - Detention Basin and Community College		
	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 of the basin meanders to vary from a straight line.
2	The profile or height of the structure varies to modulate the outline.	1	The profile of the park varies to modify the outline.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The side slopes of the basin do not vary to simulate the natural terrain.
4	The structure is designed to blend into the contour of the natural terrain.	1	The structure is not designed to blend into the contour of the natural terrain.
5	There is on-site screening with trees and shrubs used to blend the structure.	5	On-site screening with trees and shrubs are used to blend the basin.
6	There is off-site screening with plantings or earthwork buffers are used.	4	Off-site screening with plantings or earthwork buffers are used.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating of the basin with indigenous rock.
8	The disturbed areas are graded and replanted to match the surrounding area.	2	Disturbed areas are not graded and replanted to match surrounding area.
9	There are plantings used to provide erosion control and protect visual qualities.	3	Plantings are used to provide erosion control and protect visual qualities.
10	The plantings used will not cause an impedance to design function.	5	Plantings are used that will not cause an impedance to design function.
11	The structure is re-seeded to enhance the growth of vegetation.	1	The park's sides are not furrowed to enhance the growth of vegetation.
12	The structure and maintenance roads are kept free of weeds and debris.	3	The structure and maintenance roads are not kept free of weeds and debris.
	Conformance Average	**2.58**	
	Existing Aesthetic Features		
13	There are riparian corridor or desert wash features to preserve.	1	There are no riparian or river corridor features to preserve.
14	There are landscape or natural features to preserve.	5	There are landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	3	There are 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 within this zone to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure or zone.	2	There are no panoramic views from the basin.
19	There is a meandering low-flow feature modeled on desert washes.	1	There is no meandering low-flow feature modeled on riparian washes.
20	The structure or zone has naturally revegetated.	4	The basin has revegetated.
21	The existing plantings match the community character.	5	The existing plantings match the community character.
22	The structure's size and scale are proportional to its surroundings.	5	The basin's size and scale is proportional to its surroundings.
23	The attendant flood control facility structures blend into the surroundings.	1	The attendant flood control facilities structures do not blend into surroundings.
24	The adjacent properties positively impact the site.	4	The adjacent properties positively impact the site.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge or floodwater retention areas.	5	There are water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	4	The basin does not have negative on-site visual problems.
28	There are no overhead electrical lines or utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the zone.	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.	2	There are noise impacts that need buffering.
32	There is a need for additional aesthetic and landscape retrofit treatments.	5	Additional landscape features are needed.
33	There are opportunities for aesthetic and landscape retrofit treatments.	5	There are opportunities for landscape enhancements.
	Existing Aesthetic Features Average	**3.33**	
	Conformance and Aesthetic Features Average	**2.96**	

Site Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - Upper East Fork Cave Creek & Paradise Valley Detention Basin	***1 to 5***	1 Non-Conforming Element; 2 Slightly Conforming Element; 3 Moderately Conforming Element; 4 Predominantly Conforming Element; 5 Fully Conforming Element
	Zone Three - Detention Basin and Community College		
	Existing Multi-Use Features		
34	There are existing natural features beneficial for a greenway corridor.	2	There are no existing natural features beneficial for a greenway corridor.
35	There are existing multi-use features.	5	There are existing multi-use features.
36	The zone is currently accessible for multi-use.	5	The area 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.	5	Multi-use features could be added without compromising public safety.
39	There is space to meander the access/ maintenance road(s).	5	There is space to meander the maintenance road(s).
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 retrofits due to site size.	4	There are constraints to multi-use due to site size.
42	There are no constraints to multi-use retrofits 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 retrofits due to existing slopes.	4	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use retrofits due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
	Existing Multi-Use Features Average	**4.45**	
	Future Multi-Use Features		
45	There are possible connections to open space.	5	Possible connections to local foothills, Reach 11, Cave Creek, & Sonoran Preserve.
46	There is a possible connection to the Maricopa County Regional Trail System.	5	There is a possible connection to the adjacent Central Arizona Project Canal.
47	There are possible connections to the local trail system.	5	The local trail system makes numerous connections to this site.
48	There are possible connections to residential neighborhoods.	5	There are possible connections to the nearby neighborhoods.
49	There are possible connections to recreation areas.	5	This site is adjacent to the community basin parks and the Reach 11 Recreation Area.
50	There are possible connections to multi-modal facilities.	5	The areas adjacent to the arterials may provide multi-modal connection opportunities.
51	There are possible connections to local commercial areas.	3	There are no existing commercial areas, but future development may provide nodes.
52	There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in this zone.
53	Site property could be sold to allow for special use commercial areas.	1	Site property could not be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements and buffering.	3	Adjacent land could be acquired to provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	3	Adjacent land has natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	Adjacent land needs design guidelines for future development.
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 some opportunities for additional small-scale local park facilities.
59	There are opportunities for riparian or desert wash areas.	1	There are no opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	5	There are opportunities for recharge basins or ponding areas.
61	There are opportunities for multi-use trails.	5	There are opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	5	There are opportunities for separated-use trails.
	Future Multi-Use Features Average	**3.61**	
	Existing and Future Multi-Use Average	**4.03**	
	Conformance, Aesthetic Features, Existing and Future Multi-Use Average	**3.50**	

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 into 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 to 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:

Abbott Laboratories Fund

This fund is designed to provided support through cash grants to United States-based recipients who operate in the areas of health and welfare, education, culture, art, civic and public policy.

Contact: Abbott Laboratories Fund
Address: Department 379, Building AP6D-2
100 Abbott Park Road
Abbott Park, IL 60064-6048
Website: www.abbott.com
Deadlines: Open
Financial Data: The average grant is between $1,000 - $5,000
Application Info: Apply in writing.

Ackerley Corporate Giving

Seeks to improve the community as a place to live and work. Believe in developing strong community partnerships. Support, both financially and with in-kind services, qualified organizations in communities where our properties conduct business.

Contact: The Ackerley Group
Address: Ackerley Corporate Giving
1301 5th Avenue, Suite 4000
Seattle, WA 98101
Website: www.ackerley.com
Email Address: corporategiving@ackerley.com
Phone: (206) 624-2888
Fax: (206) 623-7853
Deadlines: Open
Application Info: Each request will be evaluated on its own merits with the following criteria in mind. The applicant must qualify as a 501(c)3 tax-exempt organization. Must represent a charitable agency in cities where our companies do business. Grants are generally to be expended within one year, without expectation of further support. See website for further details.

Agrilink Foods/Pro-Fac Foundation

The Agrilink Foods/Pro-Fac Foundation provides grants to not-for-profit organizations operating in communities where Agrilink Foods has facilities, or where Pro-Fac members are located. Primary giving areas include health, community services, education, youth, agricultural research and cultural programs.

Contact: Agrilink Foods/Pro-Fac Foundation
Attention: Mrs. Cathy Kilgore
Address: 3303 South 35th Street
Tacoma, WA 98409
Website: www.agrilinkfoods.com
Phone: (253) 383-1621 ext. 3263

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.

Alliant Energy

Provide funds that benefit the citizens of the communities served by Alliant Energy. The Alliant Energy Foundation will partner with the communities in which we have an interest to improve the quality of life now and in the future.

Contact: Alliant Energy Foundation, Attention: JoAnn Healy
Address: 222 West Washington Avenue
Madison, WI 53703
Email Address: joannhealy@alliant-energy.com
Phone: (608) 252-5545

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 environmental 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: American 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 Express

Grants are given in three areas: Community Service, Cultural Heritage, and Economic Independence.

Contact: American the Beautiful Fund
Address: 1730 K Street NW, Suite 1002

Washington D.C. 20006
Email address: http://home3.americanexpress.com
Application Info: Provide a hard-copy proposal in the form of a letter, no more than two to three pages in length.

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 Heritage Rivers' Catalog of Services

EPA's American Heritage Rive Internet site offers a listing of services available to those working to improve the health of rivers across the nation. Topics include communications; data collection and evaluation techniques; education and outreach; hands-on assistance; financial assistance and guides; research and development; planning and management; laws and regulations; and information centers, publications, and maps and database

Website: http://www.epa.gov/rivers/services/

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.

AMP Fund

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

Contact: The AMP Foundation, c/o Tyco Electronics Corporation, Attention: Mary Rakoczy
Address: P.O. Box 3608
MS140-42
Harrisburg PA 17105-3608
Website: www.amp.com
Phone: (717) 592-4869

AMR Foundation

The AMR/American Airlines Foundation is a corporate foundation that works to help meet the needs of non-profit organizations in the communities that American serves. General focus in community development, arts and culture, education, and health & welfare.

Contact: AMR/American Airlines Foundation
Address: P.O. Box 619616
M.D. 5575
DFW Airport, TX 75261-9616
Website: www.amrcorp.com
Fax: (817) 967-9784
Deadlines: Open
Financial Data: Open

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, NY 10021
Website: www.mellon.org
Phone: (213) 838-8400
Deadlines: Applications are reviewed throughout the year
Application Info: No special forms are required.

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 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 sate 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 Water Protection Fund
c/o Department of Water Resources
Attention: Irma Horton
Address: 500 North Third Street
Phoenix, Arizona 85004
Website: www.awpf.state.az.us
Phone: (602) 417-2460
Deadlines: Currently, the Legislature was unable to fulfill the request of funding, however approx. 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: Submit a short letter of inquiry by post, email, or fax. All letters are reviewed to see if they fall within our Program Areas. Those that do not will be immediately declined. Letters that are within our guidelines are then reviewed to determine the following: The priority of the proposed activity within the Foundation's goals, the impact of the potential results of the activities, and the availability of the Foundation's funds. No telephone calls regarding proposals.

AT&T Foundation

Support of environmental project or initiatives, particularly in the areas of technology, education, volunteerism, sustainability and clean water.

Contact: AT&T
Address: 1875 Lawrence Street, Suite 750
Denver, CO 80202
Website: www.att.com
Phone: (303) 298-6327

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
Website: www.the-body-shop.com
Phone: 01903.731500
Fax: 01903.844021

Boeing Community

Fund the protection of ancient land to the sponsorship of community programs. Boeing support for recreation and natural resources is an example of their longstanding civic initiative program.

Contact: The Boeing Company, Community Relations
Address: 5000 East McDowell Road
M/C M510-A381
Mesa, Arizona 85215

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
Application Info.: Submit online

Catalog of Federal Domestic Assistance (CFDA)

Catalog that lists all sources of federal assistance.

Contact: Federal Domestic Assistance, Catalog Staff (MVS)
Address: General Services Administration
300 7th Street, SW, Suite 101
Washington, DC 20407
Website: www.gsa.gov/fdac/
Phone: (202) 708-5126

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
Application Info: Applications are available at website.

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)

CFDs, 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. There are two ways to form a CFD: by majority vote of landowners at a special election or by a petition signed by all landowners in the proposed district.

Contact: Individual Municipalities

Community of Science (COS))

The COS Funding Opportunities Internet site, updated daily, includes information on more than 15,000 grants from around the world. Annual subscription fees are applicable.

Contact: Community of Science
Address: 1629 Thames Street, Suite 200
Baltimore, MD 21231
Phone: (410) 563-2378
Fax: (410) 563-5389
Email Address: fundingopps@cos.com

Conservation Technology Support Program (CTSP)

CTSP annually awards grants of equipment plus software to build geographic information system (GIS) capacity.

Contact: CTSP
Address: 201 Mission Street, 4th Floor
San Francisco, CA 94105
Phone: (415) 979-0474
Fax: (415) 979-0371
Email Address: ctsp@ctsp.org

Cooperative Development Foundation

CDf brings together the funds and partners to incubate and replicated 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 excluded regional parks; the statute applicable to municipalities allows development fees to be assessed for "necessary public services," which has been interpreted to include parks and open areas. There must be a reasonable relationship between the cost of the public facilities for which the development fee is assessed and the service demands of the benefit area. The development fees assessed must not exceed a proportionate share of the costs incurred or to be incurred in providing a public facility. Also, development fees must be used and expended for the benefit area that pays the development fee.

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 organization and projects with sustainability, replicability, and potential for long-term environmental impact. Interests include: energy efficiency, and conservation, environmental education, 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, CT 06880-3515
Phone: (203) 236-6498
Website: www.efaw.org
Deadlines: Open
Financial Data: $10,000 - $200,000
Application Info.: Letters of Inquiry are restricted to a maximum of two pages printed back to back on one sheet of unbleached, recycled paper. See website for details.

Energy Foundation, The

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. The foundation will also support analysis and advocacy to promote increased vehicle fuel efficiency.

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.wf.org

Environmental Cooperation Grants

The Commission for Environmental Cooperation is created by the environmental side accord to the North American Free Trade Agreement. The CEC created the North American Fund for Environmental Cooperation (NAFEC) to provide funding for community based environmental projects in North America.

Contact: Commission for Environmental Cooperation (CEC)
Address: 393 St. Jacques West, Suite 200
Montreal, Quebec Canada H2Y 1N9
Phone: (514) 350-4357
Fax: (514) 35043149
Email Address: NAFEC@ccemtl.org

Environmental Finance Program (EFP)

The U.S. Environmental Protection Agency has developed the EFP to assist communities in their search for creative approaches to funding environmental projects.

Environmental Finance Center (EFC) Network
University-based program providing financial outreach services to regulated communities.

Web Address: http://www.epa.gov/efinpage/efcpub.htm

Environmental Financing Information Network (EFIN)
An outreach service offering electronic access to many types of environmental financing information for state and local environmental programs and projects.

Web Address: http://www.epa.gov/efinpage/efin.htm

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 project, 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
Office of Community and Government Relations
Address: 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, and 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 environmental 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 of elimination of pollution across all environmental media and to strengthen the efficiency and effectiveness of State technical assistance programs in providing source reduction information to businesses.

Agency: EPA
Total Funds Avail.: $5,000,000
Eligible Applicants: 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.
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.

Environmental Support Center (ESC)

To improve the U.S. environment by enhancing the health and well-being of local, state, and regional organizations working on environmental issues.

Contact: ESC
Address: 4420 Connecticut Avenue, NW, Suite 2
Washington, DC 20008-2301
Phone: (202) 966-9843
Fax: (202) 966-4398
Email Address: general@envsc.org

Federal Highway Administration, Department of Transportation (DOT)

Provides funds to the 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 between $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, D.C. 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

Foundation Center (FC)

Publishes directories of funding opportunities.

Contact: Foundation Center
Address: 79 Fifth Avenue
New York, NY 10003-3076
Website: www.fdncenter.org
Phone: (212) 620-4320 or (800) 424-9836

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, the benefits and burdens of the funds and tax can be spread 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
Phone: (973) 540-8442
Fax: (973) 540-1211

Global Relief Eddie Bauer Tree Project

To help ensure the strength of our nation's trees, Eddie Bauer joined forces with American Forests for plantings in the US and Canada. They fund projects in certain local areas that support environmental goals such as clean rivers and streams or beautifying parks and school grounds.

Contact: Eddie Bauer, Community Relations Department
Address: P.O. Box 97000
Redmond, WA 98073-9700
Website: www.eddiebauer.com
Application Info.: Please submit your 2-3 page proposal via regular mail.

Historic Preservation Fund Grants (HPF)

Historic Preservation Fund provides matching grants to encourage private and non-federal investment in historic preservation efforts nationwide, and assists State, local governments, Indian tribes, and the National Trust for Historic Preservation with expanding and accelerating their historic preservation activities nationwide. HPF grants serve as a catalyst and "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

Identification Inventory, Acquisition, Protection and Management of Sensitive Habitat, IIPAM Heritage Fund

Projects to preserve and enhance Arizona's natural biological diversity.

Contact: Heritage Grants Coordinator, Funds/Planning Section, Arizona Game and Fish Department
Attention: Richard Maze
Additional Contact: Ms. Robyn Beck, Heritage Grants Coordinator
Funding Planning Section
Address: 221 West Greenway Road
Phoenix, AZ 85023-4312
Website: www.gf.state.az.us
Phone: (602) 789-3526
Deadlines: Open
Financial Data: Based on Arizona Lottery

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, AZ 85009
Website: www.maricopa.gov
Phone: (602) 506-4864

Laird Norton Endowment Foundation

Through the year 2004, Laird Norton Endowment Foundation will be funding in the area of sustainable forestry (restores, enhances, and then sustains a full range of forest values, both ecological and economic.)

Contact: Laird Norton Endowment Foundation
Address: 801 Second Avenue, #1300
Seattle, WA 98104
Email Address: info@lairdnorton.org

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 $10,580.00

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, AZ 85251
Phone: (480) 941-5249
Deadlines: Open
Application Info: Applications can be submitted at anytime.

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, then in-kind one for one replacement of lost habitat, third off-site replacement or enhancement, lastly 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 other land trusts 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

Multi-Objective Management (M.O.M.)

Database that contains more than 300 assistance programs offered by private, state, and federal sources. Available free of charge from the National Park Service.

Contact: Hugh Osbourne
Conservation Assistance Program
National Park Service
IMFA-RM-S
P.O. Box 25287
Denver, CO 80225
Email Address: hugh_osbourne@nps.gov
Phone: (303) 969-2781

National Agricultural Library (NAL)

NAL is a major international source for agricultural and related information. Funding resource information is available through two of the NAL's Specialized Information Centers the Water Quality Information Center (WQIC) and the Rural Information Center (RIC). The WQIC offers links to water quality-related funding information.

Contact: National Agricultural Library
Address: 0301 Baltimore Avenue
Beltsville, MD 20705
Email Address: www.nal.usda.gov
Phone: (301) 504-5755

National Center for Small Communities (NCSC)

Devoted to serving the leaders of America's smaller communities. Provides small town decision makers with the tools to govern effectively and the skills to expand local economies, protect natural resources, and preserve community character.

Contact: NCSC
Address: 444 North Capitol Street, NW, Suite 208
Washington, DC 20001-1202
Email Address: ncsc@sso.org
Phone: (202) 624-3550
Fax: (202) 624-3554

National Environmental Education and Training Foundation, Inc., The

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 supporting environmental education projects that leverage resources, bring focus to the field, and empower citizens to make informed decisions on environmental issues. Past grants 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, and zoos.

Contact: Ms. Samantha Blodgett, Grants Coordinator (202) 261-6478
Address: 1707 H Street, N.W., Suite 900,
Washington D.C. 20006
Website: www.neetf.org
Phone: (202) 833-2933
Fax: (202) 261-6464
Deadlines: Yearly
Financial Data: $4,50-$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 Network of Grantmakers (NNG)

Committed to supporting progressive social change. Provides services to both funders and grant seekers. Committed to the goal of increasing resources, financial and otherwise, to organizations working for social and economic justice.

Contact: NNG
Address: 1717 Kettner Blvd., Suite 110
San Diego, CA 92101
Email Address: nng@nng.org
Phone: (619) 231-1348
Fax: (619) 231-1349

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; 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. Primary goal of the program 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

Notice of Funding Availability (NOFA)

Allows users to generate a customized listing of announcements that appear in the Federal Register. The Federal Register, printed each business day by the U.S. Government, invites applications for federal grant programs.

Website: http://ocd.usda.fov/nofa.htm

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 that threatens recreational use and public enjoyment.

Contact: PowerBar, DIRT Program
Address: 2150 Shattuck Avenue
Berkeley, CA 94704
Website: www.powerbar.com/whoweare/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 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, AZ 85721
Email Address: kschwartz@ag.arizona.edu
Website: www.ag.Arizona.edu
www.phillips66.com
Phone: (520) 792-9591

Public Access Fund Component

To increase & maintain public access for recreation. Federal, state, local and private landowners.

Contact: Heritage Grants Coordinator, Funds/Planning Section
Arizona Game and Fish Department
Attention: Troy Christensen
Additional Contact: Ms. Robyn Beck, Heritage Grants Coordinator
Funding Planning Section
Address: 221 West Greenway Road
Phoenix, Arizona 85023-4312
Website: www.gf.state.az.us
Phone: (602) 789-3624
Financial Data: Based on Arizona Lottery

Rails-to-Trails Conservancy

The Rails-to-Trails Conservancy (RTC) 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 abandonment's; assists public and private agencies in the following 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, D.C. 20036
Website: www.railtrails.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, D.C. 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. REI funds projects that accomplish these goals by mobilizing communities, building constituencies and influencing public policy.

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. The grants—which focus on locations that are essential to outdoor recreation—are given to organizations to support specific projects.

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 the 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. However, municipalities with a population of greater than 75,000 are limited by state statutes to the issuance of revenue bonds only for utilities. The advantage to utilizing revenue bonds is that the people who use the facilities pay for the facilities via park entrance fees or other charges. The disadvantages are that only municipalities with a population of 75,000 or less have express authority to utilize revenue bonds to finance recreational facilities, and it may be difficult practically to assess a user fee for open space recreation areas in order to back the revenue bonds.

Contact: Individual Municipalities

Rockefeller Family Fund

Program emphasizes conservation of natural resources, protection of health as affected by the environment, the cessation and cleanup of pollution caused by the Department of Energy and the Department of Defense, and domestic efforts to broaden the definition of national security and global stability to include environmental security.

Contact: Rockefeller Family Fund
Address: 437 Madison Avenue, 37th Floor
Email Address: mmccarthy@rffund.org
Website: www.rffund.org
Phone: (212) 812-4252
Fax: (212) 812-4299
Financial Data: Variable

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 the 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

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. Their interests include: biological and cultural diversity, energy and transportation, and restoring the environment in urban and suburban areas.

Contact: Mr. Edward Skloot, Executive Director
The Surdna Foundation
Address: 330 Madison Avenue, 30th Floor
New York, NY 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. In addition, support was given to the Brooklyn Botanical Gardens to produce mobile active learning centers on different topics in botany and ecology.

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. Counties may not impose a countywide transaction privilege without legislative authorization. It is likely that the legislature would require voter authorization if it approved a transaction privilege tax for open space recreation areas.

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. Enhancement funds may also be used for acquisition of property and easements associated with transportation enhancement projects. Projects may be funded for an amount of up to $500,000 in federal funds; a 5.7% match is required for local projects. Flexibility in the used of funds, emphasis on measures to improve the environment, focus on a strong planning process as the foundation of a good transportation decisions – all ISTEA hallmarks – are continued and enhanced by TEA-21.

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

United States Geological Survey (USGS)

Provides funding research, water resources data collection, data management, and information transfer activities.

Email Address: www.gsa.gov/fdac/

Urban Park Recreation Recovery (UPARR)

Program was established to provide matching grants and technical assistance to economically distressed urban communities. Program 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

Urban Wildlife Habitat Fund Component – Heritage Fund

Establishment of wildlife habitat/populations in harmony with urban environmental public awareness.

Contact: Heritage Grants Coordinator, Funds/Planning Section
Arizona Game and Fish Department
Attention: Carolyn Engel-Wilson
Additional Contact: Ms. Robyn Beck, Heritage Grants Coordinator
Funding Planning Section
Address: 221 West Greenway Road
Phoenix, AZ 85023-4312
Phone: (602 789-3622
Website: www.gf.state.az.us
Financial Data: Based on Arizona Lottery

U.S. Fish & Wildlife Service

Fish & Wildlife Resources Grant Program
The fund may be used to provide grants to State 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/fresh water 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, except proposals that request matching funding for wetland and wetland-associated upland conservation projects under 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

U.S. State and Local Gateway

Internet site designed to give state and local government officials and employees easy access to federal funding information.

Website: www.statelocal.gov/funding.html

Waste Reduction Assistance (WRA)

Awards are presented to projects devoted to waste reduction, recycling, and composting.

Contact: Arizona Department of Environmental Quality Recycling Unit

	Attention: Cathy Charney
Email Address:	charney.cathy@ev.state.az.us
Website:	www.adeq.state.az.us
Phone:	(602) 207-4170 or (800) 234-5677 ext. 4170
Financial Data:	$700,000 is the estimated amount of dollars available each year

Waste Reduction Initiative Through Education, The (WRITE)

Presented to projects that educate the citizens of Arizona about waste reduction, recycling, composting, and the opportunities they have to participate.

Contact:	Arizona Department of Environmental Quality Recycling Unit, Attention: Cara Delvecchio
Email Address:	delvecchio.cara@ev.state.us
Website:	www.adeq.state.az.us
Phone:	(602) 207-4865 or (800) 234-5677 ext. 4865
Financial Data:	$250,000 is the estimated dollar amount available each year

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 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
Application Info.:	Deadlines for submitting proposals in 2001 are January 5, May 4, and September 7, with decisions made in February, June, and October.

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, CA94025
Website:	www.hewlett.org or www.info@hewlett.org
Phone:	(650) 329-1070
Fax:	(650) 329-9342

Watershed Protection Foundation

Wm C. Foundation will fund local organizations to participate more effectively in campaigns with their regional and national organization colleagues, and programs that effectively disseminate information, communication tools, or provide technical assistance to local groups.

Contact:	William C. Kenney Watershed Protection Foundation Attention: Kimery Wiltshire, Director
Address:	1001 Bridgeway, #703 Sausalito, CA 94965
Website:	www.kenneyfnd.org or www.grants@kenneyfdc.org
Phone:	(415) 332-1363
Fax:	(415) 332-2250
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, D.C. 20037
Website:	www.wwf.org
Phone:	(800) CALL-WWF
Financial Data:	Grants are available up to $10,000

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Adobe Dam

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Impoundment Area Open Space							
Aesthetic Treatment Retrofit Opportunities							
Re-contour of impoundment area basin to mimic natural desert washes and lake	1,936,000	cubic yd	$3.00	$5.00	$5,808,000.00	$9,680,000.00	See note #1
Berming to discourage undesirable vehicle access	14,667	cubic yd	$3.00	$5.00	$44,001.00	$73,335.00	
Landscaping Treatment Retrofit Opportunities							
Tree, shrub, and grass seed to mimic desert riparian wash vegetation to promote urban wildlife	1,584,000	sf	$0.10	$0.20	$158,400.00	$316,800.00	See note #2, g
Planting of key areas	66,000	sf	$0.75	$1.50	$49,500.00	$99,000.00	See note #3, a
Limited landscape irrigation of key areas	66,000	sf	$0.50	$1.50	$33,000.00	$99,000.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Lake constructed with rock drop structures that are also utilized as access points	12,222	cubic yd	$90.00	$120.00	$1,099,980.00	$1,466,640.00	
Constructed soft surface trail system with directional signage	6,600	lf	$2.50	$4.00	$16,500.00	$26,400.00	See note c, f
Soft surface parking area for fly-fishing park	7,000	sf	$0.50	$0.80	$3,500.00	$5,600.00	See note #4
Portion of tram loop	6,600	lf	$125.00	$250.00	$825,000.00	$1,650,000.00	
Subtotal					**$8,037,881.00**	**$13,416,775.00**	
Zone Two - Impoundment Area with Multi-Uses							
Aesthetic Treatment Retrofit Opportunities							
Re-contour some areas between existing amenities to create additional buffers	15,000	cubic yd	$3.00	$5.00	$45,000.00	$75,000.00	
Landscaping Treatment Retrofit Opportunities:							
Tree and shrub seeding as appropriate to provide both visual buffers between recreational uses and shade for trails linking amenities	528,000	sf	$0.10	$0.20	$52,800.00	$105,600.00	See note #5, g
Planting of roadside areas, entryways and key focal areas	52,800	sf	$0.75	$1.50	$39,600.00	$79,200.00	See note a
Limited landscape irrigation of key planting areas	52,800	sf	$0.50	$1.50	$26,400.00	$79,200.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Constructed soft surface trail system with directional signage	9,240	lf	$2.50	$4.00	$23,100.00	$36,960.00	See note c, f
Soft surface parking area for the tram station	14,000	sf	$0.50	$0.80	$7,000.00	$11,200.00	See note #6
Portion of tram loop	7,920	lf	$125.00	$250.00	$990,000.00	$1,980,000.00	
Paved road loop and access point for the ultra light flight park	13,200	lf	$30.00	$50.00	$396,000.00	$660,000.00	See note #7
Subtotal					**$1,579,900.00**	**$3,027,160.00**	
Zone Three - Dam and Emergency Spillway Structures							
Aesthetic Treatment Retrofit Opportunities							
Irregular earth placement on both sides of the dam structure	3,298,680	cubic yd	$3.00	$5.00	$9,896,040.00	$16,493,400.00	See note #8, d
Aesthetic treatment of the rock on both sides of the emergency spillway	26,000	sf	$10.00	$20.00	$260,000.00	$520,000.00	See note #9
Realignment of maintenance road to meander along top and edges	11,220	lf	$7.50	$12.00	$84,150.00	$134,640.00	See note #10
Landscaping Treatment Retrofit Opportunities							
Tree and shrub seeding on both sides of the structure to provide partial screening	1,313,720	sf	$0.10	$0.20	$131,372.00	$262,744.00	See note g
Limited planting at key areas	52,800	sf	$0.75	$1.50	$39,600.00	$79,200.00	See note a
Limited landscape irrigation of key areas	52,800	sf	$0.50	$1.50	$26,400.00	$79,200.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Soft surface trail to viewing point at north end of structure.	3,960	lf	$2.50	$4.00	$9,900.00	$15,840.00	See note c, f
Subtotal					**$10,447,462.00**	**$17,585,024.00**	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Adobe Dam

Zone Four - Foothills Area							
Aesthetic Treatment Retrofit Opportunities							
Earthwork to re-contour closed trails	7,920	lf	$2.00	$5.00	$15,840.00	$39,600.00	
Landscaping Treatment Retrofit Opportunities							
Tree and shrub seeding along trails to provide shade	211,200	sf	$0.10	$0.20	$21,120.00	$42,240.00	See note #5, g
Native seed plantings to mask closed trail areas	39,600	sf	$0.10	$0.20	$3,960.00	$7,920.00	See note #5, g
Multi-Use Treatment Retrofit Opportunities							
Soft surface trail connections to Thunderbird Park and the rest of the site's amenities	5,280	lf	$2.50	$4.00	$13,200.00	$21,120.00	See note c, f
Subtotal					**$38,280.00**	**$71,280.00**	
Zone Five - Rock Art Center Area							
Aesthetic Treatment Retrofit Opportunities							
Minor earthwork shaping in disturbed areas	10,000	cubic yd	$3.00	$5.00	$30,000.00	$50,000.00	
Landscaping Treatment Retrofit Opportunities							
Tree and shrub seeding along trails, disturbed areas and native seeding to provide a buffer for residential areas	158,400	sf	$0.10	$0.20	$15,840.00	$31,680.00	See note #5, g
Limited plantings in key areas	8,500	sf	$0.75	$1.50	$6,375.00	$12,750.00	See note a
Limited landscape irrigation of key areas	8,500	sf	$0.50	$1.50	$4,250.00	$12,750.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Soft trail connections to the rest of the site	3,960	lf	$2.50	$4.00	$9,900.00	$15,840.00	See note c, f
Tram connection to the rest of the site	2,640	lf	$125.00	$250.00	$330,000.00	$660,000.00	
Subtotal					**$396,365.00**	**$783,020.00**	
Total					**$20,499,888.00**	**$34,883,259.00**	

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area which would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*
b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*
c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*
d. *Quantity assumes an existing 2:1 slope on the dam/dike. Calculations were made with overburden at a 4:1 slope and include both sides of the dam/dike.*
e. *Buildings are estimated at $100/sf. low cost and $150/sf. high cost.*
f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*
g. *Reseeded areas are not irrigated..*

FOOTNOTES:

1. The lake is assumed to be 10' deep. The cost does not include filling the lake with water.
2. The seed area extends 50' on all sides of the wash and lake.
3. Key areas are located at trail connections and road entry at the park.
4. Assumes access and parking for 20 cars.

FLOOD CONTROL STRUCTURE ANALYSIS
Cost Estimate for Retrofit Treatments

Adobe Dam

5. Seed area extends 10' beyond trail on both sides.
6. Assumes access and parking for 40 cars.
7. Assumes asphaltic concrete paving and a road width of 25'.
8. The dam was estimated as 11,200' long and 63' high by using the hydrologic synopsis. The cost is for overburden only and does not include removal of any veneering.
9. The cost is for chemical treatment and stain applied to half of the rock to produce a weathered effect.
10. The road width is assumed 15' wide and is constructed of compacted earth.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Arizona Canal Diversion Channel

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Retention Basin and Sports Fields							
Aesthetic Treatment Retrofit Opportunities							
Re-contour basin sides and bottom edges to form naturalistic mounding	3,889	cubic yd	$3.00	$5.00	$11,667.00	$19,445.00	See note # 1, d
Removal of portions of river rock set in concrete	1,200	sf	$1.50	$3.00	$1,800.00	$3,600.00	See note # 2
Create a more naturalistic looking drop structure at the intake channel with the use of boulders	2,778	cubic yd	$90.00	$120.00	$250,020.00	$333,360.00	See note # 3
Landscaping Treatment Retrofit Opportunities							
Tree and shrub plantings primarily along the perimeter of the basin and the area in front of the intake channel	21,000	sf	$0.75	$1.50	$15,750.00	$31,500.00	See note # 4, a
Turf in the basin bottom for a multi-use play field	41,400	sf	$0.40	$0.60	$16,560.00	$24,840.00	
Turf irrigation that ties to existing system	41,400	sf	$0.75	$1.50	$31,050.00	$62,100.00	
Tree and shrub drip irrigation that ties to existing system	21,000	sf	$0.50	$1.50	$10,500.00	$31,500.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Multi-use play field area located in the basin bottom	1	each	$3,000.00	$5,000.00	$3,000.00	$5,000.00	See note # 5
Looped concrete path	3,169	lf	$15.00	$25.00	$47,535.00	$79,225.00	See note h
Site furnishings such as seating, trash receptacles, and directional signage	1	each	$20,000.00	$50,000.00	$20,000.00	$50,000.00	
Subtotal					**$407,882.00**	**$640,570.00**	
Zone Two - Covered Box Channel Area							
Landscaping Treatment Retrofit Opportunities							
Additional landscaping to provide areas for shade along the corridor	142,560	sf	$0.75	$1.50	$106,920.00	$213,840.00	See note # 6, a
Additional tree and shrub irrigation that connects to existing irrigation system	142,560	sf	$0.50	$1.50	$71,280.00	$213,840.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Additional seating and directional/ interpretive signage	2	each	$20,000.00	$50,000.00	$40,000.00	$100,000.00	See note # 7
Subtotal					**$218,200.00**	**$527,680.00**	
Zone Three - Linear Park Corridor							
Landscaping Treatment Retrofit Opportunities							
Additional landscaping along the path to provide buffering and shade	277,200	sf	$0.75	$1.50	$207,900.00	$415,800.00	See note # 6, a
Additional tree and shrub irrigation that connects to existing irrigation system	277,200	sf	$0.50	$1.50	$138,600.00	$415,800.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Seating and interpretive art elements at node areas	18	each	$20,000.00	$50,000.00	$360,000.00	$900,000.00	See note # 7
Subtotal					**$706,500.00**	**$1,731,600.00**	
Zone Four - Concrete Lined Box Channel							
Aesthetic Treatment Retrofit Opportunities							
Artist designed treatment of channel	9	each	$75,000.00	$150,000.00	$675,000.00	$1,350,000.00	See note # 8
Bridge crossings over the channel	9	each	$35,000.00	$50,000.00	$315,000.00	$450,000.00	See note # 9
Covered box channel crossings with node areas	9	each	$75,000.00	$100,000.00	$675,000.00	$900,000.00	See note # 9
Landscaping Treatment Retrofit Opportunities							
Provide appropriate trees and shrubs at covered portions of the channel	12,500	sf	$0.75	$1.50	$9,375.00	$18,750.00	See note a
Irrigation connects to existing irrigation system located along the linear park corridor	12,500	sf	$0.50	$1.50	$6,250.00	$18,750.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Art treatments and interactive "water play" features	1	each	$100,000.00	$300,000.00	$100,000.00	$300,000.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Arizona Canal Diversion Channel							
Multi-use pathway connections over the covered box channel nodes	450	lf	$15.00	$25.00	$6,750.00	$11,250.00	See note # 10, h
Subtotal					**$1,787,375.00**	**$3,048,750.00**	
Zone Five - Concrete Lined Trapezoid Channel							
Aesthetic Treatment Retrofit Opportunities							
Artist designed treatment of channel	1	each	$75,000.00	$150,000.00	$75,000.00	$150,000.00	See note # 8
Covered trapezoid channel crossings with node areas	2	each	$75,000.00	$100,000.00	$150,000.00	$200,000.00	See note # 7
Landscaping Treatment Retrofit Opportunities							
Provide appropriate trees and shrubs at covered portions of the channel	2,500	sf	$0.75	$1.50	$1,875.00	$3,750.00	See note a
Irrigation connects to existing irrigation system located along the linear park corridor	2,500	sf	$0.50	$1.50	$1,250.00	$3,750.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Art treatments and interactive "water play" features	1	each	$100,000.00	$300,000.00	$100,000.00	$300,000.00	
Multi-use pathway connections over the covered box channel nodes	200	lf	$15.00	$25.00	$3,000.00	$5,000.00	See note # 10, c
Subtotal					**$331,125.00**	**$662,500.00**	
Zone Six - Earthen Channel and Community Linear Park Corridor							
Aesthetic Treatment Retrofit Opportunities							
Relocation of the low flow channel from the center to meander back and forth along the bottom of the channel	5,544	lf	$4.00	$6.00	$22,176.00	$33,264.00	See note # 11
Earth mounding in selected areas	82,133	cubic yd	$3.00	$5.00	$246,399.00	$410,665.00	See note # 12
Landscaping Treatment Retrofit Opportunities							
Additional tree planting in turf areas to provide shade	443,520	sf	$0.35	$0.70	$155,232.00	$310,464.00	See note # 13
Additional tree and shrub planting along edges of the channel	221,760	sf	$0.75	$1.50	$166,320.00	$332,640.00	See note # 4, a
Additional irrigation connects to existing irrigation system	221,760	sf	$0.50	$1.50	$110,880.00	$332,640.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Open play fields in the channel basin	3	each	$3,000.00	$5,000.00	$9,000.00	$15,000.00	See note # 5
Multi-use sport courts adjacent to the channel basin	3	each	$25,000.00	$35,000.00	$75,000.00	$105,000.00	See note # 14
Concrete loop pathway throughout the site	36,960	lf	$15.00	$25.00	$554,400.00	$924,000.00	See note h
Additional play areas and play equipment including water play facility	1	each	$20,000.00	$50,000.00	$20,000.00	$50,000.00	
Subtotal					**$1,359,407.00**	**$2,513,673.00**	
Zone Seven - Open Space Areas							
Aesthetic Treatment Retrofit Opportunities							
Earthwork mounding to provide buffering	37,171	cubic yd	$3.00	$5.00	$111,513.00	$185,855.00	See note # 15
Landscaping Treatment Retrofit Opportunities							
Reseeding of disturbed areas where irrigation is unavailable	1,505,434	sf	$0.10	$0.20	$150,543.40	$301,086.80	See note g
Tree and shrub placement at key areas	167,270	sf	$0.75	$1.50	$125,452.50	$250,905.00	See note a
Landscape irrigation at key areas where water connection is available	167,270	sf	$0.50	$0.75	$83,635.00	$125,452.50	See note b
Multi-Use Treatment Retrofit Opportunities							
Pathway connections to the Arizona Canal Diversion Channel via open space areas	2400	lf	$15.00	$25.00	$36,000.00	$60,000.00	See note # 16, h
Small parking areas	6	each	$4,200.00	$7,000.00	$25,200.00	$42,000.00	See note # 17
Subtotal					**$532,343.90**	**$965,299.30**	
Project Total					**$5,342,832.90**	**$10,090,072.30**	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Arizona Canal Diversion Channel

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*

b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*

c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*

d. *Quantity assumes an existing 2:1 slope on the basin/channel. Calculations were made with overburden at a 4:1 slope.*

e. *Estimated at $100/sf. low cost and $150/sf. high cost.*

f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*

g. *Reseeded areas do not receive irrigation.*

h. *Paths are 5' wide standard color concrete.*

FOOTNOTES:

1. One third of the estimated 3500' of basin perimeter is to receive mounding.
2. There is an estimated 80' basin width with a 15' high bank of river rock veneer to be removed.
3. The boulder placement to cover the estimated 300' width of intake channel structure.
4. 30% of the plantable area along the basin/channel perimeter was included.
5. The cost includes field delineation and goals. Cost does not include lighting.
6. 20% of the plantable area was included.
7. The rest nodes are placed approximately two per mile.
8. One artistic treatment per mile.
9. Covered channel areas and bridge crossings alternate and are located every half mile.
10. The path length was estimated as 50' at each covered box channel crossing and 100' at each trapezoid channel crossing.
11. The estimated length of channel is 18,480'. The cost includes removal and replacement of 30% of the concrete low-flow channel.
12. The quantity is for the addition of mounding in 30% of the channel side slopes.
13. Cost is based on the 100'x100' model and was modified to include tree cost only. Trees in turf not to receive separate irrigation.
14. Sport court cost does not include lighting.
15. Each of the six open space areas is assumed to be 528'x528'. Each area to receive 3' high mounding over 20% of the surface area.
16. Each of the six open space areas have a 400' long path connection.
17. Parking has an asphaltic concrete surface and parking for 10 cars. Unit cost also includes driveway access.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Cave Creek Channelization

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Community Park							
Aesthetic Treatment Retrofit Opportunities							
Removal of grouted riprap	3,200	sf	$2.50	$5.00	$8,000.00	$16,000.00	
Landscaping Treatment Retrofit Opportunities							
Additional tree and shrub plantings to provide buffering and shade	696,960	sf	$0.75	$1.50	$522,720.00	$1,045,440.00	See note # 1, a
Additional drip irrigation connects to existing system	696,960	sf	$0.50	$1.50	$348,480.00	$1,045,440.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Trail connection to Cave Creek Wash	1,320	lf	$2.50	$4.00	$3,300.00	$5,280.00	See note c, f
Art element that utilizes water flows at riprap area	1	each	$100,000.00	$300,000.00	$100,000.00	$300,000.00	
Subtotal					**$982,500.00**	**$2,412,160.00**	
Zone Two - Retention Basin Area							
Aesthetic Treatment Retrofit Opportunities							
Construction of a naturalistic, meandering low flow channel feature	2,444	cubic yd	$90.00	$120.00	$219,960.00	$293,280.00	
Construction of adjacent wetland areas	161,333	cubic yd	$3.00	$5.00	$483,999.00	$806,665.00	See note # 2
Modify existing boulder placement with relocation and partial embedment into basin side slopes	1,500	cubic yd	$90.00	$120.00	$135,000.00	$180,000.00	
Landscaping Treatment Retrofit Opportunities							
Re-seeding of basin bottom and side slopes with native riparian vegetation	871,200	sf	$0.10	$0.20	$87,120.00	$174,240.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Soft surface trail loops around the basin edges that connect existing park trails	2,640	lf	$2.50	$4.00	$6,600.00	$10,560.00	See note c, f
Wildlife viewing stations with boardwalks that connect to trail loop	3	each	$5,000.00	$10,500.00	$15,000.00	$31,500.00	See note # 3
Subtotal					**$947,679.00**	**$1,496,245.00**	
Zone Three - Linear Parkway Corridor							
Aesthetic Treatment Retrofit Opportunities							
Path and ramp connection to rock-climbing center	200	lf	$50.00	$70.00	$10,000.00	$14,000.00	See note # 4
Landscaping Treatment Retrofit Opportunities							
Additional tree and shrub plantings to provide buffering and shade	166,320	sf	$0.75	$1.50	$124,740.00	$249,480.00	See note # 5, a
Additional drip irrigation connects to existing system	166,320	sf	$0.50	$1.50	$83,160.00	$249,480.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Fitness loop with exercise stations and mile markers	18,480	lf	$18.00	$27.00	$332,640.00	$498,960.00	See note # 6
Rest nodes with seating and shade	3	each	$20,000.00	$50,000.00	$60,000.00	$150,000.00	See note # 7
Subtotal					**$610,540.00**	**$1,161,920.00**	
Zone Four - Concrete Lined Trapezoid Channel							
Aesthetic Treatment Retrofit Opportunities							
Texture and color treatment of portions of the channel	147,840	sf	$10.00	$20.00	$1,478,400.00	$2,956,800.00	See note # 8
Removal of portions of the channel and replacement with naturalistic wash embankments	54,756	cubic yd	$5.00	$7.00	$273,780.00	$383,292.00	See note # 9
Art treatment of existing pedestrian bridge crossings	6	each	$35,000.00	$50,000.00	$210,000.00	$300,000.00	
Color treatment of safety fence	18,480	lf	$3.00	$5.00	$55,440.00	$92,400.00	See note # 10
Removal of portions of the safety fence to allow pedestrian access to the channel's recreation amenities	3,696	lf	$10.00	$25.00	$36,960.00	$92,400.00	See note # 11
Removal of top portions of the safety fence to allow visual access to the channel	3,696	lf	$10.00	$25.00	$36,960.00	$92,400.00	See note # 12

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Cave Creek Channelization

Landscaping Treatment Retrofit Opportunities							
Re-seeding portions of the channel were concrete has been replaced with wash embankment	73,920	sf	$0.10	$0.20	$7,392.00	$14,784.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Construction of rock-climbing facility	1	each	$80,000.00	$150,000.00	$80,000.00	$150,000.00	
Construction of ramped access points into the channel	600	lf	$50.00	$70.00	$30,000.00	$42,000.00	See note # 13
Subtotal					**$2,208,932.00**	**$4,124,076.00**	
Total					**$4,749,651.00**	**$9,194,401.00**	

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*
b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*
c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*
d. *Quantity assumes an existing 2:1 slope on the basin/channel. Calculations were made with overburden at a 4:1 slope.*
e. *Estimated at $100/sf. low cost and $150/sf. high cost.*
f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*
g. *Reseeded areas do not receive irrigation.*
h. *Paths are 5' wide standard color concrete.*

FOOTNOTES:

1. 20% of the estimated plantable area was included.
2. Wetlands area was assumed to be 5' deep.
3. The estimated area of the viewing point is 800 sf. It is assumed that there will be railing to define the area. The costs also include clearing the area of vegetation and providing a 1/4" minus decomposed granite base. The cost of the decomposed granite is $.50 a sf. The cost to clear the area is $1.00. It was estimate that there will be 40' of a 3' high railing at a cost of $30.00 lf. There is also earthen fill that is estimated to be 1' deep at a total cost of $90.00.
4. Cost of the ramp includes concrete and railing.
5. 30% of the estimated plantable area was included.
6. Cost was based on a 5' wide asphaltic concrete path with an allowance for mile markers every 1/4 mile and exercise stations every 1/2 mile.
7. Rest area nodes are placed every 1/2 mile and include seating and shade.
8. 20% of the channel is to receive color and texture treatment.
9. 20% of the channel is to be removed and replaced with naturalistic wash banks.
10. Quantity estimate is for railing located on both sides of the channel.
11. 20% of the railing is to be removed.
12. 20% of the railing is to be modified.
13. Estimated quantity is for 3 access points and include ramp concrete and railing.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Cave Creek and Cave Butte Dams

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One- Cave Butte Dam Structure							
Aesthetic Treatment Retrofit Opportunities							
Irregular earth placement on both sides of dam structure	2,228,657	cubic yd	$3.00	$5.00	$6,685,971.00	$11,143,285.00	See note # 1, d
Landscaping Treatment Retrofit Opportunities							
Shrub and tree plantings at key areas	3,000	sf	$0.75	$1.50	$2,250.00	$4,500.00	See note # 2, a
Re-seeding of dam area with native shrub and tree species	523,250	sf	$0.10	$0.20	$52,325.00	$104,650.00	See note g
Limited landscape irrigation of key planted areas, re-seeded areas not to receive irrigation	3,000	sf	$0.50	$1.50	$1,500.00	$4,500.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Flood control interpretive center adjacent to dam and lake for viewing	1	each	$300,000.00	$450,000.00	$300,000.00	$450,000.00	See Note # 3, e
Subtotal					**$7,042,046.00**	**$11,706,935.00**	
Zone Two- Cave Creek Dam Structure							
Aesthetic Treatment Retrofit Opportunities							
Restoration of the Dam Structure	203,040	sf	$1.50	$3.00	$304,560.00	$609,120.00	See note # 4
Multi-Use Treatment Retrofit Opportunities							
Modification of the dam structure to permit public access for use as a pier	750	lf	$50.00	$70.00	$37,500.00	$52,500.00	See note # 5
Installation of railing and viewing stations	3,384	lf	$25.00	$40.00	$84,600.00	$135,360.00	See note # 6
Subtotal					**$426,660.00**	**$796,980.00**	
Zone Three- Cave Butte Impoundment Dikes 1, 2, and 3							
Aesthetic Treatment Retrofit Opportunities							
Irregular earth placement on dike structures	2,778,289	cubic yd	$3.00	$5.00	$8,334,867.00	$13,891,445.00	See note # 7, d
Landscaping Treatment Retrofit Opportunities							
Re-seeding	1,131,290	sf	$0.10	$0.20	$113,129.00	$226,258.00	See note # 8, g
Shrub and tree plantings on the dikes side slopes to achieve a texture and color similar to its surroundings at key areas.	3,000	sf	$0.75	$1.50	$2,250.00	$4,500.00	See note a
Limited landscape irrigation of key planted areas, re-seeded areas not to receive irrigation	3,000	sf	$0.50	$1.50	$1,500.00	$4,500.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Soft surface trail- decomposed granite trail	13,520	lf	$2.50	$4.00	$33,800.00	$54,080.00	See note c, f
Gateway features-at trail connection points	1	each	$25,000.00	$50,000.00	$25,000.00	$50,000.00	See note # 9
Construction of observation towers	3	each	$80,000.00	$120,000.00	$240,000.00	$360,000.00	See note # 10
Subtotal					**$8,750,546.00**	**$14,590,783.00**	
Zone Four- Impoundment Area							
Aesthetic Treatment Retrofit Opportunities							
Re-contouring of disturbed areas to mimic natural landforms	6,969,600	sf	$0.50	$1.00	$3,484,800.00	$6,969,600.00	
Landscaping Treatment Retrofit Opportunities							
Tree and shrub plantings to create a naturalistic riparian wash and enhance the slopes of the retention basin at key areas	211,200	sf	$0.75	$1.50	$158,400.00	$316,800.00	See note # 11, a
Limited landscape irrigation of key areas	211,200	sf	$0.50	$1.50	$105,600.00	$316,800.00	See note b
Re-vegetation of disturbed areas with native seed mixes	6,969,600	sf	$0.10	$0.20	$696,960.00	$1,393,920.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Park facilities by passive recreational lake	10	acre	$100,000.00	$130,000.00	$1,000,000.00	$1,300,000.00	See note # 12
Wildlife viewing facilities by the preservation area	2	each	$5,000.00	$10,500.00	$10,000.00	$21,000.00	See note # 13

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Cave Creek and Cave Butte Dams							
Trail corridors throughout the impoundment area	36,967	lf	$2.50	$4.00	$92,417.50	$147,868.00	See note c, f
Equestrian staging area	1	each	$7,500.00	$10,000.00	$7,500.00	$10,000.00	See note # 14
Gateway features at the corridor connection points	2	each	$25,000.00	$50,000.00	$50,000.00	$100,000.00	See note # 9
Passive recreational lake by Cave Creek Dam and active recreational lake by Cave Butte Dam	2,294,518	cubic yd	$3.00	$5.00	$6,883,554.00	$11,472,590.00	See note # 15
Subtotal					**$12,489,231.50**	**$22,048,578.00**	
Zone Five- Foothills Area							
Aesthetic Treatment Retrofit Opportunities							
Re-contour closed trails in foothills surrounding this site	18,484	lf	$2.00	$5.00	$36,968.00	$92,420.00	
Earthwork-landscape berms for screening	4,890	cubic yd	$3.00	$5.00	$14,670.00	$24,450.00	See note # 16
Landscaping Treatment Retrofit Opportunities							
Tree and shrub planting to provide visual buffers between uses and shade for trails linking amenities at key areas.	3,000	sf	$0.75	$1.50	$2,250.00	$4,500.00	See note a
Limited landscape irrigation of key areas	3,000	sf	$0.50	$1.50	$1,500.00	$4,500.00	See note b
Re-vegetation of closed trails with native seed mixes	92,418	sf	$0.10	$0.20	$9,241.80	$18,483.60	See note g
Multi-Use Treatment Retrofit Opportunities							
Provide separated multi-use trail connections through the foothills	21,124	lf	$8.50	$13.00	$179,554.00	$274,612.00	See note # 17, c, f
Subtotal					**$244,183.80**	**$418,965.60**	
Zone Six- Natural Wash Area							
Aesthetic Treatment Retrofit Opportunities							
Re-contour closed trails in riparian area	14,523	lf	$2.00	$5.00	$29,046.00	$72,615.00	
Landscaping Treatment Retrofit Opportunities							
Tree and shrub plantings to provide shade and visual screening for trails at key areas	3,000	sf	$0.75	$1.50	$2,250.00	$4,500.00	See note a
Limited landscape irrigation of key areas	3,000	sf	$0.50	$1.50	$1,500.00	$4,500.00	See note b
Re-seeding of closed trails and disturbed areas	72,614	sf	$0.10	$0.20	$7,261.40	$14,522.80	See note g
Multi-Use Treatment Retrofit Opportunities							
Corridor connection through riparian area	14,523	lf	$2.50	$4.00	$36,307.50	$58,092.00	See note c, f
Wildlife viewing facilities	1	each	$5,000.00	$10,500.00	$5,000.00	$10,500.00	See note # 13
Gateway Features - At trail connection points	2	each	$25,000.00	$50,000.00	$50,000.00	$100,000.00	See note # 9
Subtotal					**$131,364.90**	**$264,729.80**	
Zone Seven- Multi-Use Area							
Aesthetic Treatment Retrofit Opportunities							
Landscape berms for screening	9,780	cubic yd	$3.00	$5.00	$29,340.00	$48,900.00	See note # 16
Clean up operations	1,742,400	sf	$0.25	$0.50	$435,600.00	$871,200.00	See note # 18
Landscaping Treatment Retrofit Opportunities							
Tree and shrub plantings to provide visual buffers between recreational uses and shade for trails in key areas	3,000	sf	$0.75	$1.50	$2,250.00	$4,500.00	See note a
Limited landscape irrigation of key areas	3,000	sf	$0.50	$1.50	$1,500.00	$4,500.00	See note b
Re-vegetation of native desert seed species for disturbed areas	1,742,400	sf	$0.10	$0.20	$174,240.00	$348,480.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Trailhead facilities with a bicycle staging area	1	each	$35,000.00	$60,000.00	$35,000.00	$60,000.00	See note # 19
Soft surface trail connections through the foothills, to other site amenities, the Phoenix Sonoran Preserve and the Maricopa County Trail	2,641	lf	$2.50	$4.00	$6,602.50	$10,564.00	See note c, f
Subtotal					**$684,532.50**	**$1,348,144.00**	-
Project Total					**$29,768,564.70**	**$51,175,115.40**	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Cave Creek and Cave Butte Dams

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*

b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*

c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*

d. *Quantity assumes an existing 2:1 slope on the dam/dike. Calculations were made with overburden at a 4:1 slope. Quantity calculations include both sides of dam/dike.*

e. *Buildings are estimated at $100/sf. low cost and $150/sf. high cost.*

f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*

g. *Reseeded areas are not to receive irrigation.*

FOOTNOTES:

1. The dam was estimated to be 2275' long and 115' high. Cost does not include veneer removal.
2. The planting area is located at the interpretive center and a 20' wide landscape buffer is assumed.
3. Interpretive Center Cost is based on a 3000 s.f. building.
4. Unit cost includes surface renovation only.
5. The cost of the ramp includes concrete and railing.
6. Railing length was determined by the 1692' length of the dam as stated in the hydrologic synopsis. Railing is located on both sides of the dam.
7. Total length of 3 dikes is estimated as 13,210 total linear feet.
8. Area includes reseeding of all three dikes.
9. Gateway features are kiosks with directional signage.
10. Towers are 20' x 20' buildings that are 20' high with stair access to a lookout point.
11. There is a 40' wide landscape buffer around the perimeter of the lake.
12. The park facilities shall include paths, restrooms, directional signage, lighting, and parking.
13. The estimated area of the viewing point is 800 sf. It is assumed that there will be railing to define the area. The costs also include clearing the area of vegetation and providing a 1/4" minus decomposed granite base. The cost of the decomposed granite is $.50 a sf. The cost to clear the area is $1.00. It was estimate that there will be 40' of a 3' high railing at a cost of $30.00 lf. There is also earthen fill that is estimated to be 1' deep at a total cost of $90.00.
14. The equestrian staging area consists of a cleared area of 1/4" minus decomposed granite and hitching posts. The estimated area is 5,000 sf.
15. The lake surface area is assumed to be 10' deep. The unit cost included excavating the area and relocating soil on site. The cost does not include filling the lake with water.
16. The berms are 3' high with a 4:1 maximum slope and a naturalistic shape.
17. Cost per lf. was estimated by adding equestrian and multi-use trail costs together.
18. General clean-up of debris.
19. Unit cost includes directional signage, bicycle racks, and soft surface parking for 20 cars.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

New River Channelization and Camelback Ranch Levee

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - River Channel with Riparian Areas							
Aesthetic Treatment Retrofit Opportunities							
Construct low-flow channel features within the river channel	476,667	cubic yd	$3.00	$5.00	$1,430,001.00	$2,383,335.00	
Add naturalistic rock drop structures to create additional wetland areas	3,330	cubic yd	$90.00	$120.00	$299,700.00	$399,600.00	See note # 1
Landscaping Treatment Retrofit Opportunities							
Re-seeding with native riparian plants along channel embankments	2,574,000	sf	$0.10	$0.20	$257,400.00	$514,800.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Soft surface trail connection through site	51,480	lf	$2.50	$4.00	$128,700.00	$205,920.00	See note c, f
Separated equestrian use trail	51,480	lf	$6.00	$9.50	$308,880.00	$489,060.00	See note c, f
Subtotal					**$2,424,681.00**	**$3,992,715.00**	
Zone Two - Levee Structure and Bank Stabilization							
Aesthetic Treatment Retrofit Opportunities							
Placement of overburden along levee embankments to create a more naturalistic looking structure and provide connections to the corridor	762,667	cubic yd	$3.00	$5.00	$2,288,001.00	$3,813,335.00	See note # 2
Landscaping Treatment Retrofit Opportunities							
Re-seeding with native trees and shrubs along levee embankments	2,059,200	sf	$0.10	$0.20	$205,920.00	$411,840.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Construction of trails for access under major street crossings	8	each	$35,000.00	$70,000.00	$280,000.00	$560,000.00	
Construction of bridge crossings over minor street crossings	10	each	$50,000.00	$100,000.00	$500,000.00	$1,000,000.00	
Installation of a paved pathway with connections to parking areas	2,400	lf	$15.00	$25.00	$36,000.00	$60,000.00	See note # 3
Installation of land-art elements along levee embankments, approximately two per mile	19	each	$75,000.00	$150,000.00	$1,425,000.00	$2,850,000.00	
Installation of a soft surface trail with connections to channel corridor	2,000	lf	$2.50	$4.00	$5,000.00	$8,000.00	
Wildlife viewing facilities located adjacent to riparian areas	9	each	$5,000.00	$10,500.00	$45,000.00	$94,500.00	See note # 4
Subtotal					**$4,784,921.00**	**$8,797,675.00**	
Zone Three - Open Space Areas							
Landscaping Treatment Retrofit Opportunities							
Re-seeding with native trees and shrubs at periphery	871,200	sf	$0.10	$0.20	$87,120.00	$174,240.00	See note 5, g
Tree and shrub plantings at key areas near trailhead facilities	5,000	sf	$0.75	$1.50	$3,750.00	$7,500.00	See note a
Limited landscape irrigation at key areas	5,000	sf	$0.50	$1.50	$2,500.00	$7,500.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Trailhead facilities including restroom and maintenance buildings	1	each	$300,000.00	$450,000.00	$300,000.00	$450,000.00	See note # 6
Directional and interpretive signage	4	each	$30,000.00	$45,000.00	$120,000.00	$180,000.00	
Art elements that communicate community history and identity	4	each	$75,000.00	$150,000.00	$300,000.00	$600,000.00	
Subtotal					**$813,370.00**	**$1,419,240.00**	
Zone Four - Agricultural Heritage Landscape							
Landscaping Treatment Retrofit Opportunities							
Re-seeding with native trees and shrubs at periphery areas	696,960	sf	$0.10	$0.20	$69,696.00	$139,392.00	See note # 5
Tree and shrub plantings at key areas near trailhead facility	5,000	sf	$0.75	$1.50	$3,750.00	$7,500.00	See note a
Tree, shrub and turf plantings at neighborhood park	261,360	sf	$0.50	$1.25	$130,680.00	$326,700.00	See note # 7, a
Landscape irrigation at neighborhood park	261,360	sf	$0.40	$0.75	$104,544.00	$196,020.00	See note # 7, b
Limited landscape irrigation at trailhead facility	5,000	sf	$0.50	$1.50	$2,500.00	$7,500.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Soft surface connection from park and trailhead facility to levee and channel areas	600	lf	$2.50	$4.00	$1,500.00	$2,400.00	See note # 8
City gateway features	2	each	$25,000.00	$50,000.00	$50,000.00	$100,000.00	
Neighborhood park facility	1	each	$675,000.00	$800,000.00	$675,000.00	$800,000.00	See note # 9
Trailhead facility	1	each	$250,000.00	$375,000.00	$250,000.00	$375,000.00	See note # 10
Subtotal					**$1,287,670.00**	**$1,954,512.00**	
Project Total					**$9,310,642.00**	**$16,164,142.00**	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

New River Channelization and Camelback Ranch Levee

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $-1.50 sf.*

b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*

c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*

d. *Quantity assumes an existing 2:1 slope on the channel/levee. Calculations were made with overburden at a 4:1 slope.*

e. *Buildings are estimated at $100/sf. low cost and $150/sf. high cost.*

f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*

g. *Reseeded areas do not receive irrigation.*

FOOTNOTES:

1. Naturalistic rock drop structures are placed 1 per mile for a total of 9.

2. Quantity was estimated for overburden along 1/2 of the embankment and assumes any veneering will be left in place.

3. Length of the path connection is estimated as 400' at each of the 6 access points.

4. The estimated area of the viewing point is 800 sf. It is assumed that there will be railing to define the area. The costs also include clearing the area of vegetation and providing a 1/4" minus decomposed granite base. The cost of the decomposed granite is $.50 a sf. The cost to clear the area is $1.00. It was estimate that there will be 40' of a 3' high railing at a cost of $30.00 lf. There is also earthen fill that is estimated to be 1' deep at a total cost of $90.00.

5. 20% of the estimated plantable area was included.

6. The building is assumed to be 3,000 sf.

7. Quantity estimate assumes 60% of the 10 acre park is to be planted with a combination of irrigated turf and shrub areas.

8. Two connections are to be provided; each 300' long.

9. Cost includes building and associated parking for a passive use park.

10. The trailhead facility is a 2,500 sf. building.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

New River Dam

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks (Refer to Assumptions and Methods)
Zone One - Dam and Emergency Spillway Structures							
Aesthetic Treatment Retrofit Opportunities							
Irregular earth placement on the top and both sides of the dam structure	3,692,949	cubic yd	$3.00	$5.00	$11,078,847.00	$18,464,745.00	See note # 1, d
Aesthetic treatment of the principal outlet channel with rough-surfaced colored concrete & boulders	11,741	sf	$20.00	$50.00	$234,820.00	$587,050.00	See note # 2
Treatment of the emergency spillway structure to age and blend the rock with the adjacent mountains	26,000	sf	$10.00	$20.00	$260,000.00	$520,000.00	See note # 3
Landscaping Treatment Retrofit Opportunities							
Seeding along the dam sides	1,926,756	sf	$0.10	$0.20	$192,675.60	$385,351.20	See note g
Tree and shrub plantings at key areas	4,000	sf	$0.75	$1.50	$3,000.00	$6,000.00	See note # 4, a
Limited landscape irrigation of key areas, seeded areas not to receive irrigation	4,000	sf	$0.50	$1.50	$2,000.00	$6,000.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Meander existing maintenance road and install fixed and removable bollards	2,600	lf	$7.50	$12.00	$19,500.00	$31,200.00	See note # 5
Flood Control interpretive center on top of the dam structure	1	each	$250,000.00	$375,000.00	$250,000.00	$375,000.00	See note # 6, e
Equestrian staging area south of dam structure	1	each	$7,500.00	$10,000.00	$7,500.00	$10,000.00	See notes # 7
Soft Surface Trail - Decomposed Granite Trail connection	5,200	lf	$2.50	$4.00	$13,000.00	$20,800.00	See note c, f
Subtotal					**$12,061,342.60**	**$20,406,146.20**	
Zone Two - Mountain Areas							
Aesthetic Treatment Retrofit Opportunities							
Re-contour closed trails in foothills area	30,000	lf	$2.00	$5.00	$60,000.00	$150,000.00	
Earthwork berms for remaining and new trails	11,852	cubic yd	$3.00	$5.00	$35,556.00	$59,260.00	See note # 8
Landscaping Treatment Retrofit Opportunities							
Native desert seed mixes for closed trails	320,000	sf	$0.10	$0.20	$32,000.00	$64,000.00	See note # 9, g
Multi-Use Treatment Retrofit Opportunities							
Trail establishment and connections through mountain areas	16,000	lf	$2.50	$4.00	$40,000.00	$64,000.00	See note c, f
Viewing point located in mountain areas, west of the impoundment area	3	each	$5,000.00	$10,500.00	$15,000.00	$31,500.00	See note # 10
Subtotal					**$182,556.00**	**$368,760.00**	
Zone Three - Impoundment Area							
Aesthetic Treatment Retrofit Opportunities							
Construct lake and wetland areas	177,777	cubic yd	$3.00	$5.00	$533,331.00	$888,885.00	See note # 11
Re-contour closed trails	52,000	lf	$2.00	$5.00	$104,000.00	$260,000.00	See note c, f
Landscaping Treatment Retrofit Opportunities							
Seeding around lake area	140,000	sf	$0.10	$0.20	$14,000.00	$28,000.00	See note # 12, g
Tree and shrub planting at key areas	4,400	sf	$0.75	$1.50	$3,300.00	$6,600.00	See note # 13, a
Limited landscape irrigation of key areas, seeded areas not to receive irrigation	4,400	sf	$0.50	$1.50	$2,200.00	$6,600.00	See note b
Native desert seed mixes for disturbed areas and closed trails	312,000	sf	$0.10	$0.20	$31,200.00	$62,400.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Separate-use equestrian trails	26,400	lf	$6.00	$9.50	$158,400.00	$250,800.00	See note # c, f
Education center for riparian restoration study area facilities	1	each	$300,000.00	$450,000.00	$300,000.00	$450,000.00	See note # 14, e
Hike-in small scale day or overnight campsite facilities located in the southwest area of the impoundment zone	4	each	$10,000.00	$25,000.00	$40,000.00	$100,000.00	See note # 15
Subtotal					**$1,186,431.00**	**$2,053,285.00**	
Aesthetic Treatment Retrofit Opportunities							
Irregular earth placement on the top and both sides of the dike structure	1,484,352	cubic yd	$3.00	$5.00	$4,453,056.00	$7,421,760.00	See note # 16
Landscaping Treatment Retrofit Opportunities							
Re-seeding the sides of the dike structure with native plant species	2,226,528	sf	$0.10	$0.20	$222,652.80	$445,305.60	See note g

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

New River Dam							
Tree and shrub plantings at key areas at the base of the structure for visual screening	77,310	sf	$0.75	$1.50	$57,982.50	$115,965.00	See note a
Limited landscape irrigation of key areas.	77,310	sf	$0.50	$1.50	$38,655.00	$115,965.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Soft surface trail connection	4,000	lf	$2.50	$4.00	$10,000.00	$16,000.00	See note # c, f
Subtotal					**$4,782,346.30**	**$8,114,995.60**	
Project Total					**$18,212,675.90**	**$30,943,186.80**	

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*
b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*
c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*
d. *Quantity assumes an existing 2:1 slope on the dam/dike. Calculations were made with overburden at a 4:1 slope.*
e. *Buildings are estimated at $100/sf. low cost and $150/sf. high cost.*
f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*
g. *Reseeded areas do not receive irrigation.*

FOOTNOTES:

1. The length of the structure is estimated at 2,327' with a height of 103.5'. The information was provided by the Hydrologic Synopsis. Cost is for earth placement on both sides of the structure and does not include removal of any veneering.

2. The channel will receive a treatment of rough-surfaced colored concrete with 1/3 of the surface area embedded with boulders.

3. The cost is for a chemical treatment and stain applied to half of the rock to produce a weathered affect.

4. It is assumed that there will be a 20' landscape buffer around the building.
   The perimeter of the center is estimated to be around 200'.

5. The existing maintenance road is estimated to be 2,600' long and 15' wide. An allowance for concrete bollards was also included.

6. The interpretive center is estimated to be a 2,500 sf facility with plumbing and electricity.

7. The equestrian staging area consists of a cleared area of 1/4" minus decomposed granite and hitching posts. The estimated area is 5,000 sf.

8. The berms are assumed to be 20' wide and 4' high with a 4:1 slope and natural shaped.

9. A 10' wide landscape buffer is assumed for both sides of the trail.

10. The estimated area of the viewing point is 800 sf. It is assumed that there will be railing to define the area. The costs also include clearing the area of vegetation and providing a 1/4" minus decomposed granite base. The cost of the decomposed granite is $.50 a sf. The cost to clear the area is $1.00. It was estimate that there will be 40' of a 3' high railing at a cost of $30.00 lf. There is also earthen fill that is estimated to be 1' deep at a total cost of $90.00.

11. The lake is assumed to be 10' deep. The unit cost involved excavating the area and relocating soil. The cost does not include filling the lake with water.

12. The re-seeding area extends 50' beyond the lake edge on all sides.

13. It is assumed that there will be a 20' landscape buffer around the education center.

14. The education center is estimated to be a 3,000 sf facility with electricity and plumbing.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

New River Dam

15. Each campsite facility is estimated to be a 50' x 50' area. The cost includes clearing the area and limited site amenities such as trash receptacles and signs.

16. The estimated length of the dike is 7,731', and the height is 36'. Information was provided by the Hydrologic synopsis. The cost is for the earth placement on both sides of the structure and does not include removal of any veneering.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Skunk Creek Channel and Levee

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks (Refer to Assumptions and Methods)
Zone One - Natural Wash Area							
Aesthetic Treatment Retrofit Opportunities							
Construct lake and wetland areas	425,822	cubic yd	$3.00	$5.00	$1,277,466.00	$2,129,110.00	See note # 1
Construct naturalistic rock drop structures to form the southern edge of the lake	4,889	cubic yd	$90.00	$120.00	$440,010.00	$586,680.00	
Landscaping Treatment Retrofit Opportunities							
Re-seeding of disturbed areas and enhancement of constructed wetlands area with native riparian shrub and tree species	544,500	sf	$0.10	$0.20	$54,450.00	$108,900.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Soft surface trails on both sides of the lake that connect to the Phoenix Sonoran Preserve via the Central Arizona Project (CAP)							
Canal and cross the zone just below the lake	7,920	lf	$2.50	$4.00	$19,800.00	$31,680.00	See note c, f
Equestrian trail through site	3,960	lf	$6.00	$9.50	$23,760.00	$37,620.00	See note c, f
Subtotal					**$1,815,486.00**	**$2,893,990.00**	
Zone Two - Channel Area							
Aesthetic Treatment Retrofit Opportunities							
Re-contour of channel bottom to create multiple washes	484,000	cubic yd	$3.00	$5.00	$1,452,000.00	$2,420,000.00	See note # 2
Placement of rock drop structures to slow water flows	19,556	cubic yd	$90.00	$120.00	$1,760,040.00	$2,346,720.00	See note # 3
Landscaping Treatment Retrofit Opportunities							
Re-seeding of disturbed areas and enhancement of wash areas with native riparian shrub and tree species	2,178,000	sf	$0.10	$0.20	$217,800.00	$435,600.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Soft surface trails through channel area with connections across channel and to other zones	6,600	lf	$2.50	$4.00	$16,500.00	$26,400.00	See note c, f
Subtotal					**$3,446,340.00**	**$5,228,720.00**	
Zone Three - Levee Structure							
Aesthetic Treatment Retrofit Opportunities							
Irregular placement of earth on the levee structures	201,667	cubic yd	$3.00	$5.00	$605,001.00	$1,008,335.00	See note # 4, d
Removal of portions of grouted riprap and replacement with irregularly sized native rock and soil	103,889	cubic yd	$20.00	$30.00	$2,077,780.00	$3,116,670.00	See note # 5, d
Landscaping Treatment Retrofit Opportunities							
Re-seeding of re-contoured areas with native shrub and tree species	1,320,000	sf	$0.10	$0.20	$132,000.00	$264,000.00	See note g
Multi-Use Treatment Retrofit Opportunities							
Multi-use soft surface trail connection through zone	13,200	lf	$2.50	$4.00	$33,000.00	$52,800.00	See note c, f
Equestrian trail through zone	13,200	sf	$6.00	$9.50	$79,200.00	$125,400.00	See note c, f
Subtotal					**$2,926,981.00**	**$4,567,205.00**	
Zone Four - Concrete Drop Structure Area							
Aesthetic Treatment Retrofit Opportunities							
Install faux stone and rock veneer over concrete baffles	28,200	sf	$20.00	$40.00	$564,000.00	$1,128,000.00	See note # 6
Stain and treat concrete lining with texture to match native soil	32,000	sf	$10.00	$15.00	$320,000.00	$480,000.00	See note # 7
Artist-designed aesthetic treatment of bridge supports	1	each	$100,000.00	$300,000.00	$100,000.00	$300,000.00	
Multi-Use Treatment Retrofit Opportunities							
Artist designed pedestrian bridge gateway feature over interstate	1	each	$1,000,000.00	$3,000,000.00	$1,000,000.00	$3,000,000.00	
Equestrian trail crossing under interstate bridge	400	lf	$20.00	$35.00	$8,000.00	$14,000.00	See note # 8, c, f
Subtotal					**$1,992,000.00**	**$4,922,000.00**	
Project Total					**$10,180,807.00**	**$17,611,915.00**	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Skunk Creek Channel and Levee

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*

b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*

c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*

d. *Quantity assumes an existing 2:1 slope on the levee/channel. Calculations were made with overburden at a 4:1 slope.*

e. *Buildings are estimated at $100/sf. low cost and $150/sf. high cost.*

f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*

g. *Reseeded areas do not receive irrigation.*

FOOTNOTES:

1. The lake is assumed to be 10' deep. The unit cost includes excavation of the area and relocating the soil. The cost does not include filling the lake with water.

2. The re-contoured wash has an assumed depth of 3'. The unit cost includes relocation of the soil along the channel to create a naturalistic wash.

3. Quantity calculation assumes that there are 4 rock drop structures.

4. The quantity estimation includes earth placement on both sides of the levee for 2/3 of the total length. The unit cost does not include removal of any veneering.

5. The quantity estimate is for 1/3 of the riprap lining the levee to be removed. The unit cost includes removal of veneering and replacement with a mix of 1/5 native boulders and 4/5 soil.

6. The veneer or faux stone is a concrete product applied to the baffle surface.

7. The unit cost includes material and labor to stain the concrete to blend with the surrounding soil.

8. The unit cost includes construction of the trail and minor earthwork.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Skunk Creek Channelization

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Channel Area							
Aesthetic Treatment Retrofit Opportunities							
Construct lake areas and enhance/ create wetlands and wash areas	1,339,556	cubic yd	$3.00	$5.00	$4,018,668.00	$6,697,780.00	See note # 1, 2
Seven naturalistic looking rock drop structures that contain the lakes' water	2,953	cubic yd	$90.00	$120.00	$265,770.00	$354,360.00	
Landscaping Treatment Retrofit Opportunities							
Re-seeding of disturbed areas with native shrubs and trees	660,000	sf	$0.10	$0.20	$66,000.00	$132,000.00	See note g
Tree and shrub landscape in key areas	198,000	sf	$0.75	$1.50	$148,500.00	$297,000.00	See note a
Irrigation of key landscaped areas	198,000	sf	$0.50	$1.50	$99,000.00	$297,000.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Soft surface separated-use trails within the channel area	6,600	lf	$2.50	$4.00	$16,500.00	$26,400.00	See note c, f
Gateway Features at trail connection points at New River, Skunk Creek, and ACDC	3	each	$25,000.00	$50,000.00	$75,000.00	$150,000.00	See note # 3
Subtotal					**$4,689,438.00**	**$7,954,540.00**	
Zone Two - Levee Structure							
Aesthetic Treatment Retrofit Opportunities							
Remove the top portion of north levee near the sports complex and construct a tiered levee	88,000	cubic yd	$3.00	$5.00	$264,000.00	$440,000.00	See note # 4, d
Add a lower tier to the south levee structure for equestrian trails	88,000	cubic yd	$3.00	$5.00	$264,000.00	$440,000.00	See note # 4, d
Re-contour levee slopes to mimic natural landforms	264,000	cubic yd	$3.00	$5.00	$792,000.00	$1,320,000.00	See note # 5, d
Removal of portions of riprap and soil cement areas	316,800	sf	$2.50	$5.00	$792,000.00	$1,584,000.00	See note # 6
Landscaping Treatment Retrofit Opportunities							
Re-seeding of disturbed and re-contoured slopes with native shrubs and trees	792,000	sf	$0.10	$0.20	$79,200.00	$158,400.00	See note g
Tree and shrub landscape along boardwalk area	132,000	sf	$0.75	$1.50	$99,000.00	$198,000.00	See note a
Irrigation of landscape at boardwalk area	132,000	sf	$0.50	$1.50	$66,000.00	$198,000.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Equestrian trail along the southern levee	6,600	lf	$6.00	$9.50	$39,600.00	$62,700.00	See note c, f
Multi-use pathway along the northern levee	6,600	lf	$15.00	$25.00	$99,000.00	$165,000.00	See note h
Underground pathway connection at 75th and 83rd Avenues	350	lf	$100.00	$250.00	$35,000.00	$87,500.00	See note # 7, h
Special uses park facilities located along the levee embankments that serve the lakes	3	each	$250,000.00	$500,000.00	$750,000.00	$1,500,000.00	See note # 8, e
Subtotal					**$3,279,800.00**	**$6,153,600.00**	
Zone Three - Sport Complex Area							
Landscaping Treatment Retrofit Opportunities							
Re-seeding of disturbed areas to blend this zone with the channel area	396,000	sf	$0.10	$0.20	$39,600.00	$79,200.00	See note g
Tree and shrub landscape at key areas, such as, the entry to the lake facility	5,280	sf	$0.75	$1.50	$3,960.00	$7,920.00	See note a
Irrigation of landscape at key areas	5,280	sf	$0.50	$1.50	$2,640.00	$7,920.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Parking and loading facilities that serve the kayaking and windsurfing lake	2	each	$18,000.00	$25,000.00	$36,000.00	$50,000.00	See note # 9
Subtotal					**$82,200.00**	**$145,040.00**	
Zone Four - Open Space Areas							
Landscaping Treatment Retrofit Opportunities							
Re-seeding of disturbed areas	871,200	sf	$0.10	$0.20	$87,120.00	$174,240.00	See note g
Tree and shrub landscape at key areas, such as, the entry to the boat rental facility	5,280	sf	$0.75	$1.50	$3,960.00	$7,920.00	See note a
Irrigation of landscape at key areas	5,280	sf	$0.50	$1.50	$2,640.00	$7,920.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Parking area for boat rental and site access	1	each	$18,000.00	$25,000.00	$18,000.00	$25,000.00	See note # 9
Paddleboat rental building	1	each	$100,000.00	$150,000.00	$100,000.00	$150,000.00	See note # 10, e
Subtotal					**$118,000.00**	**$175,000.00**	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Skunk Creek Channelization

Project Total		**$8,169,438.00**	**$14,428,180.00**	

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be $7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.*
b. *The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.*
c. *The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.*
d. *Quantity assumes an existing 2:1 slope on the levee/channel. Calculations were made with overburden at a 4:1 slope.*
e. *Buildings are estimated at $100/sf. low cost and $150/sf. high cost.*
f. *Pedestrian trails are 5' wide and equestrian trails are 12' wide.*
g. *Reseeded areas do not receive irrigation.*
h. *Paths are 5' wide standard color concrete.*

FOOTNOTES:

1. The lake is assumed to be 10' deep. The unit cost includes excavation of the area and relocating the soil. The cost does not include filling the lake with water.
2. The re-contoured wash has an assumed depth of 5'. The unit cost includes relocation of the soil along the channel to create a naturalistic wash.
3. Gateway features are kiosks with directional signage.
4. The quantity estimation includes earth placement on one side of the levee to provide tiering or a ledge. The unit cost does not include removal of any veneering or rip rap.
5. Tiered areas were subtracted from this quantity estimate. The unit cost does not include removal of any veneering or rip rap.
6. The quantity estimate is for removal of veneer/rip rap in selected areas only, approximately totaling one mile.
7. The unit cost includes the concrete path, minor earthwork and slope reinforcement.
8. The unit cost includes construction of a restroom building, play equipment area and associated landscaping. Parking facilities costs are separate.
9. The unit cost includes construction of an asphaltic concrete parking lot for 30 cars and access drive.
10. The unit cost is for construction of a small (1000 sf.) boat rental building.

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Upper East Fork Cave Creek and Paradise Valley Detention Basin

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks (Refer to Assumptions and Methods)
Zone One - Detention Basins and Community Parks							
Aesthetic Treatment Retrofit Opportunities							
Earthwork modification and repair of basin side slopes	8,800	cubic yd	$3.00	$5.00	$26,400.00	$44,000.00	See note # 1, d
Landscaping Treatment Retrofit Opportunities							
Additional tree and shrub plantings along basin side slopes	47,520	sf	$0.75	$1.50	$35,640.00	$71,280.00	See note # 2, a
Additional irrigation that ties to existing irrigation system	47,520	sf	$0.50	$1.50	$23,760.00	$71,280.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Delineation of sports fields	2	each	$5,000.00	$10,000.00	$10,000.00	$20,000.00	See note # 3
Park Connections to surrounding neighborhoods and businesses	1,200	lf	$15.00	$25.00	$18,000.00	$30,000.00	See note h
Subtotal					**$113,800.00**	**$236,560.00**	
Zone Two - Earthen Channel Area							
Aesthetic Treatment Retrofit Opportunities							
Earthwork modification of the channel's side slopes	29,333	cubic yd	$3.00	$5.00	$87,999.00	$146,665.00	See note # 4, d
Removal of existing rock in several key areas	19,800	sf	$20.00	$30.00	$396,000.00	$594,000.00	
Landscaping Treatment Retrofit Opportunities							
Trees and shrubs along both sides of channel for shade and visual interest	237,600	sf	$0.75	$1.50	$178,200.00	$356,400.00	See note a
Turf areas along the channel bottom	59,400	sf	$0.60	$1.20	$35,640.00	$71,280.00	See note # 5
Landscape irrigation for shrubs and trees	237,600	sf	$0.50	$1.50	$118,800.00	$356,400.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Path connection located on one side of channel	3,960	lf	$15.00	$25.00	$59,400.00	$99,000.00	See note h
Community identity art elements at concrete apron areas	2	each	$75,000.00	$150,000.00	$150,000.00	$300,000.00	
Subtotal					**$1,026,039.00**	**$1,923,745.00**	
Zone Three - Detention Basin and Community College							
Aesthetic Treatment Retrofit Opportunities							
Landscape berms along basin edges to add visual interest.	2,347	cubic yd	$3.00	$5.00	$7,041.00	$11,735.00	See note # 6
Landscaping Treatment Retrofit Opportunities							
Tree and shrub plantings for shade and visual screening.	348,480	sf	$0.75	$1.50	$261,360.00	$522,720.00	See note # 7, a
Turf areas in basin bottom	522,720	sf	$0.60	$1.20	$313,632.00	$627,264.00	See note # 8
Landscape irrigation	348,480	sf	$0.50	$1.50	$174,240.00	$522,720.00	See note b
Multi-Use Treatment Retrofit Opportunities							
Path connection to college, reading garden, library and adjacent neighborhood	1,320	lf	$15.00	$25.00	$19,800.00	$33,000.00	See note h
Reading garden with seating and shade ramadas	1	each	$110,000.00	$200,000.00	$110,000.00	$200,000.00	See note # 9
Subtotal					**$886,073.00**	**$1,917,439.00**	
Project Total					**$2,025,912.00**	**$4,077,744.00**	

ASSUMPTIONS AND METHODS

GENERAL NOTES:

1. *Calculated quantities are from aerial photography and are not for construction bidding purposes.*
2. *Maintenance costs are not included in cost estimates.*
3. *Revenue potential has not been factored in when determining costs*

SPECIAL CONSIDERATIONS:

a. *100'x100' Model: The plant quantities are based on a 100' x 100' area, and would contain (97) 5 gallon shrubs, (97) 1 gallon shrubs, and (10) - 24" box trees. The cost of a 5 gallon shrub is $ 25, $ 15 for 1 gallon, and $ 350 for a 24" box tree. The total cost for a 10,000 sf area would be*

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Upper East Fork Cave Creek and Paradise Valley Detention Basin

$7,500. This number would then be divided by 10,000 sf to produce a unit cost of $ 0.75 sf. The high end cost would be $ 1.50 sf.

b. The irrigation costs are based upon the 100' x 100' Model. Refer to Special Considerations "a." The irrigation costs for a tree would be $ 60 each, and $ 20 each for a shrub.

c. The trail will be 1/4" minus stabilized decomposed granite. The cost includes a soil stabilizer and compaction rolling. The typical depth is 3", and the color will blend with the surrounding environment.

d. Quantity assumes an existing 2:1 slope on basins. Calculations were made with overburden at a 4:1 slope.

e. Buildings are estimated at $100/sf. low cost and $150/sf. high cost.

f. Pedestrian trails are 5' wide and equestrian trails are 12' wide.

g. Reseeded areas do not receive irrigation.

h. Paths are 5' wide standard color concrete.

FOOTNOTES:

1. 20% of the basin edges are to be modified. Quantity estimate includes all four basins and assumes a 10' basin\.

2. 20% of the basin edges.

3. Sports field unit cost includes field delineation and goals. Cost does not include lighting.

4. The unit cost does not include removal of any veneering or lining.

5. Unit cost includes irrigation. Half of the basin bottom is to have turf.

6. Berming is 3' high with a maximum 4:1 slope and is naturalistic in form. 20% of the landscape area is to receive berming.

7. 20% of the total area is to be planted.

8. Unit cost includes irrigation. 30% of the total area is to have turf.

9. The reading garden area cost includes shade structures with picnic tables and seating.

List of References

Army Corps of Engineers

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, Oct. 1999

Recreational, Park and Open Space Standards and Guidelines, 1983

Other City, County and State Recreation, Trails, and Open Space Plans