

Rose Creek Watershed Opportunities Assessment
EXISTING CONDITIONS REPORT

Prepared For:
San Diego Earthworks

Prepared By:
KTU+A

In Association with:
Merkel & Associates
Susan Hector Consulting

Date:
April 15, 2005

Executive Summary	9
1 Introduction & Overview	11
1.1 Project Purpose	11
1.2 Study Area	11
1.3 Watershed Overview.....	17
1.3.1 Physical Characteristics	17
1.3.2 Land Uses & Planning	17
1.3.3 Biological Resources	18
1.3.4 Water Resources	20
1.3.5 Cultural Resources	21
1.3.6 Recreational Resources.....	21
1.3.7 Political Districts.....	22
2 Political Districts.....	23
2.1 Federal Offices.....	23
2.2 State Offices.....	23
2.3 County of San Diego Supervisor Districts.....	26
2.4 City of San Diego Council Districts	27
2.5 Interest Groups.....	29
2.5.1 Government Sponsored Interest Groups.....	29
2.5.2 Private and Non-Profit Interest Groups	30
3 Land Uses and Planning.....	33
3.1 Land Use Jurisdictions.....	33
3.1.1 MCAS Miramar	33
3.1.2 City of San Diego.....	34
3.2 Land Ownership.....	45
3.3 Existing Land Uses	45
3.4 Planned Land Uses.....	51
3.5 Land Use Change Analysis.....	54
4 Physical Characteristics	56
4.1 Elevation	56
4.2 Slope	56
4.3 Precipitation	61

4.4	Soils.....	61
4.5	Geology.....	67
4.6	Faults.....	68
4.6.1	Rose Canyon Fault.....	68
5	Biological Resources	73
5.1	Planning Efforts	73
5.2	Vegetative Resources.....	85
5.3	Sensitive Species.....	89
5.3.1	Sensitive Flora	89
5.3.2	Sensitive Fauna	89
5.4	Invasive Exotic Species	105
5.4.1	Invasive Exotic Plant Species	105
5.4.2	Invasive Exotic Animal Species	105
5.4.3	Mitigations Sites on MCAS Miramar	106
5.4.4	Restoration, Enhancement and Mitigation Efforts.....	106
6	Water Resources	109
6.1	Stream System	109
6.2	Surface Water Impoundments.....	110
7	Utilities.....	113
7.1	Water Systems	113
7.2	Sewer System.....	114
7.2.1	Sewer Overflows.....	114
7.3	Storm Water Conveyance	115
7.3.1	Hydromodifications	117
7.4	Electrical Distribution.....	127
7.5	Gas Distribution	127
7.6	Flood Hazards	127
7.7	Vehicular Transportation System	129
7.8	Rail Service.....	130
8	Water Quality.....	137
8.1	Water Quality Issues.....	138
9	Cultural Resources	143
9.1	Prehistoric	143

9.2	Historic.....	144
9.3	History of Human Effects on Rose Creek.....	146
10	Recreational Resources.....	149
10.1	Open Space Parks	149
10.2	Neighborhood and Community Parks.....	150
10.3	Trails	151
10.3.1	Bikeway Facilities.....	152
10.3.2	Community Plan Bikeway Facilities	154
10.3.3	Official Trails.....	161
10.3.4	Un-official Trails	162
10.3.5	Trail Amenities	163
10.3.6	Park Accessibility	164
11	Informational Resources and Current Activities.....	167
11.1	Guidance Documents	167
11.2	Previous Projects and Research Efforts	169
11.3	Current Projects and Research Efforts	173
11.4	Future Projects	177
12	Next Steps	179
12.1	Data Gaps.....	179
12.2	Future Analyses	180
12.2.1	Erosion & Sediment Management.....	180
12.2.2	Restoration Potential & Opportunities.....	180
12.2.3	Trail Linkages	181
12.2.4	Interpretive Opportunities.....	181
12.2.5	Fire Risk Characteristics.....	181
13	References.....	183

Figure 1-1: Regional Overview	13
Figure 1-2: Planning Basins.....	15
Figure 2-1: Federal Congressional Districts	25
Figure 2-2: California Senatorial Districts.....	25
Figure 2-3: California Assembly Districts.....	26
Figure 2-4: County of San Diego Supervisor Districts.....	27
Figure 2-5: City of San Diego Council Districts	28
Figure 3-1: City of San Diego – City of Villages	41
Figure 3-2: City of San Diego Community Plan Areas	43
Figure 3-3: Land Ownership.....	47
Figure 3-4: 2002 Existing Land Use.....	49
Figure 3-5: 2020 Planned Land Use	52
Figure 4-1: Topography	57
Figure 4-2: Slopes.....	59
Figure 4-3: Precipitation	63
Figure 4-4: Soils.....	65
Figure 4-5: Geologic Hazards.....	71
Figure 5-1: MSCP Biological Core & Linkage Areas	75
Figure 5-2: MSCP Multiple Habitat Planning Areas.....	81
Figure 5-3: MCAS Miramar INRMP Management Areas	83
Figure 5-4: Vegetation Communities.....	87
Figure 5-5: Sensitive Species.....	103
Figure 5-6: Mitigation Sites	107
Figure 6-1: Hydrologic Features.....	111
Figure 7-1: Reclaimed Water and SDCWA Aqueduct.....	119
Figure 7-2: Sewer System.....	121
Figure 7-3: Sanitary Sewer Overflows	123
Figure 7-4: Storm Water Conveyance and Hydromodifications	125
Figure 7-5: Gas and Electrical Distribution	131
Figure 7-6: FEMA/FIRM Flood Zones.....	133
Figure 7-7: Major Transportation Systems	135
Figure 8-1: City of San Diego Dry and Wet Weather Monitoring Stations	141

Figure 9-1. 1935 Aerial photograph of Rose Creek.....	147
Figure 9-2: 1949 Oblique: Pacific Beach looking west from Highway 101.....	147
Figure 9-3: 2000 Aerial photograph of Rose Creek.....	148
Figure 10-1: Parks and Open Space.....	157
Figure 10-2: Bikeway Facilities.....	159
Figure 10-3: Hiking Facilities.....	165

Table 2-1: Federal Offices and Districts	23
Table 2-2: California Senatorial Districts	24
Table 2-3: California Assembly Districts	24
Table 2-4: County of San Diego Supervisor Districts	27
Table 2-5: City of San Diego Council Districts	28
Table 3-1: City of San Diego – City of Villages	35
Table 3-2: City of San Diego Community Plan Areas	35
Table 3-3: Land Ownership	45
Table 3-4: 2002 Existing Land Use	46
Table 3-5: 2020 Planned Land Use.....	51
Table 3-6: Land Use Changes (Planned Land Use – Existing Land Use)	55
Table 4-1: Slope Categories.....	56
Table 4-2: Soils Categories.....	62
Table 4-3: Geologic Hazards	67
Table 4-4: Fault Systems	69
Table 5-1: Multiple Species Conservation Plan (MSCP) Biological Core & Linkage Areas	74
Table 5-2: MSCP Multiple Habitat Planning Areas	77
Table 5-3: Vegetation Communities.....	86
Table 5-4: Special Status Species and Potential for Occurrence	96
Table 5-5: Invasive Exotic Plant Species.....	106
Table 7-1: Sanitary Sewer Overflows.....	115
Table 7-2: 100 Year Flood Zone.....	129
Table 10-1: Open Space Parks.....	150
Table 10-2: City of San Diego owned Parks	151
Table 10-3: Bikeway Facilities	154

Executive Summary

The Rose Creek Watershed is a 36-square mile area that extends from the Miramar Marine Corps Air Station sixteen miles along San Clemente and Rose creeks through Clairemont Mesa and University City to the east end of Mt. Soledad; later draining to the 4,235.6-acre Mission Bay Park in eastern Pacific Beach where Rose Creek meets the ocean. Rose Creek is a gateway to the City of San Diego, the community of Pacific Beach, and to Mission Bay Park.

The watershed contains great natural beauty and biological diversity. There are huge Sycamore trees in both Rose and San Clemente canyons that offer shade and rest to hikers and cyclists as well as wildlife. Many areas contain native habitat that supports a rich array of wildlife including endangered and threatened species. The ecological value of the undeveloped land in the watershed is in its diversity of native vegetation communities, which provide a wide variety of essential animal habitats.

Unfortunately the watershed suffers from many of the same ills as other watersheds at the edge where wild lands meet urban development. Invasive exotic (non-native) species have overrun many areas and urban problems such as crime and vagrancy are acute in the lower watershed. While the overall health of the Rose Creek Watershed is better than many urban-wildland watersheds, the lower watershed, in particular, is unhealthy, unsafe and a detriment to water quality in Mission Bay and the Pacific Ocean.

Fortunately, steps are being taken to make the watershed a healthier and safer place.

The California Coastal Conservancy, the County of San Diego, the City of San Diego and San Diego Earthworks have joined together to create the Rose Creek Watershed Opportunities Assessment (Assessment), a comprehensive analysis of opportunities and recommendations to enhance the natural, cultural, public safety, and recreation attributes of the Rose Creek Watershed. San Diego Earthworks is acting as the project manager; the consulting team includes [KTU&A Landscape Architects](#), biologists [Merkel and Associates](#), and archaeologist Dr. Susan Hector.

This Existing Conditions report is the first step in the Assessment. It along with three associated technical memorandums, Recreational Trails; Biological Resources; and Erosion/Sedimentation, has been prepared to help create a baseline documentation of the current health of the watershed. The consultant team consolidated information contained in numerous studies and is augmenting this information with field assessments. This report contains 10 sections documenting what is currently known about the watershed, with a special attention on the natural areas that are the primary focus of the Assessment.

Recommendations from the public on the Existing Conditions report and associated technical documents, along with additional analyses, will result in the development of a subsequent document, the Rose Creek Watershed Opportunities Assessment. The Assessment will include recommended enhancements such as better public access (for example, trails), improved water quality, restoration of natural habitat to support wildlife and removal of non-native "exotic invasive" plants, all of which will enhance both public safety and public enjoyment of the watershed.

The Assessment will engage and inform the public, guide volunteers and professionals, and build policy level support within the appropriate public agencies for implementation. With public support, the Assessment can become the guiding document for planning activities throughout the watershed, especially in its natural areas.

San Diego Earthworks has developed a public steering committee known as the Rose Creek Watershed Alliance to help guide the development of the Assessment, as well as the implementation of its future recommendations. A number of community, business and environmental organizations have joined the "Rose Creek Watershed Alliance" and are developing a comprehensive vision for the Rose Creek Watershed for incorporation into the final Assessment. More information can be found at www.rosecreekwatershed.org.

1 Introduction & Overview

1.1 Project Purpose

The purpose of the Rose Creek Watershed Opportunities Assessment (Assessment) is to comprehensively assess existing conditions, opportunities and constraints for habitat protection, habitat restoration, enhancement and protection of cultural resources and public access improvements in the Rose Creek Watershed (RCW). The Assessment is primarily funded by the Coastal Conservancy with additional support by County Supervisor Pam Slater.

1.2 Study Area

The Rose Creek Watershed is part of the Penasquitos Hydrologic Unit, which is roughly 162 square miles and includes portions of the City of San Diego, Del Mar and Poway. This hydrologic unit is highly developed with a population of approximately 400,000 people, or about 3.8 people per acre on average. The hydrologic unit is centrally located within San Diego County and represents about 4% of the County's land area, making it one of the County's smallest hydrologic units.

Hydrologic features within the unit include Los Penasquitos Creek, Los Penasquitos Lagoon, Rose Creek, Tecolote Creek, Mission Bay and Miramar Reservoir. The San Diego Regional Water Quality Control Board (SDRWQCB) has sub-divided the Penasquitos Hydrologic Unit into two Watershed Management Areas: 1) The Penasquitos Watershed Management Area which is comprised of the Miramar Reservoir (906.1) and the Poway (906.2) Hydrologic Areas; 2) and the Mission Bay Watershed Management Area which is comprised of the Scripps (906.3), Miramar (906.4), and Tecolote (906.5) Hydrologic Areas. The Miramar (aka Rose Creek) Hydrologic Area is roughly 27,667 acres (37 square miles), which makes it the second largest hydrologic area in the Penasquitos hydrologic unit (Figure 1-1).

To further analyze the Rose Creek watershed and its boundaries, a topographic delineation was performed to correctly assess runoff and stream flow that discharges from the mouth of Rose Creek into Mission Bay. The Rose Creek watershed delineation refined the boundary of the sub-basin to

23,427 acres or 36 square miles. The area within the hydrologic area that is not considered part of the study area occurs toward the mouth of Rose Creek where it flows into Mission Bay, and includes those land areas that drain directly into Mission Bay (Figure 1-2). For this study, Rose Canyon and San Clemente Canyon were separated to allow more detailed analysis in future phases of the project. Figure 1-2 shows the breakdown of the three planning basins created by this delineation. San Clemente Canyon is the largest planning basin occupying 49% of the watershed while Lower Rose Canyon only occupies 11%.

Figure 1-1: Regional Overview

Back of Figure 1-1

Figure 1-2: Planning Basins

Back of Figure 1-2

1.3 Watershed Overview

1.3.1 Physical Characteristics

The Rose Creek Watershed (RCW) consists of three primary drainages; Rose Canyon, San Clemente Canyon, and Stevenson Canyon. The watershed is characterized by relatively steep foothills in the headwaters, which transition to broad mesa's throughout the mid-section that drain into steeply incised canyons as runoff concentrates and flows through the primary drainages towards Mission Bay. The northern edge of the watershed is partially defined by the Rose Canyon drainage. The majority of Rose Canyon itself, excluding the adjacent mesa tops, has been dedicated as public open space and is called the Rose Canyon Open Space Park. The central portion of the watershed is defined by upper and lower San Clemente Canyon. Upper San Clemente Canyon originates in the foothills east of Interstate 15 on MCAS Miramar before flowing across the mesa and into lower San Clemente Canyon. This portion consists of the dedicated parkland of Marian Bear Memorial Park. San Clemente Creek flows through this canyon before converging with Rose Creek on its way to Mission Bay. The southern edge of the watershed is partially defined by Stevenson Canyon, which is tucked away between two developed mesa tops. The bulk of Stevenson Canyon is privately owned with the Bay Ridge Open Space being the only designated public open space.

1.3.2 Land Uses & Planning

Currently in the RCW, the dominant land use is undeveloped land occupying roughly 21% of the study area. Parks and preserves occupy 21% and family housing is the third highest land use occupying 16%. Commercial and industrial complexes each occupy 2% of the study area. The Federal Government owns 40% of the RCW and lies primarily within the boundaries of MCAS Miramar. The second largest ownership is the private sector occupying 25%. City of San Diego owns or manages roughly 17% of the RCW with 7% being leased from the Federal Government. There are two larger private natural open space areas within the RCW in Stevenson Canyon and off of Lakehurst Avenue in Clairemont Mesa. Stevenson Canyon is 76 acres while the Lakehurst site is approximately 16 acres.

Watershed assessment calls for developing an understanding of the many processes and interactions occurring within a watershed. Information gathered during a watershed assessment is typically organized into separate distinct topics such as soils, hydrology and land use. This information needs

to be integrated in order to discover the processes and interactions occurring between the different topics. There are three distinct land use datasets used in this assessment; ownership, existing land use and proposed land use. Synthesis between these datasets allows the existing and future planning of the watershed to be analyzed to help the overall protection of the watershed. Land use data analysis will be more comprehensive with the incorporation of community plan documents, policies and guidelines for future development and habitat protection. The incorporation of City of San Diego Management Plans and Master Plans are also vital sources for future planning.

1.3.3 Biological Resources

Vegetation communities depicted within the project boundary provide an insight to the potential species present, as well as habitat richness and diversity. Understanding the diverse habitats provides insight on site-specific biological assessments necessary for review during the watershed management planning process.

The vegetation communities found within the RCW are sharply defined based on jurisdictional boundaries, particularly between MCAS Miramar and its adjacent communities. MCAS Miramar contains the majority of Diegan Coastal Sage Scrub and Chaparral found in the study area. The Coastal Sage Scrub and Chaparral that can be found west of MCAS Miramar tends to follow finger canyons that protrude up into the developed mesa tops. The majority of the Riparian Scrub is predominantly found outside MCAS Miramar within Rose Canyon and San Clemente Canyon. San Clemente Canyon can be distinguished by the Sycamore Riparian Woodland that runs along its bottom in a near continuous manner from Interstate 805 to below the confluence with Rose Canyon to Interstate 5. Other notable habitats types with the RCW are the Mima Mounds and vernal pool complexes that can be found almost exclusively within MCAS Miramar and the inter-tidal communities at the mouth of Rose Creek.

Special status species are species that are listed as sensitive by one or more of the following resource agencies or societies: United States Fish & Wildlife Service (USFWS), California Department of Fish & Game (CDFG), or the California Native Plant Society (CNPS). Species may be sensitive for a variety of reasons, including limited geographic distribution, documented or suspected population declines, extensive habitat loss, and/or natural occurrence in low numbers. One, or a combination of these factors, may cause a given species to be more vulnerable to extinction. There are a number of

categories, depending on the significance of the threat of the species' survival, under which a given species can be listed as sensitive at the local, state, or federal level.

A diversity of sensitive plant and animal species occur within the Rose Creek Watershed, however the driving force behind the major conservation efforts in the region are federally listed species, and to a lesser extent, species listed by the state of California as endangered.

The listing of the California Gnatcatcher as a federally listed species was the primary catalyst for the passage of the State of California Natural Community Conservation Planning Act of 1991 (NCCP). The Gnatcatcher is the most widely distributed species on the threatened and endangered list occurring within the Rose Creek Watershed.

In addition, the California Least Tern is another species of concern and is a rare visitor to the Fish Pond on MCAS Miramar. The U.S. Marine Corps and the U.S. Fish and Wildlife Service have teamed up to manage a large number of California least tern populations breeding on military lands. Because they tend to be located on remote beaches that are off-limits to the public, naval bases and training centers have become refuges for these endangered birds. Cooperation among these government agencies to minimize human impact within these sites have resulted in a dramatic recovery of tern populations, which climbed from a low of 600 breeding pairs in 1970 to 2,300 pairs in 1993. Today, over one-third of California least tern populations breed on Navy and Marine Corps bases. However, within the Rose Creek Watershed the least tern is currently only infrequently found on MCAS Miramar or within Mission Bay.

The San Diego Fairy Shrimp is one invertebrate that is federally protected. It occurs almost entirely within MCAS Miramar and is limited to vernal pool areas. The San Diego Fairy Shrimp are considered federally endangered due to continued conversion of grassland-vernal pool ecosystems to urban or agricultural uses.

There are many notable Threatened and Endangered plants that occur within the watershed. The two most widely distributed species are San Diego Button Celery and Willow Monardella. Other

Threatened and Endangered species include: California Orcutt Grass, San Diego Mesa Mint, Short Leaved Dudleya and Spreading Navarretia. Other sensitive or special status species sighted within the Rose Creek Watershed include mammals such as the Mule Deer and Mountain Lion. Sensitive bird species include the Northern Harrier, Coopers Hawk, and the California Brown Pelican. The Rufous-crowned sparrow is an occasional winter resident and the Burrowing Owl was last recorded in 1997. Sensitive reptiles and amphibians include the Orange Throated Whiptail, San Diego Horned Lizard, and the Western Spadefoot Toad.

The sole sensitive insect occurring within the watershed is the Monarch Butterfly and is geographically located in the northwest corner of the study area. Other sensitive flora worth noting include Campbell's Liverwort, Coulter's Goldfields, Nuttall's Lotus, Nuttall's Scrub Oak, Orcutt's Brodiaea, San Diego Barrel Cactus, San Diego Goldenstar, Bottle Liverwort, Estuary Seablite, Rayless Ragwort, Prostrate Navarretia, Purple Stemodia, Long-spined Spineflower, Summer Holly, Wart-stemmed Ceanothus, Woven-spored Lichen, Clevelands Goldenstar, and Little Mousetail.

Unfortunately, the vegetation communities within the RCW are not in pristine condition, having been impacted by a variety of human activities that have contributed to invasive exotic species proliferation. Some of the most problematic species are pampas grass, tamarisk, arundo, castor bean, Brazilian pepper, and ice plant. Of these species; pampas grass is the most pervasive in the finger canyons and other disturbed upland areas, while ice plant is predominantly spreading downhill from private mesa top landscapes. The other species are primarily associated with the riparian and railroad corridors. The distribution of these invasive exotic species are most prevalent downstream of storm drain outfalls where disturbed conditions and regular water inputs favor their growth habitats over other native species. Comprehensive mapping of invasive exotic plant species is being conducted as part of the field efforts related to this assessment and will be incorporated and considered during the future phases of the project.

1.3.4 Water Resources

The major surface water resources within the RCW are Rose Creek and San Clemente Creek. Both creeks flow southwesterly until their confluence near the interchange between Interstate 5 and State Route 52 and then flows south to Mission Bay. Both creeks would naturally only have precipitation driven seasonal flows with riparian and aquatic communities adapted to periods of dry conditions.

With the contribution of dry weather flows from the nearby urbanized landscaping, the lower sections of both Rose Creek and Sycamore Creek are now nearly perennial in nature. There are no significant groundwater aquifers present in the RCW. The aquifers that do exist are narrow shallow alluvium deposits that support the existing riparian communities along the canyon bottoms. There are also a variety of small surface impoundments on MCAS Miramar, including the Fish Pond used as a recreational asset for Station personnel.

1.3.5 Cultural Resources

Cultural Resources on MCAS Miramar are managed by the Environmental Management Department (EMD). EMD completed the final version of the Integrated Cultural Resources Management Plan (ICRMP) in January of 2004. The ICRMP is being used as a five year plan to manage cultural resources by maximizing the benefits on resources, minimizing adverse affects and impacts on resources, while supporting the continued mission of MCAS Miramar. The document provides guidance on actions to be taken if a proposed project will have an effect on a cultural resource. Typically, survey or excavation work would be performed by qualified contractors to meet National Historic Preservation Act (NHPA) requirements. Regulations outlined by the National Advisory Council on Historic Preservation (ACHP) and the National Park Service (NPS) provide additional guidance and instruction on managing cultural resources. The ICRMP has not been made public due to sensitivity of resources on station.

In addition to reviewing the historic and cultural resource information provided by MCAS Miramar, the project team conducted research in the Rose Canyon and San Clemente Canyon west of Interstate 805. The research resulted in a finding of 47 recorded archaeological sites. Historic sites located in Rose Canyon include the Union Brick Company and features associated with the railroad line. The terraces and banks of Rose Canyon have not been surveyed for cultural resources. San Clemente Canyon was last comprehensively surveyed in 1968. It would benefit from a new survey since many conditions have changed over the past 37 years.

1.3.6 Recreational Resources

There are 16 parks and 11 open space preserves within the RCW, all of which are owned by the city of San Diego. They provide many recreational opportunities such as nature viewing, hiking and cycling. A network of 37 miles of designated bikeway facilities allows users from the area access into these parks and open spaces. Over 14 miles of hiking and mountain biking trails span both the Rose

Canyon Open Space Park and the Marian Bear Memorial Park. These parks allow locals to enjoy nature without having to venture too far. There is potential for more educational opportunities within the RCW with the presence of significant biological and cultural resources, as well as suitable habitat for several endangered species within the RCW boundaries. Interpretive signage and kiosks, which are currently installed on park lands, are a simple way to inform the public about the sensitivity of the RCW and a way to encourage them to help preserve it.

1.3.7 Political Districts

Politicians, land owners and land managers play a big part in the funding and management of projects within a watershed. It's important to know the political structure of the RCW in order to contact officials for appropriate funding, project proposals and the implementation of future projects.

The watershed includes ten community planning areas, each with an elected board; five San Diego City Councilmembers (Districts 1,2,5,6 and 7); three San Diego County Supervisors (Districts 1,3 and 4); three State Assemblymembers (Districts 75, 76 and 77); two State Senators (Districts 36 and 39) and three representatives in Congress (Districts 50, 52 and 53).

2 Political Districts

It is important to understand how the various political districts and special interests may have a potential to affect or be affected by actions recommended or undertaken within the RCW. As such, the following sections identify the various federal, state, county, and local political offices and districts that overlay the study area. This information will be used during later phases of this project to help determine appropriate contacts for gaining political support, augmenting funding, and maintaining community involvement and interest.

2.1 Federal Offices

The current U.S. Senators for California are Dianne Feinstein and Barbara Boxer. Senator Feinstein was elected in 2000 and will be up for re-election in 2006. Senator Boxer was just re-elected in 2004 to serve another term. The RCW contains portions of three U.S. House of Representative districts (Figure 2-1 and Table 2-1), and includes the 50th District, Randy 'Duke' Cunningham; the 52nd District, Duncan Hunter; and the 53rd District, Susan Davis. All three Representatives were re-elected in 2004 for another two-year term.

Table 2-1: Federal Offices and Districts

Senatorial Term					Senator
2001-2007					Dianne Feinstein
2005-2011					Barbara Boxer
Congressional Districts and Terms	Total Acres	Acres in watershed	Percent in watershed	Percent of watershed	Congressional Representative
50th District (2004-2006)	194,844	13,769	7%	59%	Randy Cunningham
52nd District (2004-2006)	1,362,696	6,812	0%	29%	Duncan Hunter
53rd District (2004-2006)	73,459	2,847	4%	12%	Susan Davis

2.2 State Offices

The RCW contains portions of two California Senatorial districts (Figure 2-2 and Table 2-2) and three Assembly districts (Figure 2-3 and Table 2-3). The two Senatorial districts include: 36th District, Dennis Hollingsworth and 39th District, Christine Kehoe. Senator Hollingsworth's district covers the eastern portion (~23%) of the RCW and includes a portion of Scripps Miramar Ranch and about half of the MCAS Miramar lands within the RCW. Senator Hollingsworth was elected to office in 2002 and will be up for re-election in 2006. Senator Kehoe's district covers the western portion (~77%) of the RCW and includes the portions of Mira Mesa, Clairemont Mesa, Kearny Mesa, University, La Jolla and Pacific

Beach that are within the RCW, as well as about half of the MCAS Miramar lands within the RCW. Senator Kehoe was elected to office in 2004 and will be up for re-election in 2008.

The three Assembly districts include: the 75th District, George Plescia; the 76th District, Lori Saldana; and the 77th District, Jay La Suer. Assemblyman Plescia's district covers portions of Mira Mesa, University, and La Jolla that represents about 18 percent of the RCW. Assemblywoman Saldana's district covers portions of Clairemont Mesa, Kearny Mesa, Pacific Beach and Mission Bay Park that represents about 18 percent of the RCW. Assemblyman La Suer's district covers portions of Scripps Miramar Ranch, Mira Mesa, MCAS Miramar, and University that represents about 63 percent of the RCW. Assemblyman Plescia and La Suer were re-elected in 2004 for another two-year term while Assemblywoman Saldana was elected for the first time in 2004.

Table 2-2: California Senatorial Districts

Senatorial Districts and Term	Total Acres	Acres in watershed	Percent in watershed	Percent of watershed	Senator
36th District (2002-2006)	1,750,596	5,331	0%	23%	Dennis Hollingsworth
39th District (2004-2008)	117,350	18,096	15%	77%	Christine Kehoe

Table 2-3: California Assembly Districts

Assembly Districts and Terms	Total Acres	Acres in watershed	Percent in watershed	Percent of watershed	Assembly Representative
75th District (2004-2006)	183,567	4,237	2%	18%	George A. Plescia
76th District (2004-2006)	52,684	4,325	8%	18%	Lori Saldana
77th District (2004-2006)	1,375,047	14,866	1%	63%	Jay La Suer

Figure 2-1: Federal Congressional Districts

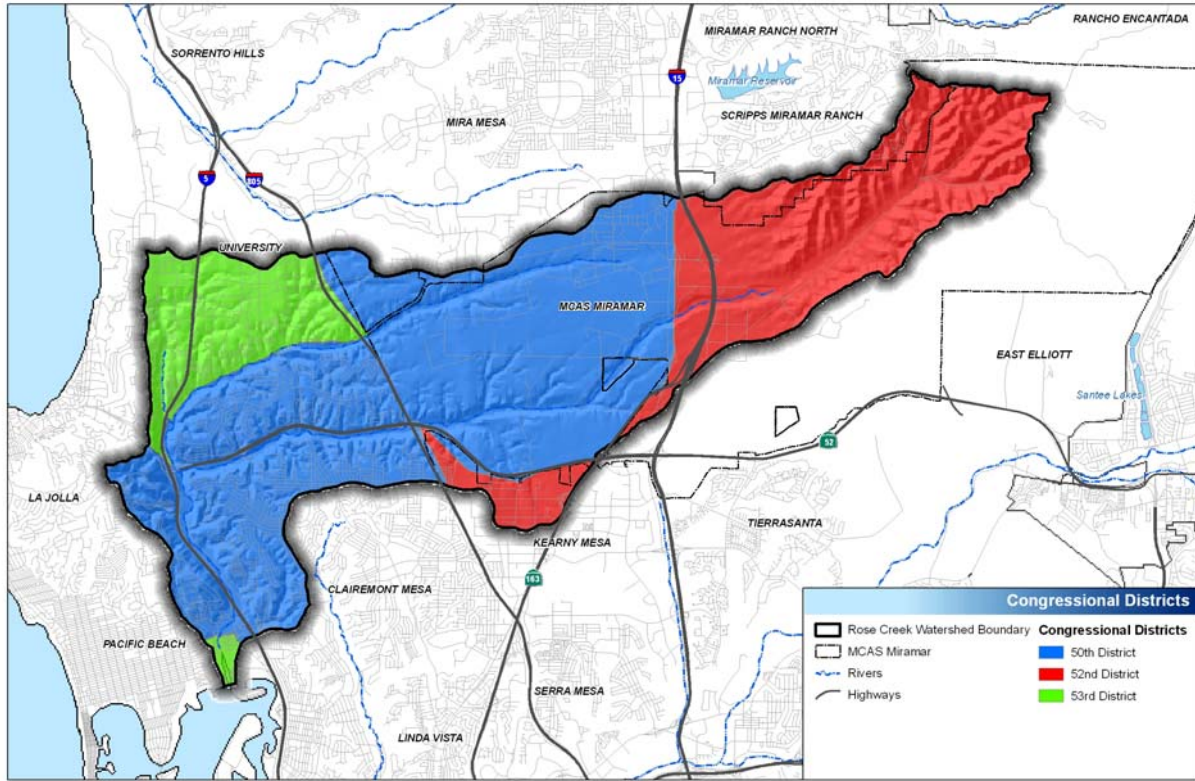


Figure 2-2: California Senatorial Districts

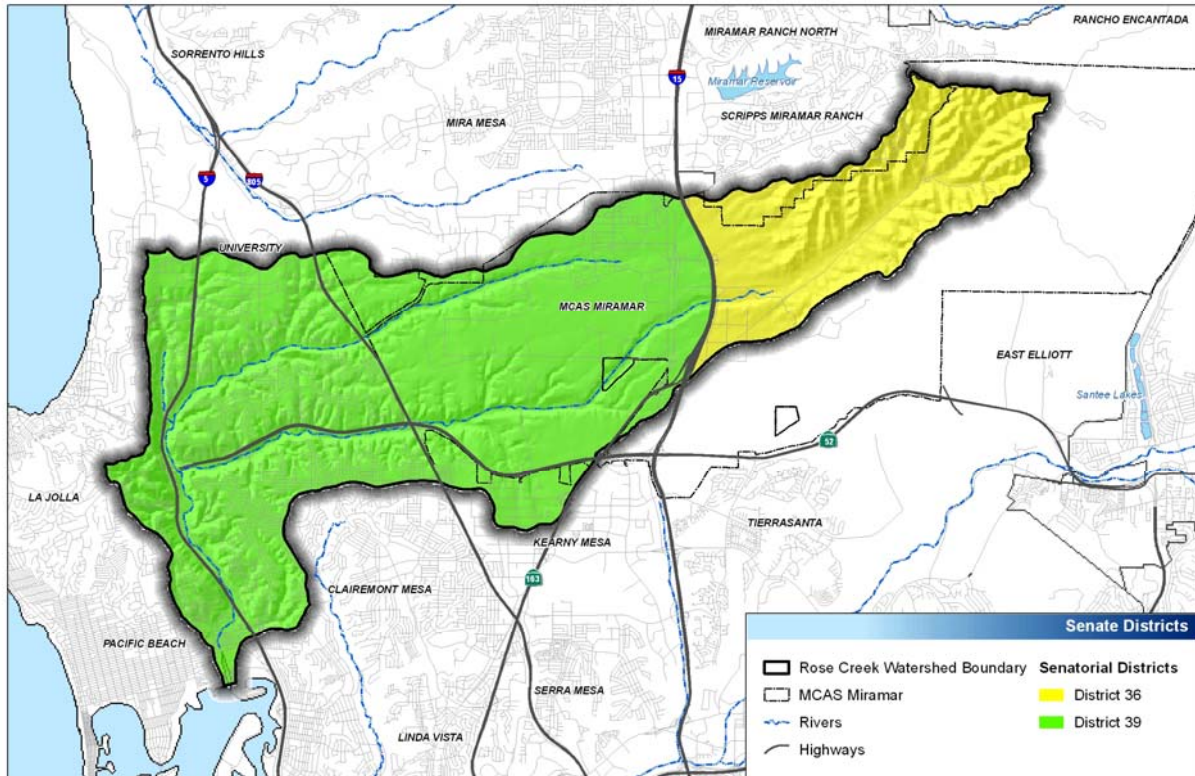
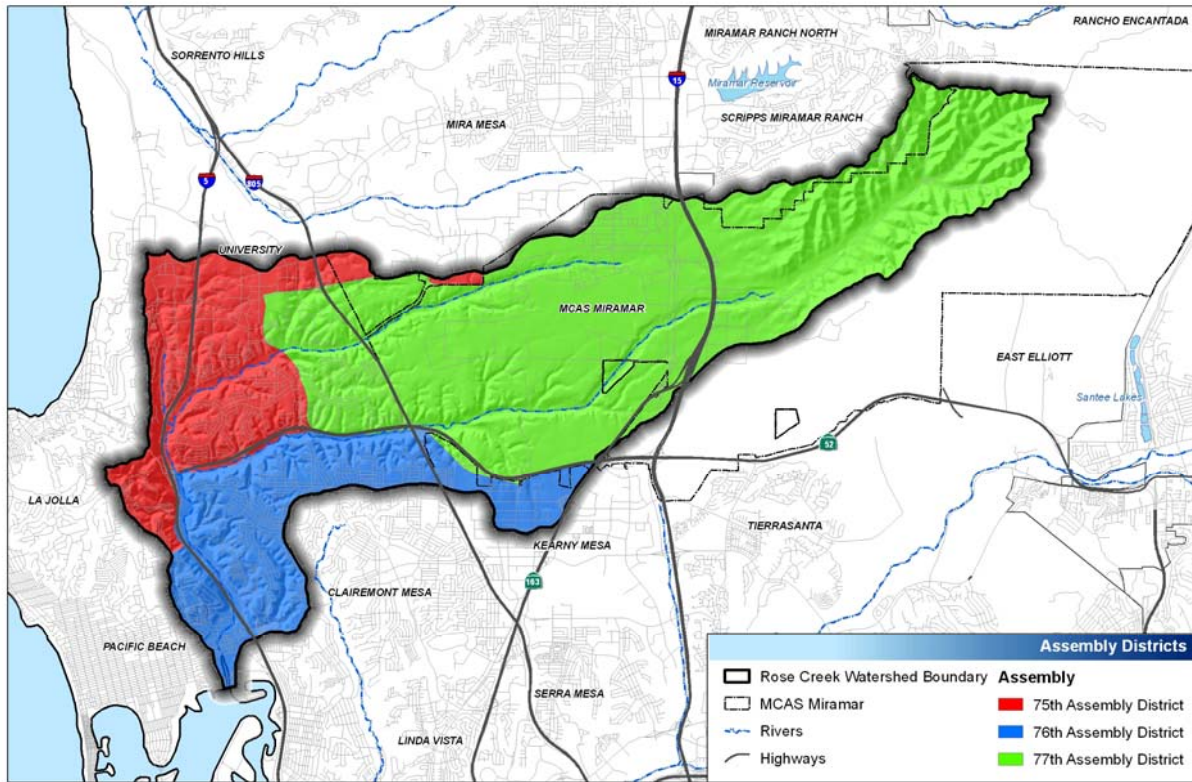


Figure 2-3: California Assembly Districts



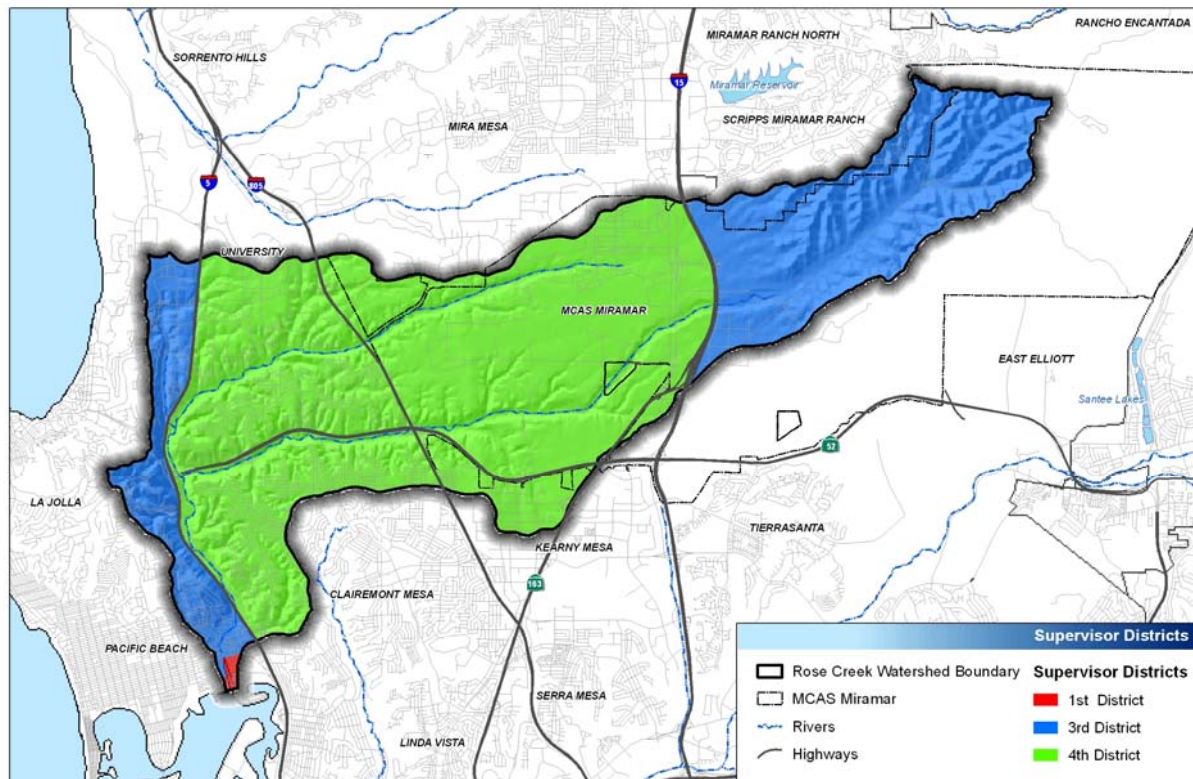
2.3 County of San Diego Supervisor Districts

The RCW contains portions of three Supervisor Districts (Figure 2-4 and Table 2-4), with the 1st District only covering 60 acres within Mission Bay Park. Supervisor Greg Cox has represented the 1st District since 1995, and was re-elected in 2004 to another term. The 3rd District covers portions of Scripps Miramar Ranch, La Jolla, Pacific Beach, University, and MCAS Miramar representing 31 percent of the RCW. Supervisor Pam Slater-Price has represented the 3rd District since 1992, and was re-elected in 2004 to another term. The 4th District covers portions of Mira Mesa, Kearny Mesa, Clairemont Mesa, University, and MCAS Miramar representing 68 percent of the RCW. Supervisor Ron Roberts has represented the 4th District since 1995, and was re-elected to another term in 2002.

Table 2-4: County of San Diego Supervisor Districts

Supervisor Districts	Total Acres	Acres in watershed	Percent in watershed	Percent of watershed	Supervisors
1st District	120,870	57	0%	0%	Greg Cox
3rd District	134,194	7,353	5%	31%	Pam Slater-Price
4th District	63,848	16,018	25%	68%	Ron Roberts

Figure 2-4: County of San Diego Supervisor Districts



2.4 City of San Diego Council Districts

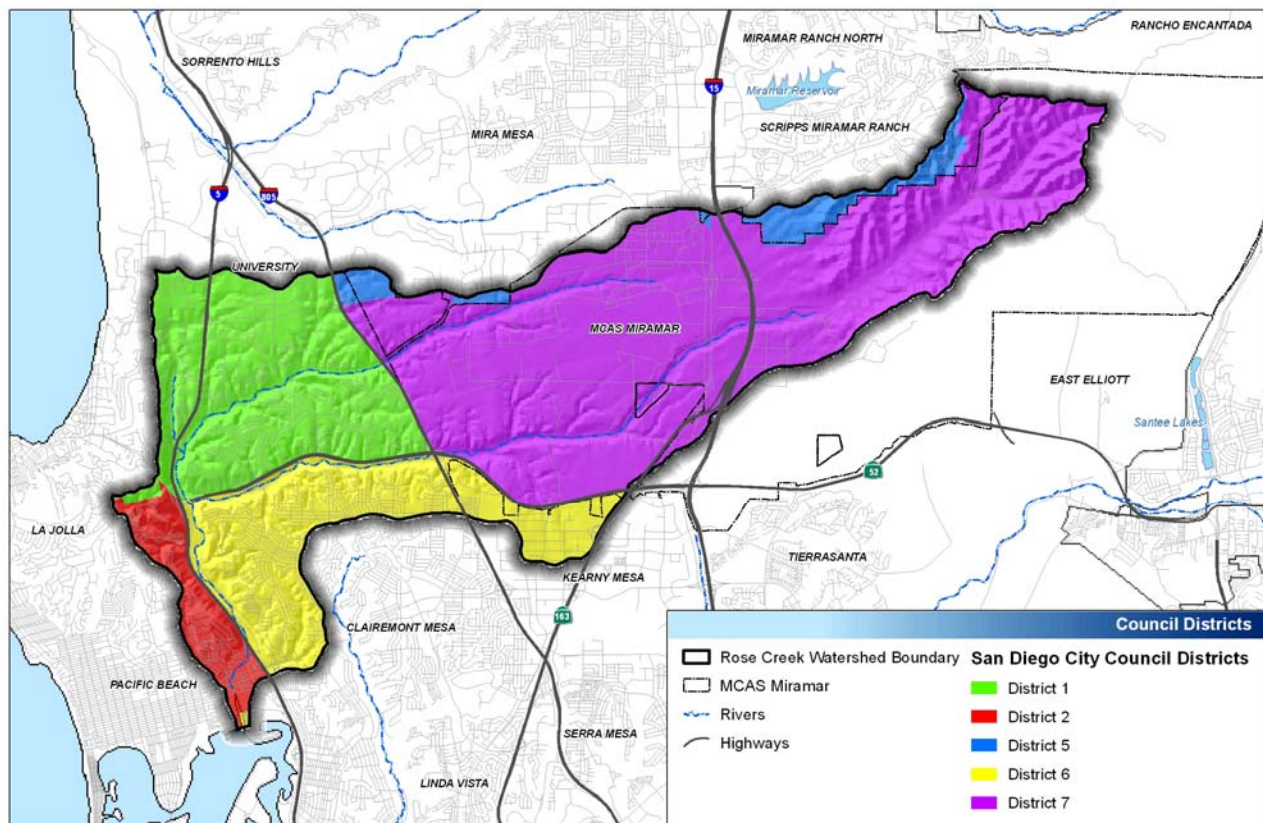
The RCW contains portions of five City of San Diego Council Districts (Figure 2-5 and Table 2-5), including: District 1, District 2, District 5, District 6, and District 7. District 1 covers portions of University and La Jolla and representing 21 percent of the RCW. Councilman Scott Peters has represented District 1 since 2000, and we re-elected in 2004 to another term. District 2 covers portions of La Jolla, Pacific Beach, and Mission Bay Park representing only 5 percent of the RCW. Councilman Michael Zucchet has represented District 2 since 2002, and will be up for re-election in 2006. District 5 covers portions of Scripps Miramar Ranch, Mira Mesa, and University that are within the RCW representing only 4 percent of the RCW. Councilman Brian Maienshein has represented District 5 since 2000, and was re-elected to another term in 2004. District 6 covers portions of Kearny

Mesa, Clairemont Mesa, and Mission Bay Park representing 17 percent of the RCW. Councilwoman Donna Frye has represented District 6 since 2001, and will be up for re-election in 2006. District 7 covers portions of University and MCAS Miramar representing 54 percent of the RCW. Councilman Jim Madaffer has represented District 7 since 2002, and was re-elected to another term in 2004.

Table 2-5: City of San Diego Council Districts

Council Districts	Total Acres	Acres in watershed	Percent in watershed	Percent of watershed	Council Representative
District 1	40,809	4,896	12%	21%	Scott Peters
District 2	21,287	1,080	5%	5%	Michael Zucchet
District 5	37,960	869	2%	4%	Brian Maienshein
District 6	23,280	3,923	17%	17%	Donna Frye
District 7	49,083	12,660	26%	54%	Jim Madaffer

Figure 2-5: City of San Diego Council Districts



2.5 Interest Groups

In addition to the formal political offices and associated districts described above, there are a variety of special interest groups active within Mission Bay or the RCW. Involving these groups and keeping them informed as the Assessment moves forward will also help build and maintain political and community support for implementing its final recommendations.

2.5.1 Government Sponsored Interest Groups

Mission Bay Clean Water Technical Advisory Committee (MBCWTAC) was formed to coordinate the science of the various projects included in the Mission Bay Water Quality Management Plan (MBWQMP) and make recommendations to the Mayor's Clean Water Task Force on adaptive management issues to the MBWQMP. The MBCWTAC meets on a quarterly basis and acts as a forum for project team leaders, technical advisors, contract managers and the public to share information with each other. Discussions also focus on project approaches, results, data management, and the conclusions of the various technical studies being conducted in and around Mission Bay.

Mayor's Clean Water Task Force (CWTF) was established by Mayor Dick Murphy in 2001 to advise the Mayor and City Council on water quality issues. The CWTF is co-chaired by the Mayor and Councilmember Scott Peters and consists of elected officials, academics, environmentalists, business interests, professionals, and other related agency representatives. The CWTF meets bi-monthly, thus providing ample opportunity for community stakeholders and government agencies to provide input.

Mission Bay Park Committee advises the San Diego Park and Recreation Board on the development, utilization, and policies regarding Mission Bay Park. The Committee meets the first Tuesday of each month, 6:00 p.m., at various locations.

San Diego Park and Recreation Board was chartered by the City Council under Municipal Code Section 26.30 to serve as an advisory board on matters relating to the acquisition, development, maintenance and operation of parks, beaches and recreation properties and facilities. The Board consists of eleven members who serve without compensation. Appointed by the Mayor and confirmed by the City Council, the members serve two-year terms, for a maximum of eight years. The Park and

Recreation Director serves as Secretary to the Board. The Board meets the third Thursday of the month, 2:00 P.M. in the Council Committee Room of the City Administration Building located at 202 C Street.

Marian Bear Natural Park Recreation Council is part of the city and public interface. This council makes recommendations to the City on management needs, enhancement and development of City parks and open space. In addition, the Marian Bear Natural Park Recreation Council has undertaken tasks such as conducting fundraising activities for Park enhancement, education and interpretive efforts as well as advise and assist any and all government agencies in the preparation, adoption and implementation of or the amendment to the planning of Marian Bear Memorial Park.

Rose Canyon Recreation Council advises City of San Diego Open Space Division staff, the Park and Recreation Board and its Area Committees on matters related to the preservation, management, maintenance and appropriate use of the Rose Canyon Open Space Park. Such matters include, but are not limited to, issues of park maintenance and safety, illegal encroachments, park access and trail delineation, enhancing public awareness and appreciation of park assets, restoration of degraded areas, enlisting and establishing volunteer programs to assist in maintenance and management, making recommendation on additional land acquisition for the park, and to advise the University Community Planning Group regarding land use issues affecting the park.

2.5.2 Private and Non-Profit Interest Groups

Friends of Rose Canyon is a non profit corporation whose mission is to protect, preserve and restore Rose Canyon and the Rose Canyon Watershed. Other activities Friends of Rose Canyon are involved with are the monitoring of birds and wildlife on an informal basis, publicizing information about the canyon and watershed to more than 1,100 people and monitor conditions in the canyon and report violations of safety issues as necessary. This interest group organizes and conducts nature walks that they co-sponsor with the City of San Diego Parks and Recreation Department. These walks are for the general public, scout groups, school groups and other groups upon request. The Friends of Rose Canyon also works on restoration projects that are co-sponsored by the City of San Diego Park and Recreation Department and involve scouts and the general public and well as ongoing maintenance of the riparian restoration project that was funded by a state grant. This active group also monitors a

tracking transect in Rose Canyon in which the data is compiled into a database by the San Diego Tracking Team

The Friends of Rose Creek is an advocacy group working to create a healthy eco-system for plants, animals and humans along Rose Creek from Highway 52 to Mission Bay while improving public access and recreational opportunities along critical wetland corridors. An all volunteer group consisting of local residents, business owners and environmental activists, the group organizes nature hikes, picks up trash and removes invasive species. The Friends' goal is to have the lower portion of the creek added to Marian Bear Memorial Park and Mission Bay Park so that resource management and recreational opportunities take precedence for both short and long-term planning and management. Achieving this goal will allow the communities of University and Clairemont Mesa to have non-motorized access to Mission Bay Park, create a model watershed eco-system in the heart of Pacific Beach and lower Rose Canyon. For more information contact Karin Zirk at (858) 405-7503 or visit their website at <http://www.saverosecreek.org>.

San Diego Earthworks, in addition to managing the Rose Creek Watershed Opportunities Assessment, annually organizes San Diego Earth Day, the Green Built Tour and other community-based conservation events. Volunteers are welcome at all events. Contact earthworks@earthdayweb.org.

The San Diego Tracking Team promotes the preservation of biologically diverse and sensitive land forms and wildlife habitat in San Diego County and adjacent areas by conducting wildlife monitoring and research coupled with outdoor and environmental programs. Some of their goals are to regularly monitor the presence (or absence) of certain target and rare species that reflect the health of the ecosystem and record that data consistently for all of San Diego County. They also participate in efforts to monitor and improve the effectiveness of planned conservation efforts in San Diego County such as the MSCP and MHCP. The team facilitates the San Diego community's awareness, involvement and appreciation of the environment and the importance of conserving habitat by providing various public outreach and educational opportunities. The San Diego Tracking Team has one transect in Rose Canyon where volunteers are recording the presence of various animal species. The Tracking Team would like add transects that cover the watershed, which acts as a wildlife connection from Mission Trails Park to the ocean. Additional volunteers are needed to expand the

program; training is provided. Contact Gretchen Nell at gnell@ucsd.edu or visit their website at <http://www.sdt.org/index.html>.

The Sierra Club San Diego Canyons Campaign is a volunteer organization to foster awareness, appreciation and on-going community involvement in the protection and restoration of the unique canyon and creek habitats in San Diego County. The group also conducts educational naturalist-guided tours of neighborhood canyons and creeks throughout San Diego to initiate establishment of Friends Groups to steward these natural open space areas. After the tour events, the group facilitates organizational meetings for the participants and residents surrounding the particular neighborhood canyon. At these meetings, they enroll leadership for new Friends Groups and the residents share in a variety of stewardship and other project responsibilities. The Sierra Club San Diego Canyons Campaign also helps these Friends Groups plan and implement clean-up and habitat restoration events for their canyon. A variety of educational components are introduced at the events to inform on habitat loss, endangered species, habitat restoration techniques and important contacts. Contact Eric Bowlby at savewetlands@compuserve.com or visit their website at <http://sandiego.sierraclub.org/canyons>.

The Tri-Canyon Weed Warriors is a group of community volunteers dedicated to helping maintain the native vegetation in the city's tri-canyons (Rose, Marian Bear and Tecolote). They hold weed warrior events to remove non-native exotic invasive species. To volunteer or for more information, contact the Tri-canyon Ranger office at (858) 581-9961.

3 Land Uses and Planning

Existing and planned land uses, along with the jurisdictions and planning documents governing them are critical pieces in understanding the historical character of the RCW, including potential assets and liabilities; today's community and land use character; and what tomorrow's character may be like if the existing planning documents are implemented in their current form. By gaining an in-depth perspective on the past, current, and future land use planning environment affecting the RCW; historical assets can be protected and interpreted; current opportunities can be leveraged; and future land use decisions can be modified to help enhance and protect the natural, cultural and recreational resources within the RCW.

3.1 Land Use Jurisdictions

The public entities having land use jurisdiction within a watershed are key stakeholders to engage in the planning and assessment process. Their early and continued involvement can streamline the vetting process for action recommendations, thus developing the bureaucratic and political support necessary for funding and implementation. To initiate the involvement of these entities, a Memorandum of Understanding (MOU) was developed with the City of San Diego for cooperative information sharing and review. The MOU with the City of San Diego identifies the Storm Water Pollution Prevention Division (SWPPD) of the Metropolitan Wastewater Department as the lead for the MOU. The overall lead of the project is the City of San Diego's Park and Recreation Department. Additionally, the MOU also establishes data sharing agreements with the Open Space Division regarding ownership data within Rose and San Clemente Canyons and with the SWPPD regarding water quality monitoring data from the dry-weather stations within the RCW.

3.1.1 MCAS Miramar

The United States Government has owned the site of MCAS Miramar in one form or another since World War I, when it was an Army Infantry Training Center called Camp Kearny. Present day MCAS Miramar is located within the incorporated boundaries of the City of San Diego. The station is bisected by Interstate 15 and bordered on the west by Interstate 805 and occupies several parcels that extend south of State Route 52. Within the RCW all of the land adjacent to MCAS Miramar is under the jurisdiction of the City of San Diego and is comprised of several community planning areas.

Of the 23,194 acres under federal jurisdiction at MCAS Miramar, 12,201 acres (53%) are within the RCW.

3.1.2 City of San Diego

The City of San Diego has land use jurisdiction over all of the lands within the RCW that are not a part of MCAS Miramar. Land use planning within the City of San Diego occurs primarily at two levels: city-wide and community plan.

3.1.2.1 City-wide Planning

At the citywide level the City of San Diego adopted its Strategic Framework Element and Action Plan in 2002, which lays out a strategy for updating all of the remaining Plan elements by 2008. It incorporates water quality and watershed protection into the Conservation and Environment section, and identifies the use of BMPs within the development sections of the Plan. One of the key features of the Strategic Plan is the “City of Villages” concept that focuses future development and redevelopment around transportation nodes, creating smaller higher density communities aimed at providing a strong localized live/work relationship with streetscapes focused on the pedestrian experience.

Within the RCW study area there are three types of village destinations; Multifamily Redesignation, Neighborhood Village Center and Urban Village Center. Multi-family Redesignations are areas that have been slated to become multifamily residential complexes such as condominiums and apartments. Neighborhood Village Centers are areas that are a mix of commercial and residential uses with an emphasis on residential density. Urban Village Centers are similar to Neighborhood Village Centers but with less residential and a higher density of office and industrial use. The communities of Clairemont Mesa, Kearny Mesa, Pacific Beach, Scripps Miramar Ranch and University City all have village designations with University City having the highest amount of total acreage within the RCW. There are 104 acres of an Urban Village Center which is the University Towne Center. La Jolla Village Square makes up the 70 acres of a Neighborhood Village Center just east of Interstate 5 and Nobel Drive. Table 3-1 lists the City of Villages designations and acreages within the RCW.

Table 3-1: City of San Diego – City of Villages

Village Type	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Multifamily Resignation	2						8			10
Neighborhood Village Center	5						35	28	70	137
Urban Village Center		37							104	141
Totals	6	37	0	0	0	0	43	28	174	288

3.1.2.2 Community Plan Areas

Within the RCW lie seven community plan areas centered on the communities of Clairemont Mesa, Kearny Mesa, La Jolla, Mira Mesa, Pacific Beach, Scripps Miramar Ranch and University (Figure 3-2), which combined represent about 47 percent of the watershed. Of these seven communities, the largest community plan area in terms of size (5,014 acres) is University and occupies the northwestern portion of the RCW, which includes the University of California at San Diego (UCSD) and the Rose Canyon Open Space (Table 3-2). The Clairemont Mesa community plan area is the next largest (3,040 acres) and occupies the southwestern portion of the RCW and includes Marian Bear Memorial Park. The combination of these three community plan areas represents about 86 percent of the RCW. The remaining 14 percent of the RCW the City of San Diego's jurisdiction is split across the community plan areas of Kearny Mesa (869 acres), La Jolla (823 acres), Mira Mesa (85 acres), Pacific Beach (522 acres), and Scripps Miramar Ranch including the Reserve area (821 acres). The Mira Mesa Community Plan areas represent less than 1% of the RCW. In addition to the seven Community Plan areas, Mission Bay Park is a major feature and recreation destination.

Table 3-2: City of San Diego Community Plan Areas

Community Plan Area	Total Acres within San Diego County	Acres within watershed	Percent in watershed	Percent of watershed
Clairemont Mesa	8,555	3,040	36%	13%
Kearny Mesa	4,423	869	20%	4%
La Jolla	5,720	823	14%	4%
MCAS Miramar	23,060	12,201	53%	52%
Mira Mesa	10,848	85	1%	0%
Mission Bay Park	4,157	53	1%	0%
Pacific Beach	2,642	522	20%	2%
Reserve	224	222	99%	1%
Scripps Miramar Ranch	4,195	599	14%	3%
University City	8,681	5,014	58%	21%
Totals	72,503	23,428		100%

The following discussion of each of the communities are based on information obtained from the City of San Diego website and has been included here to provide a short characterization of each community. They are listed in order based on the percentage of the RCW within the plan area.

University

The University Community Planning area encompasses 8,681 acres, with 5,014 acres being within the RCW representing about 21 percent of the watershed. The area is bounded by Los Penasquitos Lagoon and the toe of the east-facing slopes of Sorrento Valley on the north, the railroad track, the station boundary for MCAS Miramar and I-805 on the east, State Route 52 on the south, and I-5, Gillman Drive, North Torrey Pines Road, La Jolla Farms, and the Pacific Ocean on the west. The University Community Planning Group recently worked with City Planning Department to review and revise existing condition data for their community and completed the process in May 2004. The Community Plan was adopted on July 7, 1987 and last amended on November 21, 2000. Councilmember Scott Peters (District 1) shares representation of the University community with Councilmember Brian Maienschein (District 5).

Clairemont Mesa

The Clairemont Mesa Community Planning area encompasses 8,555 acres, with 3,040 acres of the planning area being within the RCW representing about 13 percent of the watershed. The area lies south of State Route 52, west of Interstate 805, north of the Linda Vista community, and east of Interstate 5. Clairemont Mesa is one of the first post-World War II suburban developments in the City of San Diego, with many of its homes built in the 1950's and 1960's. The area is largely defined by its prominent topography. Developed areas of Clairemont Mesa sit primarily atop mesas punctuated by several major canyon systems, with San Clemente Canyon to the north and Tecolote Canyon weaving through the center of the community. Many of the neighborhoods in the western portion of the community enjoy views of Mission Bay and the Pacific Ocean. The Clairemont Mesa Community Planning Group recently worked with City Planning Department to review and revise existing condition data for the community and completed the process in April 2004. The Clairemont Mesa Community Plan was adopted by the City Council on September 26, 1989. Councilmember Donna Frye (District 6) represents the Clairemont Mesa community.

Kearny Mesa

The Kearny Mesa Community Planning area encompasses 4,423 acres, with 869 acre being within the RCW representing only 4 percent of the watershed. The plan area is generally bounded by SR-52 on the north, I-805 on the west, Aero Drive on the south, and I-15 on the east. The first urbanization of Kearny Mesa began in 1937 with Gibbs Airfield, now Montgomery Field. Beginning in 1955 with General Dynamics, numerous aerospace, electronic, and other industrial and office firms have located in the area. Portions of Kearny Mesa, predominantly west of SR-163, also include commercial development. Residential development is limited but increasing in recent years, particularly with the development of Stonecrest in the southeast corner of the community and the redevelopment of the General Dynamics site, now known as Spectrum. The original 1977 Serra Mesa Community Plan encompassed Kearny Mesa. The Kearny Mesa Community Planning Group worked with City Planning Department to review and revise existing condition data for their community. The process was completed in September 2003. The Kearny Mesa Community Plan was adopted in 1992 and last amended in 2002. Councilmember Donna Frye (District 6) represents the Kearny Mesa community.

La Jolla

The La Jolla Community Planning area consists of 5,720 acres, with 823 acres being within the RCW representing only 3 percent of the watershed. The plan area is located along the western edge of the north coastal region of the City of San Diego. It is bounded on the north by the University of California, San Diego and a portion of the University community, on the east by Gilman Drive, the University community and Interstate 5, on the south by the community of Pacific Beach and on the west by the Pacific Ocean. Neither the Scripps Institute of Oceanography nor the University of California is under the jurisdiction of the City of San Diego. Visually dramatic, the primarily residential (58%) community of La Jolla is physically defined by its rugged coastline of ocean bluffs and beaches together with steep canyons and hillsides culminating at Mount Soledad. La Jolla has experienced substantial growth and land development resulting in the community currently being 99 percent built out. Consequently, the primary development in La Jolla is infill. In 1967, the first La Jolla Community Plan was adopted. A subsequent comprehensive update to the La Jolla Community Plan was adopted by the City Council in June 2002, and then certified by the California Coastal Commission in February 2004 following City approval of a number of suggested modifications. Councilmember Scott Peters

(District 1) shares representation of the La Jolla community with the Councilmember Michael Zucchet (District 2).

Scripps Miramar Ranch

The Scripps Miramar Ranch Community Plan area encompasses 4,195 acres, with 599 acres being within the RCW representing about 3 percent of the watershed. This community of eucalyptus trees and hiking trails surrounds Miramar Reservoir and is immediately east of Mira Mesa. Scripps Miramar Ranch is one of two communities that make up the Scripps Ranch Community that was established in the 1890's and continues to proudly maintain its community motto, "Scripps Ranch - Country Living." Scripps Ranch is also home to some of the City's most scenic parks, beautiful community facilities, landscaped neighborhoods and business centers. The Scripps Miramar Ranch Community Planning Group recently worked with City Planning Department to review and revise existing condition data for their community and completed the process in April 2004. The Community Plan was adopted in August 1978; Reprinted September 1989; Amended in November 1989, October 1993, and October 1999. Councilmember Brian Maienshein (District 5) represents the Scripps Miramar Ranch community.

Pacific Beach

The Pacific Beach Community Planning area encompasses 2,642 acres, with 522 acres being within the RCW representing about 2 percent of the watershed. The planning area is located along the western edge of the mid-coastal region of the City of San Diego. It is bounded on the north by La Jolla, on the east by Interstate 5 and Clairemont Mesa, on the south by Mission Bay Park and Mission Beach, and on the west by the Pacific Ocean. The primarily residential (76%) community of Pacific Beach is physically identified by its proximity to water, both the coastal bluffs and beaches of the Pacific Ocean and the beaches of Mission Bay to the south. The coastal plain that encompasses the majority of Pacific Beach rises to steep hillsides to the north, bordering La Jolla. Pacific Beach was included within the original Pueblo Lands, which divided the area into a large grid pattern in the mid-1800s. Although residential construction began at that time, the majority of the community was built out after 1930. Approximately 97% of the community's land area has been developed. Consequently, the development at this time is primarily infill. In 1970, a Mission (Beach)-Pacific Beach Community Plan was adopted. In 1974, the City Council adopted the Mission Beach Precise Plan, amending the 1970 plan to remove the Mission Beach planning area from it, thus creating the first Pacific Beach

Community Plan. The advent of the Coastal Act was one of the many reasons to update the plan in 1983, creating the Pacific Beach Community Plan and Local Coastal Program Land Use Plan. That plan was amended in 1990 to reduce the residential land use designation density in most of the community's multiple dwelling unit areas. A subsequent plan update in 1995 that dealt with a range of issues resulted in the plan currently in use. The Pacific Beach Community Planning Group recently worked with City Planning Department to review and revise existing condition data for their community and complete the process in July 2004. Councilmember Michael Zucchet (District 2) represents the Pacific Beach community.

Mira Mesa

The Mira Mesa Community Plan area encompasses 10,848 acres, with 85 acres being within the RCW representing less than 1 percent of the watershed. It is bounded on the north by Los Penasquitos Canyon, on the west by I-805, on the east by I-15, and on the south by Miramar Road. The Mira Mesa Community Planning Group recently worked with City Planning Department to review and revise existing condition data for their community and completed the process in December 2003. The current community plan was adopted on December 6, 1994 and last amended on June 19, 2001. Councilmember Brian Maienshein (District 5) represents the Mira Mesa community.

Mission Bay Park

Mission Bay Park is the largest man-made aquatic park in the country, consisting of 4,235 acres, approximately 46% land and 54% water. Only 53 acres of Mission Bay Park are considered to be within the RCW representing less than 1 percent of the watershed. The park offers a wide range of recreational activities including paths for walking and jogging, and playgrounds for children. It is one of San Diego's most popular locations to fly kites, have picnics or sail model yachts. Fire rings make it possible to cook out and stay warm. Mission Bay Park also offers a variety of free opportunities to the public such as professional volleyball and Over-the-Line sporting events. Annual attendance in the park is estimated at 15 million.

THIS PAGE LEFT INTENTIONALLY BLANK

Figure 3-1: City of San Diego – City of Villages

Back of Figure 3-1

Figure 3-2: City of San Diego Community Plan Areas

Back of Figure 3-2

3.2 Land Ownership

The largest physical landowner within the RCW is the federal government with its holdings at MCAS Miramar (Figure 3-3 and Table 3-3). Of the 12,201 acres under federal ownership within the RCW, over 2,600 acres are leased to other entities, including nearly 2,300 acres to the City of San Diego being primarily operated as the Miramar Landfill. Private owners (primarily individual residences) are the second largest landowners within the RCW with 5,937 acres or 25% of the entire watershed. The community of University entails the largest area of private ownership with 2,477 acres or 41 percent of the total private land holdings. The community of Clairemont Mesa is the second largest with 29 percent of the private land holdings (Table 3.2). Ownership by the City of San Diego (1148 acres) is focused in the two large open spaces of Rose Canyon Open Space Park and the Marion Bear Memorial Park, which occur within the communities of University and Clairemont Mesa respectively. The University of California owns 839 acres of land within the RCW occupied by the University of California San Diego in the community of University, Alliant University is a private college located in the community of Scripps Miramar Ranch.

Table 3-3: Land Ownership

Ownership	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
City of San Diego	502	112	130			4	17	215	646	1,626
City of San Diego leased from Federal Gov't		26		2,239						2,265
Military		25		9,248	9		51	4	245	9,582
Private	1,729	499	555	107	71	11	298	191	2,477	5,937
Road Right-of Way	664	183	138	596	6	38	131	32	1,001	2,787
School Districts	145	25					24	14	172	381
State of California				12						12
University of California								366	473	839
Totals	3,040	869	823	12,201	86	53	522	821	5,014	23,428

3.3 Existing Land Uses

Based on the 2002 Existing Land Use data collected from SANDAG (Figure 3-4 and Table 3-4), undeveloped land is the most dominant land use within the RCW covering 8,393 acres (36%) of land, with 7,477 acres being found within MCAS Miramar which is designated for military training purposes

on an as-needed basis (Figure 3-4). The second largest land use category is family housing, which encompass 3,840 acres (16%) of the RCW. Of the 821 acres that the community of Scripps Miramar Ranch occupies within the RCW, 633 acres (77%) are designated as a preserve. Of the 487 acres of parks and preserves designated within the community of Clairemont Mesa, 454 acres (93%) are dedicated to the Marian Bear Memorial Park. In the community of University, 343 of the 564 acres (39%) of parks and preserves are part of the Rose Canyon Open Space Park. Lands dedicated to transportation uses cover the third largest area at just over 3,100 acres. Much of this area is contained within the rights-of-way for Interstate 5, 805, and 15, as well as State Route 52 and 163 that crisscross through the watershed. The majority of family housing and commercial services can be found west of Interstate 805 in the communities of La Jolla, Pacific Beach, Clairemont Mesa and University. Table 3-5 shows the breakdown of existing land uses throughout the watershed.

Table 3-4: 2002 Existing Land Use

Existing Land Use	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Agriculture				80						80
Aviation				809						809
Commercial	39	113		31	5		23		170	381
Extractive Industry				108						108
Family Housing	1,384	33	293	50	1	8	248	102	1,722	3,840
Group Quarters				54			35		56	145
Hotel / Motel		13		2	5		1		28	49
Industrial	82	258		116	31		6		29	523
Junkyard/Dump/Landfill				859						859
Medical	3			5					60	68
Military				1,184						1,184
Military Undeveloped				7,477						7,477
Office	19	29	3				3		187	241
Parks / Preserves	487	44	260	45		11	4	633	564	2,048
Public Services	16	13	14	57			4		36	139
Recreation	8	3	27	502		18	4	3	29	592
Schools	126						24	28	499	676
Transportation	707	188	162	816	39	8	125	35	1,095	3,175
Under Construction	0	25							46	71
Private Undeveloped	153	150	65		6		28	20	493	916
Water Bodies	16			7		9	17			49
Totals	3,040	869	823	12,201	86	53	522	821	5,014	23,428

Figure 3-3: Land Ownership

Back of Figure 3-3

Figure 3-4: 2002 Existing Land Use

Back of Figure 3-4

3.4 Planned Land Uses

Based on the 2020 Planned Land Use data collected from SANDAG (Figure 3-5 and Table 3-5), military undeveloped remains the most dominant land use within the RCW covering 6,035 acres (26%) of land. The second largest planned land use category becomes family housing encompassing 5,003 acres (21%) of the RCW. Lands identified for Military use become the third largest planned land use category covering 4,659 acres (20%) of the RCW. After these three main categories of planned land uses, the next most significant planned land uses each cover nearly equal portions of the RCW. Agriculture, Schools, and Transportation each covers between 1,200 and 1,300 acres. Table 3-5 shows the breakdown of planned land uses throughout the watershed.

Table 3-5: 2020 Planned Land Use

Planned Land Use	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Commercial	8	186							211	405
Extractive Industry				369						369
Family Housing	1,853		445				393	136	2,176	5,003
Hotel / Motel					8				76	84
Industrial	110	507		1	66		6		264	953
Junkyard/Dump/Landfill				454	0			222		676
Medical									27	27
Military				4,659						4,659
Military Undeveloped				6,035						6,035
Mixed Use							46			46
Office	6								137	143
Parks / Preserves	517	75	309		8	53	22	72	953	2,007
Public Services	0								48	49
Recreation				291	3				43	338
Schools	139		1	0			28	391	638	1,196
Spaced Rural Residential	73		69							142
Transportation	335	102		393			27		442	1,298
Totals	3,040	869	823	12,201	86	53	522	821	5,014	23,428

Figure 3-5: 2020 Planned Land Use

Back of Figure 3-5

3.5 Land Use Change Analysis

To determine land use trends between existing and planned land uses, the 2002 Land Use dataset from the San Diego Association of Governments (SANDAG) was used in conjunction with the 2020 Planned Land Use dataset (also from SANDAG). In its current state, the planned land use data has some flaws in which a majority of current vacant and undeveloped land will be converted into spaced rural residential even though physical constraints, ownership patterns, and community plans may suggest otherwise. Though inaccuracies exist, these conversions are still shown since they reflect trends for the area. As this Assessment moves forward these areas will be identified and corrected as more current and accurate data becomes available. As with the existing development patterns, the vast majority of planned development within the RCW occurs west of Interstate 805 within the communities of University and Clairemont Mesa (Figure 3-5). Based on the GIS data from SANDAG, family housing increases 1,163 acres from 3,840 acres to 5,003 acres within the RCW (Table 3-6). The communities of Clairemont Mesa and University see the largest increases in family housing at 25% and 21% respectively. This appears to be due to commercial and vacant lands being converted to family housing. One of the most interesting land use changes (requiring further investigation) occurs within the Scripps Miramar Ranch community where over 200 acres of open space preserve are shown to be converted to a junkyard or landfill. This area has been listed as part of the Multiple Habitat Planning Areas database, calling for 94% preservation. The Scripps Miramar Ranch General Plan printed in 1989, projects this same area as low density family housing. Other land uses outside of MCAS Miramar fluctuate minimally due to the built out nature of the communities.

Table 3-6: Land Use Changes (Planned Land Use – Existing Land Use)

Land Use Categories	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Agriculture	0	0	0	(80)	0	0	0	137	0	57
Commercial	(31)	73	0	(31)	(5)	0	(23)	0	42	24
Extractive Industry	0	0	0	260	0	0	0	0	0	260
Family Housing	469	(33)	152	(50)	(1)	(8)	145	(102)	454	1,027
Hotel / Motel	0	(13)	0	(56)	3	0	(36)	0	(9)	(110)
Industrial	28	248	0	(115)	35	0	(1)	0	235	431
Junkyard/Dump/Landfill	0	0	0	(405)	0	0	0	222	0	(183)
Medical	(3)	0	0	(5)	0	0	0	0	(33)	(41)
Military	0	0	0	2,666	0	0	0	0	0	2,666
Military Undeveloped	0	0	0	(1,442)	0	0	0	0	0	(1,442)
Office	(13)	(29)	(3)	0	0	0	(3)	0	(50)	(98)
Parks / Preserves	30	31	49	(45)	8	42	18	(561)	388	(41)
Private Undeveloped	(15)	(13)	(14)	(57)	0	0	(4)	0	13	(90)
Public Services	(8)	(3)	(27)	(210)	3	(18)	(4)	(3)	14	(255)
Recreation	13	0	1	0	0	0	4	363	140	520
Schools	73	0	69	0	0	0	0	0	0	142
Spaced Rural Residential	(373)	(87)	(162)	(423)	(39)	(8)	(98)	(35)	(653)	(1,877)
Transportation	(153)	(175)	(65)	0	(6)	0	18	(20)	(539)	(941)
Water Bodies	(16)	0	0	(7)	0	(9)	(17)	0	0	(49)
Totals	0	(0)	0	0	(0)	0	(1)	0	0	0

4 Physical Characteristics

Physical characteristics determine the hydrology, vegetation and development patterns for the entire watershed. These characteristics are discussed in this section to increase the understanding of the natural processes that affect the Rose Creek Watershed.

4.1 Elevation

The topographic profile of the RCW ranges from sea level at the mouth of Rose Creek at Mission Bay to over 1,100 feet in the headwaters on MCAS Miramar. The most noticeable high point is Mt. Soledad in La Jolla that rises 822 feet above sea level (Figure 4-1). Elevation influences several important natural conditions including precipitation, runoff, slope stability and vegetation. The higher elevations receive an average of 15-18 inches of rain on the eastern most limits of the watershed while the lower elevations average less than 12 inches per year. Slope stability is a concern in areas of rough terrain, as they are more likely to have erosion problems caused by periods of intense rainfall or increased velocities.

4.2 Slope

Steep slopes (>50%) are predominantly found along the bluffs of Rose Canyon and San Clemente Canyon on the western edge of the RCW (Table 4-1). These slopes lessen in steepness as the canyons move eastward toward the mesas of MCAS Miramar. Gently sloped mesa tops (0-3%) dominate the watershed occupying roughly 39% of the watershed (Figure 4-2). West of Interstate 805 (in the communities of Clairemont Mesa and University) the mesa tops are highly developed, which is in sharp contrast to the large expanse of undeveloped mesa top present on MCAS Miramar. A majority of the moderately steep slopes between 25-50% can be found in the headwaters within eastern MCAS Miramar.

Table 4-1: Slope Categories

Slope Percentage	Total Acres	Percent of Rose Canyon
0 - 3%	9,161	39%
3 - 10%	5,887	25%
10 - 25%	3,849	16%
25 - 50%	3,538	15%
> 50%	993	4%

Figure 4-1: Topography

Back of Figure 4-1

Figure 4-2: Slopes

Back of Figure 4-2

4.3 Precipitation

Precipitation patterns show the average annual precipitation totals ranges from about 12 inches to 15 inches in a west to east gradient, with the eastern headwater receiving the highest amounts (Figure 4-3). This pattern reflects an orographic effect that is common throughout the coastally influenced portions of southern California where precipitation generally increases with increasing elevation. This phenomenon includes a dry season typically occurs during the summer months with higher precipitation primarily occurs during the winter and spring. In the RCW, most of the streams are naturally dry during the summer with current low flows being the result of urban runoff and irrigation return flows. Understanding the precipitation pattern is important to this Assessment because it affects runoff flow characteristics, timing and amounts, which in turn influences the types and extents of wetland restoration, creation, or enhancement opportunities.

4.4 Soils

The RCW is comprised of a large variety of soils with the majority being within the loam category. The two largest soils types, gravelly loam and cobbly loam compose 49% of the watershed (Table 4-2). This soil type is largely found west of Interstate 805 in the communities of Mira Mesa, Kearny Mesa, Scripps Miramar Ranch and MCAS Miramar (Figure 4-4). This soil is made up of undulating to gently rolling soils that formed on gravelly marine terraces. These soils have little value for farming or ranching, which has allowed native vegetation such as Diegan Coastal Sage Scrub and various types of chaparral to develop and persist. Loamy sand can be found adjacent to Rose Canyon and San Clemente Canyon from Interstate 805 to Mission Bay.

Table 4-2: Soils Categories

Soils	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University City	Totals
Clay Loam	90								134	224
Clays	96		2	25					755	878
Coarse sandy loam									4	4
Cobbly loam	26	136	31	3,180	6		18	648	380	4,425
Fine sandy loam	489	358	5	720					1,129	2,701
Gravel pit				89						89
Gravelly loam		319		5,910	73			164	481	6,947
Gravelly loamy sand			69	402				10	42	522
Loamy alluvial land				4						4
Loamy sand	162		45			3	55		683	949
Made land	163		49			35	35		47	329
Riverwash	53	15		661					48	776
Terrace escarpments	403	1	493	1,198	7		52		251	2,405
Tidal flats						4				4
Unclassified				4		9	8			20
Urban land complex	1,557	40	129			1	355		1,060	3,143
Water				8						8
Totals	3,040	869	823	12,201	85	53	522	821	5,014	23,427

Figure 4-3: Precipitation

Back of Figure 4-3

Figure 4-4: Soils

Back of Figure 4-4

4.5 Geology

Based on the SanGIS geological data, there are three major geologic hazards within the RCW (Figure 4-5 and Table 4-3). These three hazards are landslides, liquefactions and slide prone areas:

Table 4-3: Geologic Hazards

Geological Hazards	Claremont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Landslides	16		49	11					10	85
Liquefaction	256	11	4	770		53	139	3	244	1,479
Slide Prone Formations	665	29	421	204			64		436	1,819
Totals	937	40	474	985	0	53	203	3	689	3,383

Landslides can be described as movement of mass rock, debris or earth down a slope. Landslides are a type of “mass wasting” which denotes a down movement of soil and rock under the influence of gravity. Landslides vary in sizes depending on the geology and initial cause of the landslide. They also cause \$1-2 billion in damages nationwide and 25 or more fatalities each year and pose serious threats to highway structures, mining, tourism and energy production. Within the RCW, there are 85 acres of known and confirmed landslides. Of the 85 acres, 54 acres have been confirmed landslides that have predominantly occurred on the steep slopes of Rose Creek south of the confluence with San Clemente Creek.

Liquefaction is a phenomenon in which the strength and stiffness of soil is reduced by an earthquakes shaking or other rapid loading. Liquefaction occurs in saturated soils in which the space between individual particles is completely filled with water. Increased water pressure caused by the shaking of an earthquake allows the particles to move in respect to each other thereby decreasing the stability of the soil. Liquefaction mainly occurs in low lying areas such as bays, rivers lakes and lagoons. Within the RCW, potential liquefaction can be found along the entire length of both San Clemente Creek and Rose Creek and at the mouth of Rose Creek in Mission Bay. Liquefaction can occur in the entire area of Mission Bay Park. Since it contains the majority of the length of Rose Creek and San Clemente Creek, MCAS Miramar has the highest amount of liquefaction at 770 acres (Figure 4-5).

Slide Prone Formations are areas of neutral to unfavorable geologic formations that can cause landslides. These areas can be identified as having steep slopes with very little vegetation to stabilize the slope. Slide Prone Formations can be found along the steep hills along Rose Creek and San Clemente Creek. The potential for landslides to occur during wet periods can be exacerbated by the build up of iceplant on many steep slopes, which can lead to slumping due to the added weight of the plant material and its shallow root system. The largest threat being on the slopes south of the Interstate 5 and State Route 52 merge where industrial facilities as well as Interstate 5 are located. Clairemont Mesa has the largest amount of Slide Prone Formations at 665 acres with University second at 436 acres. Of the 522 acres of Pacific Beach in the RCW, 60% are Slide Prone Formations and 40% of La Jolla's 823 acres are prone to slides.

4.6 Faults

Faults are fractures in the earth along which blocks of crust on either side that have moved relative to one another. There are four types of fault systems within the RCW that span about 28 miles throughout the western portion of the watershed. Concealed faults are buried under the uppermost layers of crust and do not produce geologic formations seen from the surface. There are also known faults that have been identified by scientists and inferred faults that are only generally located. Shear Zones are deep level equivalents to faults. They accumulate relative displacement of rock bodies by either high temperature conditions or low strain rates and the bands of rock undergo deformation. Table 4-4 lists the types of faults in the RCW.

4.6.1 Rose Canyon Fault

The western end of the RCW lies within the Rose Canyon Fault Zone which is the major fault zone in the San Diego area. This fault zone is approximately 19 miles in length and extends from La Jolla south through Rose Canyon, then Old Town and on into San Diego Bay and across to the Silver Strand (Figure 4-5). The southern end of the fault extends from the City of San Diego to the Tijuana area and is comprised of at least three faults and is an extension of another fault system called the Newport – Inglewood fault. The Rose Canyon Fault Zone is also responsible for two of San Diego's most recognizable landmarks—Mount Soledad and San Diego Bay. The Rose Canyon Fault Zone has steps or "kinks" in it. The left step near Ardath Road caused compression, which piles up sedimentary layers to form Mount Soledad. Near the south end of the fault zone, a right-step caused the fault to spread apart, resulting in the formation of a basin and San Diego Bay. This fault is capable of producing a magnitude 6.9 earthquake and has a slip rate of about 1.1mm a year. The Rose Canyon

Fault Zone is still active and its most recent major activity was during the Holocene era, about 11,000 years ago.

Table 4-4: Fault Systems

Geological Hazards	Claremont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Concealed Zone	4		1				1		4	9
Known Fault	1		2				1		2	5
Inferred Fault	4		3				1		2	9
Shear Zone	2		1							
Totals	11	0	7	0	0	0	3	0	8	28

THIS PAGE LEFT INTENTIONALLY BLANK

Figure 4-5: Geologic Hazards

Back of Figure 4-5

5 Biological Resources

Biological resources, both flora and fauna, have been the focus of local, state, and federal protection efforts for more than four decades. Within the RCW, these efforts have been consolidated and focused into two initiatives: City of San Diego Multiple Species Conservation Plan and the MCAS Miramar Integrated Natural Resource Management Plan. Both programs are focused on providing protections to habitats that provide food and shelter to umbrella Threatened or Endangered species. In some cases the focus of habitat protection includes specific legal protections, such as the no net loss of wetlands. As such, not all habitats and associated species of flora and fauna are provided the same level of protection from these programs. This leaves room for additional protections to be added from ecological and watershed management perspectives. The following section describes these programs and the resources they are striving to protect and conserve.

5.1 Planning Efforts

Multiple Species Conservation Plan: The Multiple Species Conservation Program (MSCP) is a comprehensive habitat conservation program for southwestern San Diego County. The MSCP is intended to preserve a network of open space and habitats for protecting biodiversity and enhancing the region's quality of life. Economic benefits should also be realized by the reduction of constraints on future development and the decrease in costs for compliance with federal and state laws protecting biological resources. Many entities have cooperatively participated in the development of the MSCP including the City of San Diego, wildlife agencies, special districts, property owners and representatives of the development industry. The MSCP was created to preserve native vegetation and meet the habitat needs for multiple species rather than focusing on individual species. Sensitive biological resources are typically abundant within the core areas, which if lost or fragmented, could not be replaced or mitigated elsewhere. A component of the MSCP was the Biological Core and Linkage Areas (BCLA), which were developed to prioritize preservation and to maximize the conservation value of the preserve to efficiently use funds and to identify less environmentally valuable land for development (Figure 5-1). The MSCP was developed in 1996 and has yet to be updated. The current status of the MSCP within the RCW is based on the 1996 data with some areas being changed due to land acquisition, jurisdiction and development.

Within the RCW, 2,138 acres have been identified as BCLAs or 9% of the entire watershed. University and Clairemont Mesa each have over 20% of their area as a Biological Core (Table 5-1). MCAS

Miramar does not participate in the MSCP but instead has its own conservation plan as described later in this section. According to the data, there are no Linkage Areas within the boundaries of the watershed.

Table 5-1: Multiple Species Conservation Plan (MSCP) Biological Core & Linkage Areas

BCLA	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University City	Totals
Core Resource Areas	635	112			14			117	1,260	2,138
Outside BCLA	2,405	757	823	12,201	71	53	522	705	3,754	21,290
Totals	3,040	869	823	12,201	85	53	522	821	5,014	23,428
Percent of the community within the BCLA	21%	13%	0%	0%	17%	0%	0%	14%	25%	9%

Figure 5-1: MSCP Biological Core & Linkage Areas

Back of Figure 5-1

As the MSCP program evolved the BCLAs were refined, augmented, and prioritized. The resulting targeted conservation areas were termed Multiple Habitat Planning Areas (MHPA) and are the areas in which preserves will be assembled and managed for their biological resources. The MHPA were designed to act as formal guidance for the construction of the MSCP preserve system as a partnership with the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Military property and some special districts are being planned separately. MHPAs are defined by both physical area with mapped boundaries for conservation, as well as areas with quantitative criteria for conservation of vegetation communities tied to criteria for preservation design (Figure 5-2).

Six percent of the RCW is occupied by a MHPA (Table 5-2), with all of the communities (except MCAS Miramar and Mission Bay Park) contributing. The size and location of Mission Bay Park limits its contribution to the overall preservation of the watershed. The communities of University, Scripps Miramar Ranch and Clairemont Mesa hold the highest acreage of MHPA within the watershed with Clairemont Mesa having 363 acres, Scripps Miramar Ranch having 431 acres, and University having 473 acres. Although University boasts the highest acreage of land within the MHPA, its percentage relative to its community plan area is only 8% compared to Clairemont Mesa at 12% and Scripps Miramar Ranch at 47%. The undeveloped land associated with Rose Canyon and San Clemente Canyon make up most of the MHPA within University and Clairemont Mesa. As mentioned previously, the planned land use dataset shows 222 acres of the MHPA in Scripps Miramar Ranch as being slated to be converted to a junkyard / landfill.

Table 5-2: MSCP Multiple Habitat Planning Areas

MHPA (Percent)	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University City	Totals
Outside MHPA	2,677	840	603	12,201	85	53	515	390	4,542	21,905
75			120				1	43	32	195
94	363	29	101				6	388	441	1,327
Totals	3,040	869	823	12,201	85	53	522	821	5,014	23,428

Integrated Natural Resource Management Plan: MCAS Miramar is implementing its own habitat management efforts through its Integrated Natural Resource Management Plan. The purpose of the INRMP is to integrate MCAS Miramar’s land use needs (in support of the military mission) with the management and conservation of natural resources. The INRMP establishes MCAS Miramar’s

approach and guidelines in relation to natural resources to accomplish its mission. The INRMP summarizes the baseline information which ensures compliance with regulatory and planning processes such as those by the National Environmental Policy Act, Endangered Species Act (ESA) and the Clean Water Act. The INRMP also fulfills other responsibilities with regards to the Department of Defense (DOD) and Marine Corps Policies and legal requirements regarding natural resource planning.

The INRMP is intended to be a technical document to be used by persons planning and/or preparing MCAS Miramar approvals, management actions, instructions, guidelines as well as the integration of natural resource issues. MCAS Miramar's overall strategy for conservation and management is to limit activities; avoid conflicting development; perform mitigation actions in areas supporting high densities of vernal pools and other wetlands, threatened or endangered species. Regardless of sensitivity, all of MCAS Miramar is subject to natural resource management and conservation. The station uses the concept of Management Areas to aid in the management and conservation of its resources. Management Area delineations define the distribution of regulated and sensitive natural resources on MCAS Miramar warranting special attention. The entire land area has been placed into Management Areas (Figure 5-3). These five Management Areas fall within the boundaries of the RCW study area. Level I (2,625 acres) target vernal pools, Level II (1,352 acres) targets non-vernal pool threatened and endangered species, Level III (1,159 acres) targets riparian areas, wetlands and movement corridors. Level IV (4,999 acres) encompasses the remaining undeveloped areas and Level V (2,483 acres) includes the developed areas. Currently the INRMP management areas are in the process of revision as is the entire document. The management area boundaries are being changed to reflect new information and developments. The revised INRMP is scheduled to be completed in the Fall of 2005 and will display new Management Area boundaries.

Mitigation is used to lessen adverse effects of a project that may cause impacts to natural resources. Mitigation can include avoiding the impact altogether; limiting the magnitude of the action; repairing; rehabilitating or; restoring the affected resources. Other types of mitigation can include reducing or eliminating the effect over time by conservation and maintenance operations during the course of the action and/or compensating for the effect by providing substitute resources or environments. On MCAS Miramar, one typical form of mitigation is the restoration or revegetation of disturbed areas for creating additional habitat for sensitive species such as the California Gnatcatcher. Regulatory

agency approval of restoration/mitigation plans is usually required as a condition of the Endangered Species Act and Clean Water Act permit approvals. Techniques used to restore disturbed areas can also include the use of herbicide, planting of container stock, soil mitigation, hand seeding, irrigation, prescribed burning and imprinting. The use of Management Area designations will be given careful consideration when siting proposed actions and potential compensation for mitigation. As part of MCAS Miramar's ongoing efforts to avoid and/or minimize impacts on sensitive species, vernal pools, other wetlands and habitat linkages, first consideration will be given to the use of Management Area Level V, the Level IV. This will assist planners in avoiding areas supporting the existing resources in Level I, II and III (Figure 5-3).

Within MCAS Miramar, there are ten species of plants and wildlife receiving federal protection under the Endangered Species Act. Six species protected by the ESA are present in vernal pools. A large portion of the known vernal pools remaining in San Diego County are within the station boundaries. At a minimum, MCAS Miramar supports eight species of amphibians, twenty-one species of reptiles and thirty-one species of mammals. In addition, well over 200 species of birds have been sited on station.

THIS PAGE LEFT INTENTIONALLY BLANK

Figure 5-2: MSCP Multiple Habitat Planning Areas

Back of Figure 5-2

Figure 5-3: MCAS Miramar INRMP Management Areas

Back of Figure 5-3

5.2 Vegetative Resources

Vegetation communities depicted within the project boundary provide an insight to the potential species present and habitat richness and diversity. Specific habitat types also give perspective on site-specific biological assessments necessary for review during the watershed management planning process.

The vegetation across the RCW is sharply delineated based on jurisdictional boundaries, particularly between MCAS Miramar and its adjacent communities. Based on the regional vegetation mapping available from SANDAG (augmented by more detailed mapping provided by MCAS Miramar,) MCAS Miramar clearly contains the majority of Diegan Coastal Sage Scrub and Chaparral (Figure 5-4). Of the 2,264 acres of Diegan Coastal Sage Scrub, approximately 1,250 acres can be found on MCAS Miramar or 55% of the total. Eight-two percent of Chaparral can be found on MCAS Miramar as well. Non-Native Grasslands are also found almost exclusively within MCAS Miramar where 93% of this habitat resides. Other habitats that can be found almost exclusively within MCAS Miramar are Mima Mounds and vernal pool complexes. Riparian Scrub is predominantly found within Rose Canyon and San Clemente Canyon in an east-west orientation. The Sycamore Riparian Woodland that runs along its tributary distinguishes San Clemente Canyon. The Chaparral that can be found west of MCAS Miramar typically follows finger canyons that protrude their way into developed mesas. North of the military installation, Chaparral can be found in Scripps Miramar Ranch within MHPA boundaries. Urban and developed land is the most prevalent land cover encompassing 43% of the total RCW (Table 5-3). Based on closer review of the regional vegetation mapping available through SANDAG, it was noted that the overall mapping resolution and accuracy level of the boundaries between vegetation communities was unacceptable for the more detailed analyses and recommendations expected during later phases of this project. As such, additional field mapping was conducted as part of this assessment within the natural areas yet outside the jurisdiction of MCAS Miramar. The results of this field mapping effort are not yet available and will be incorporated into the later phases of this assessment as soon as they are complete.

Table 5-3: Vegetation Communities

Vegetation	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University City	Totals
Chamise Chaparral				20					45	65
Chaparral	95	41	45	183	3			540	81	986
Coast Live Oak Woodland				4						4
Coastal Sage-Chaparral Scrub				196				1		197
Coastal and Valley Freshwater Marsh				28			5	1	0	34
Dense Coast Live Oak Woodland	35			1						37
Diegan Coastal Sage Scrub	394	21	209	1,252			26	26	336	2,264
Disturbed Habitat	117	36	46	2,222				4	231	2,656
Disturbed Wetland				1					3	4
Eucalyptus Woodland				20				25	39	83
Freshwater				40						40
Freshwater Seep				56				1	1	58
Mule Fat Scrub										0
Non-Native Grassland				1,718				13	109	1,841
Non-Vegetated Channel				11					1	12
Scrub Oak Chaparral				8					7	15
Shallow Bay						9	3			12
Southern Arroyo Willow Riparian Forest				11						11
Southern Coast Live Oak Riparian Forest				2						2
Southern Coastal Salt Marsh							4			4
Southern Maritime Chaparral			15							15
Southern Mixed Chaparral		23		3,913				13	26	3,975
Southern Riparian Forest									18	18
Southern Riparian Scrub	61	4					1		25	91
Sycamore-Alder Riparian Woodland	118	4		80					88	290
Southern Willow Scrub				23						23
Urban-Developed	2,146	735	478	2,270	83	43	469	182	3,750	10,156
Valley Needlegrass Grassland		7		140					15	161
Valley and Foothill Grassland	74		29				14	16	242	374
Totals	3,040	869	823	12,201	86	53	522	821	5,014	23,428

Figure 5-4: Vegetation Communities

Back of Figure 5-4

5.3 Sensitive Species

Sensitive species (both flora and fauna) are at the heart of the both the MSCP and the INRMP. They are the focus of additional local, state, and federal regulations that provide specific protections for these species and the habitats they depend on for various portions of their life cycles. The sensitive species that have been sighted within the RCW (as documented by the California Department of Fish and Game's Natural Diversity Database (CNDDB), SANDAG's regional sensitive species database, or MCAS Miramar's sensitive species database) are shown in Figure 5-5. Table 5-4 documents additional sensitive species that have been documented to exist within the RCW through other studies or are likely to occur based on habitat conditions that appear conducive to their occurrence.

5.3.1 Sensitive Flora

Sensitive flora species, either currently known to occur, or ones that have a potential to occur in the Rose Creek Watershed, are listed by habitat associations because of the large quantity of species: riparian habitats, San Diego sagewort (*Artemisia palmeri*), and willowy monardella (*Monardella linoides viminea*); vernal pools, Orcutt's brodiaea (*Brodiaea orcuttii*), San Diego button celery (*Eryngium aristulatum parishii*), San Diego golden star (*Muilla clevelandii*), spreading navarretia (*Navarretia fossalis*), prostrate navarretia (*Navarretia prostrata*), California adder's tongue fern (*Ophioglossum californicum*), California Orcutt grass (*Orcuttia californica*), and San Diego Mesa Mint (*Pogogyne abramsii*); sage scrub, San Diego barrel cactus (*Ferocactus viridescens*), Palmer's grappling hook (*Harpagonella palmeri*), decumbent goldenbush (*Isocoma menziesii decumbens*), Coulter's goldfields (*Lasthenia glabrata coulteri*), Golden-rayed pentachaeta (*Pentachaeta aurea*), ashy spike-moss (*Selaginella cinerascens*), and western dichondra (*Dichondra occidentalis*); chaparral, Otay Mountain ceanothus (*Ceanothus otayensis*), wart-stemmed ceanothus (*Ceanothus verrucosus*), summer-holly (*Comarostaphylis diversifolia diversifolia*), and Nuttall's scrub oak (*Quercus dumosa*); and grasslands, purple needlegrass (*Nassella pulchra*) and graceful tarplant (*Holocarpha virgata*).

5.3.2 Sensitive Fauna

Sensitive fauna species either currently known to occur or ones that have a potential to occur in the Rose Creek Watershed includes invertebrates, San Diego fairy shrimp (*Branchinecta sandiegonensis*), Hermes copper (*Lycaena hermes*), and wandering skipper, (*Panoquina errans*); an amphibian, western spadefoot toad (*Spea hammondi*); reptiles, San Diego horned lizard (*Phrynosoma coronatum blainvillii*), orange-throated whiptail (*Aspidoscelis hyperythra*), California legless lizard (*Anniella*

pulchra), coastal rosy boa (*Lichanura trivirgata roseofusca*), San Diego ring-necked snake (*Diadophis punctatus similes*), California glossy snake (*Arizona elegans occidentalis*), two-striped gartersnake (*Thamnophis hammondi*), and the red diamond rattlesnake (*Crotalus ruber*); birds, brown pelican (*Pelecanus occidentalis*), white-faced ibis (*Plegadis chihi*), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), elegant tern (*Sterna elegans*), California least tern (*Sterna antillarum browni*), California gnatcatcher (*Polioptila californica*), western bluebird (*Sialia mexicana*), and the burrowing owl (*Speotyto cunicularia*); and a mammal, mule deer (*Odocoileus hemionus*).

Many of the sensitive species within the RCW are under the federal classification status for Special Status Species. Candidate Species are classified as species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened. Proposed Species are any species that has been proposed for listing as a threatened or endangered species. Threatened species are likely to become and endangered species within the foreseeable future throughout all or significant portions of its range. Endangered species are in danger of extinction throughout all or a significant portion of its range. It is important to know the habitat and distribution of Threatened and Endangered species to understand the effects natural and manmade disturbance can have on their existence. The following describes the Federal and State Threatened and Endangered species that can be found within the RCW.

Threatened and Endangered Flora

San Diego Button Celery (*Eryngium aristulatum* var. *parishii*)

Listing – USFWS, Endangered; CDFG, Endangered

Distribution – Riverside County; San Diego County; Baja California, Mexico

Habitat – The San Diego Button Celery occurs in vernal pools but can also tolerate the peripheral mima mound areas. This annual/perennial herb blooms from April through June.

Status – This species is declining due to loss of vernal pools.

San Diego Button Celery can be found on the southern edge of the watershed south of State Route 52 and west of State Route 163 in Kearny Mesa. Another site can be found in the community of University City.

Spreading Navarretia (*Navarretia fossalis*)

Listing – USFWS; Threatened

Distribution – This species is found in Riverside County, San Diego County; and Baja California, Mexico.

Habitat – Spreading Navarretia occurs in shallow freshwater habitats such as marshes, swamps, playas and vernal pools. This annual herb blooms April through June.

Status – Spreading Navarretia is severely declining throughout its range.

Spreading Navarretia can be found just outside the watershed on MCAS Miramar south of State Route 52.

California Orcutt Grass (*Orcuttia californica*)

Listing – USFWS; Threatened

Distribution – Riverside County, San Diego County, Ventura County, Los Angeles County; Baja California, Mexico.

Habitat – California Orcutt Grass is found in vernal pools. This annual blooms April through August.

Status – California Orcutt Grass is slowly declining throughout its range primarily due to urban development and grazing.

One site of California Orcutt Grass can has been identified in the area between the State Route 52 and State Route 163 interchange and west of Interstate 15.

Willowy Monardella (*Monardella linoides viminea*)

Listing – CDFG, Endangered

Distribution – This species can be found in San Diego County in the coastal hills from Poway to the Mexican Border and are concentrated in riparian creeks.

Habitat – Willowy Monardella can be found in riparian scrub usually in seasonal dry washes.

Status – Willowy Monardella is severely declining in total numbers throughout San Diego County.

Willow Monardella can be found in the riverwash of San Clemente Canyon. The CalTrans mitigation site in San Clemente Canyon for plants lost during the State Route 52 expansion showed virtually all tagged specimens dead when the site was last visited in 1987. The surrounding habitat for the Willow Monardella is quickly being engulfed by urban development throughout San Diego County.

Short-leaved Dudleya (*Dudleya blochmaniae*)

Listing – CDFG, Endangered

Distribution – Within Chamise Chaparral in San Diego County

Habitat – Short-leaved Dudleya can be found in then open areas of Chamise Chaparral on Torrey sandstone with soils mapped as Carlsbad gravelly loamy sand. A healthy population can be found in the Torrey Pines Preserve.

Status - Short-leaved Dudleya is presently stable in San Diego County but endangered due to proposed urban development near its location.

Not typically found in the Rose Canyon Watershed, a small colony can be found just west of Interstate 805 and north of La Jolla Village drive.

San Diego Mesa Mint (*Pogogyne abramsii*)

Listing – USFWS, Endangered; CDFG, Endangered

Distribution – San Diego County, Baja California and Mexico

Habitat – This small annual is restricted to vernal pools. Oftentimes this mint blooms profusely following heavy inundation and standing water in pools and may bloom late into the summer.

Status – San Diego Mesa Mint is declining in San Diego County predominantly due to impacts from urban development pressures. Loss of watershed for individual pools is a concern.

San Diego Mesa Mint can be found in MCAS Miramar and is locally common at the Miramar Mounds. The majority of the distribution can be found east in the block area of Interstate 805, north of State Route 52, west of Interstate 15 and south of Miramar Road. A few colonies can be found east of Interstate 15.

San Diego Fairy Shrimp (*Branchinecta sandiegoensis*)

Listing – USFWS, Federally Endangered

Distribution – Coastal southern California, in Orange and San Diego Counties, and has also been recorded in northwestern Baja California, Mexico.

Habitat – Shallow vernal pools and ephemeral basins that range in depth from two to 12 inches (Hathaway and Simovich 1996).

Status – Declining due to loss of habitat as a result of pool filling or draining, or destruction due to urban development.

San Diego Fairy Shrimp can be found predominantly in the vernal pool complexes of MCAS Miramar.

California Brown Pelican (*Pelecanus occidentalis californicus*)

Listing – State Federally Endangered

Distribution – Nesting is restricted to islands in the Gulf of California and along the outer coast from Baja California, Mexico, to West Anacapa and Santa Barbara Islands in Southern California. Non-breeding California brown pelicans range northward along the Pacific Coast from the Gulf of California to Washington and southern British Columbia.

Habitat – Roosting and loafing sites provide important resting habitat for breeding and non-breeding birds. Important roosting sites include offshore rocks and islands, river mouths with sand bars, breakwaters, pilings, and jetties along the Pacific Coast and San Francisco Bay

Status – Pelicans are sensitive to bioaccumulation of the pesticide DDT, which causes reproductive failure. Although California breeding populations have rebounded since the elimination of DDT use, persistent residues in the coastal regions continue to cause chronic reproductive problems.

Brown pelican can be spotted near the mouth of Rose Creek and in Mission Bay.

California Least Tern (*Sterna antillarum browni*)

Listing – USFWS, Endangered

Distribution – The California Least Tern is a migratory bird that remains on their breeding grounds from late April until August. The historic range for this species includes coastal areas from Monterey County, California to Southern Baja California (Grinnell and Miller 1944) with the majority of birds

nesting between Santa Barbara south through San Diego County. Their decline has been blamed on habitat loss mainly due to human related activities.

Habitat – The California Least Tern nests in dense colonies along open sandy beaches with little or no vegetation. They prefer areas close to rivermouths and estuaries where they forage on small fish such as northern anchovy, topsmelt, various surf-perch, killifish, mosquitofish and various other species (USFWS 1980).

California Least Terns can be spotted near the mouth of Rose Creek and in Mission Bay.

California Gnatcatcher (*Polioptila californica californica*)

Listed – USFWS, Threatened

Distribution – The California Gnatcatcher is restricted to coastal southern California in areas below 3,000 feet, from Ventura and San Bernardino Counties to El Rosario in northwestern Baja California. This is a year-round resident that breeds between late February through July.

Habitat – The California Gnatcatcher is a resident that typically occurs in sage scrub habitat. In California it can be found the Venturan, Diegan coastal sage scrub as well as maritime succulent scrub, alluvial fan scrub, southern coastal bluff scrub and coastal sage-chaparral scrub (USFWS 2000). They often use adjacent chaparral, grassland, and riparian habitats for foraging.

Status – This species is declining due to habitat loss. In 1944, this species was recorded by Grinnell and Miller as abundant within areas of suitable habitat. It is estimated by USFWS, at the time of listing that only 2,562 pairs remain within their entire range in the United States.

Gnatcatchers are concentrated in the sage scrub habitats MCAS Miramar and are protected within the military installation. They can also be found in Stevenson Canyon, Rose Canyon and San Clemente Canyon.

Table 5-4: Special Status Species and Potential for Occurrence

Figure 5-5: Sensitive Species

Back of Figure 5-5

5.4 Invasive Exotic Species

Invasive exotic species have been identified as posing one of the greatest threats to the conservation of biological diversity on a global scale. An "invasive exotic species" is defined as a species that is: 1) non-native (or alien) to the ecosystem under consideration *and*; 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants (flora), animals (fauna), and other organisms (e.g., microbes). Invasive exotic plant species infestations can significantly alter hydrology, erosion and sedimentation, and water quality conditions within affected areas. Invasive exotic plants species are often early colonizers of disturbed habitats and can often out-compete native species for space and resources. Impacts to natural communities by invasive exotic faunal species include unbalanced predation of native species, competition for limited resources, and introduction of vectors for novel pathogens and parasites. At the heart of the problem is the fact that human actions are the primary means of invasive species introductions.

5.4.1 Invasive Exotic Plant Species

Several invasive exotic floral species occurring within the Rose Creek Watershed include, giant reed (*Arundo donax*), ice plant (*Carpobrotus edulis*), pampas grass (*Cortaderia selloana*), tamarisk (*Tamarix* spp.), fennel (*Foeniculum vulgare*), Brazilian pepper tree (*Schinus terebinthifolius*), and castor-bean (*Ricinus communis*), as well as weedy grasses, including but not limited to annual beard grass (*Polypogon monspeliensis*), ripgut grass (*Bromus diandrus*), black mustard (*Brassica nigra*) and slender wild oat (*Avena barbata*). Of these species the two most highly invasive wetland plants that occur within the watershed are giant reed (*Arundo donax*) and tamarisk (*Tamarix* spp.). These wetland associated species in particular have an adverse affect on the hydrology and geomorphology, habitat diversity, and ecological integrity along drainages.

5.4.2 Invasive Exotic Animal Species

Established exotic animal populations occurring within the Rose Creek Watershed include, Argentine ant (*Iridomyrmex humilis*), crayfish (*Procambrus clarki*), mosquitofish (*Gambusia affinis*), bullfrog (*Rana catesbeiana*), African clawed-frog (*Xenopus laevis*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), roof rat (*Rattus rattus*), house mouse (*Mus musculus*), and Virginia opossum (*Didelphis virginiana*).

Table 5-5: Invasive Exotic Plant Species

Common Name	Scientific Name	Habitat
Giant Reed	<i>Arundo Donax</i>	Riparian
Ice Plant	<i>Carpobrotus edulis</i>	Coastal areas, hillsides and riparian
Pampas Grass	<i>Cortaderia selloana</i>	Coastal areas and riparian
Jubatagrass	<i>Cortaderia jubata</i>	Coastal uplands
Artichoke Thistle	<i>Cynara cardunculus</i>	Grassland and riparian
Tamarisk, Salt cedar	<i>Tamarix ramosissima</i>	Riparian
Perennial Pepperweed	<i>Lepidium latifolium</i>	Riparian
Cape Ivy	<i>Senecio mikanioides</i>	Riparian and Uplands
Yellow Star Thistle	<i>Centaurea solstitialis</i>	Coastal Sage Scrub and grasslands
Spanish Broom	<i>Spartium junceum</i>	Coastal Sage Scrub and grasslands
Fennel	<i>Foeniculum vulgare</i>	Grassland, riparian and Coastal Sage Scrub
Eucalyptus	<i>Eucalyptus sp.</i>	Riparian and Uplands
Tocalote	<i>Centaurea melitensis</i>	Grasslands and Coastal Sage Scrub
Brazilian Pepper	<i>Schinus terebinthifolius</i>	Riparian
Italian Thistle	<i>Carduus pycnocephala</i>	
Castor Bean	<i>Rinicus communis</i>	Riparian
Garland chrysanthemum	<i>Chrysanthemum coronarium</i>	Disturbed areas and Coastal Sage Scrub
Rabbit's Foot Grass	<i>Polypogon monspeliensis</i>	Vernal pools
Brass buttons	<i>Cotula coronopifolia</i>	Vernal pools and Salt marsh
Bristly Ox tongue	<i>Pichris echioides</i>	Coastal Sage Scrub and grasslands
Common teasel	<i>Dipsacus sativus</i>	Disturbed areas and Coastal Sage Scrub
Red brome	<i>Bromus madritensis ssp.</i>	
Black mustard	<i>Brassica nigra</i>	Coastal Sage Scrub, grasslands and hillsides

5.4.3 Mitigations Sites on MCAS Miramar

The three types of mitigation areas on MCAS Miramar are vernal pool restoration, coastal sage scrub mitigation and riparian mitigation. See Figure 5-6 for the general location of these mitigation sites on MCAS Miramar. Currently, MCAS Miramar is restoring about 5 acres of vernal pool habitat, 88 acres of coastal sage scrub and 2.4 acres of riparian wetland.

5.4.4 Restoration, Enhancement and Mitigation Efforts

Documenting where restoration, enhancement, or mitigation efforts have occurred throughout the RCW is important in determining where future efforts can be appropriately planned and implemented. Figure 5-6 shows the restoration, enhancement, or mitigation efforts that the project team are aware of to date. These represent efforts undertaken by MCAS Miramar, various City of San Diego Departments, private developers, and volunteers.

Figure 5-6: Mitigation Sites

Back of Figure 5-6

6 Water Resources

Water resources, whether generated and maintained by precipitation and groundwater or by urban runoff, are the circulation system of every watershed. A natural stream system acts as the distribution system not only for runoff from precipitation, but also for habitat building sediments and associated nutrients, seeds and rhizomes of many native plant species, and provide shelter for many animals moving through and between watersheds. In semi-arid climates like San Diego, stream systems and impoundments often provide the only source of year-round water for many animal species. Streams become critical components of a watershed's ecosystem during times of drought or catastrophic events like a fire. However, stream systems that occur in more developed watersheds also act as distribution systems for unnaturally erosive storm flows that can cause significant stream bank and bed erosion. They can also transport seeds and rhizomes of invasive exotic plant species, and provide shelter and concealment for non-native predators, such as domestic or feral cats.

6.1 Stream System

The Rose Creek Watershed consists of two primary creeks, Rose Creek and San Clemente Creek (Figure 6-1). These two creek systems converge approximately 3.3 miles north of Mission Bay below the Interstate 5 and State Route 52 interchange. From the confluence upstream, the main stem of Rose Creek is approximately 17.1 miles with another 10 miles of currently mapped tributaries. The main stem of San Clemente Creek is the shorter of the two at approximately 16 miles but has more than 15 miles of mapped tributaries. All the mapped San Clemente tributaries can be found on MCAS Miramar except for a one-mile long section along Lakehurst Ave and Regents Road with the outlet in the Marian Bear Memorial Park. Both Rose Creek and San Clemente Creek flow from the northeast to their outlet in Mission Bay to the southwest.

Both creek systems are very cobbled in nature with numerous sections of standing water in their lower reaches. Along the lower half of Rose Creek, the riparian scrub habitat is dense with a healthy understory and narrow channels varying from 2 feet to 4 feet wide. The portion of Rose Creek east of Interstate 805 is an intermittent stream primarily dependent on precipitation and associated runoff to fill its channel. This section of Rose Creek remained dry during fall field work, with a cobblestone streambed and various trees growing intermittently in the streambed. There were signs of dead foliage and numerous other fallen trees with many signs of stream bank erosion occurring during higher flows. As Rose Creek progresses southwest beyond Interstate 805, its character changes as dry-weather

flow is added from adjacent urban development in the form of runoff and irrigation return flows. These hydrologic additions have allowed for the formation of dense riparian scrub habitat with numerous small in-stream impoundments as wide as 6 feet. San Clemente Creek shares many of the same characteristics as Rose Creek with its cobbled streambed, stream bank scour, and progressively wetter conditions as you move down-stream. Various types of riparian trees have taken root within the drier channel segments, or within the over-bank floodplain, including sycamores, bay laurel, coast live oak, and various willows. The San Clemente Creek channel is typically a bit wider than Rose Creek, which may in part be due to the less dense riparian understory that exposes the stream banks to more direct storm flows and erosion potential. Sycamores can be found scattered along San Clemente Creek from east of Interstate 5 within MCAS Miramar all the way to the confluence with Rose Creek, and form a near continuous canopy within Marion Bear Memorial Park from Interstate 805 to Interstate 5. Along the reaches west of Interstate 805 small in-stream impoundments can also be found, which again appear to be primarily associated with the additional hydrologic inputs from urban runoff and irrigation return flows.

6.2 Surface Water Impoundments

There are no major surface water impoundments within the Rose Creek Watershed. The closest major surface water impoundment is the Miramar Reservoir just north of the northeastern watershed boundary in Scripps Miramar Ranch. The largest surface water impoundment within the RCW is the Fish Pond within MCAS Miramar on Rose Creek (Figure 6-1). The Fish Pond is used for recreational purposes by MCAS Miramar personnel and has been stocked with game fish species. Other small in-stream impoundments can be found along both Rose Creek and San Clemente Creek. The larger of these are found along Sycamore Creek at the site of past aggregate extraction activities near the current Sim J Harris operation in the middle of MCAS Miramar. Two other impoundments can be found along San Clemente Creek just east of Interstate 805 in MCAS Miramar and on the main tributary flowing into San Clemente Creek from Kearny Mesa.

Figure 6-1: Hydrologic Features

Back of Figure 6-1

7 Utilities

The utilities on MCAS Miramar are owned, maintained and operated by the station's Public Work Center. The Southwest Division (SOUTHWESTDIV), Naval Facilities Engineering Command, Public Works Support and Utilities Management Branch are currently exploring the potential for privatization of the utility systems. Privatization would include the construction, ownership, operation and maintenance of the utility systems by the local utility company. There are a variety of utility systems that criss-cross through the RCW. Some of these systems, such as the high-voltage electrical lines, provide opportunities for habitat protection as the parcels they own or the easements they maintain are often in natural habitats. Other systems, such as the sewer system, can act as constraints when considering habitat creation or restoration opportunities as the main trunk lines are often aligned in the bottom of finger canyons or cross main tributaries making significant grading impracticable. Other utility systems within the RCW include fiber optic lines, television cable and phone lines. Whether they provide opportunities or constraints, understanding the utility systems occurring within the RCW and their locations are important aspects to understand before making recommendations about restoration opportunities.

7.1 Water Systems

The San Diego County Water Authority maintains a portion of its second aqueduct across MCAS Miramar and through the base of the foothills in the upper portion of the RCW. The aqueduct provides interconnections with Olivenhain Reservoir, Lake Hodges, and Miramar Reservoir in the north with Lake Murray and its associated filtration plant in the south. Additionally, the City of San Diego operates 24 miles of reclaimed water distribution lines within the RCW that provide landscape irrigation and some industrial supply water to users throughout its service area. Both of these systems are depicted in Figure 7-1.

Potable water for Miramar is obtained from the City of San Diego under contract. The main connection to the City of San Diego water system is located along the northwest side of MCAS Miramar near Miramar Road and Bauer Road. The City of San Diego, through the Clean Water Act, has installed reclaimed water distribution lines along Miramar Road for use by MCAS Miramar and other organizations.

7.2 Sewer System

The Metropolitan Waste Water Department of the City of San Diego operates and maintains over 322 miles of sewer trunk lines, and another .13 miles of laterals or overflows (Figure 7-2). The watershed is sewerred in areas located almost solely south of the Highway 52 and west of Interstate 805. The area above this location lies MCAS Miramar where sewer lines are not shown in the city data. The sewer trunk lines run along main arterials such as Interstate 5, Interstate 805. Starting from Mission Bay Drive, the outwash point, trunk sewers run north along Moraga Blvd and Interstate 5. Along Moraga Boulevard, the trunk sewers end just before Clairemont Mesa Boulevard. Along Interstate 5, sewers run north until Highway 52 diverts a trunk line east into San Clemente Canyon which ends at Genesee Avenue. Beyond Highway 52 the trunk sewer runs north until it intercepts La Jolla Colony Drive which takes the line east into north Rose Canyon. The Interstate 5 trunk sewer ends at Gilman Drive and La Jolla Village Drive which brings the line back to Interstate 5's west border. The trunk sewer that begins at La Jolla Colony Drive extends east into north Rose Canyon well into the MCAS Miramar Air Station. Prior to reaching MCAS Miramar, the sewer is diverted twice to the north, the first location is just prior to reaching Genesee Avenue and the second is just beyond Genesee Avenue. Sewer laterals or Sewer Overflows only occur in two locations in the RCW. They are located within 100 feet of each other on the western border of the RCW off of Desert View Drive which is approximately 1,000 feet from Soledad Road north of on Soledad Mountain Road.

The sewer wastewater on MCAS Miramar is collected on base and discharges to the City of San Diego system. MCAS Miramar's sewer system consists of approximately 38 miles of 6" to 15" vitrified clay lines built from 1953 to 1960.

7.2.1 Sewer Overflows

Since 1995, there have been 57 sewer overflow spills throughout the RCW recorded by the San Diego Regional Water Quality Control Board (Figure 7-3). Of these spills, 57% have been caused by root intrusion and 19% by grease buildup and remaining 24% by other factors. Almost 70% of these spills have at one point reached the surface water instead of being diverted into storm drains. In 1995-1996 there were 14 recorded spills in City of San Diego owned land of the RCW. Another 14 spills were recorded in between 1996-1997 throughout the same area. The San Diego Regional Water Quality Control Board has been aggressively addressing sanitary sewer overflows for several years now. In

May of 1996, the Regional Board adopted Order No. 96-04 which are waste discharge requirements prohibiting sanitary sewer overflows by sewage collection agencies. This order was adopted in response to what the Regional Board had been seeing as a serious and growing sewage problem in the region. The Board was very concerned and wanted a way to reduce the number and volume of spills and protect water quality, the environment and public health. Table 7-1 summarizes each years spills since 1995 Sewer Spills have occurred in other parts of the City due to vandalism, but vandalism has not been a problem so far in San Clemente Canyon. MWWD recently installed locking covers on all the manholes in San Clemente Canyon to reduce the possibility of spills due to vandalism.

Table 7-1: Sanitary Sewer Overflows

Year	Total Volume (Gallons)	Recovered Volume (Gallons)	Percent Recovered	Primary Cause
1995-1996	121,090	90,450	75%	Root blockage and grease buildup
1996-1997	20,793	3,942	19%	Root blockage and grease buildup
1997-1998	82	0	0%	Root blockage
1998-1999	9,797	3,125	32%	Root blockage and construction
1999-2000	16,808	4,959	30%	Root blockage and grease buildup
2000-2001	4,100	3,895	95%	Root blockage
2001-2002	874	300	34%	Root blockage and construction
2002-2003	8,830	8,730	99%	Root blockage
2003-2004	1,962	1,625	83%	Root blockage and

7.3 Storm Water Conveyance

Most of the storm drain systems servicing the developed areas of the watershed have their outfalls in tributary canyons that then drain into Rose or Sycamore creek (Figure 7-4). In certain locations, the storm drain systems have their outlets directly into the Rose or Sycamore Creek. This is particularly true within the lower portions of the watershed. The Stevenson Canyon drainage did not naturally converge with Rose Creek but has been connected via storm drains along Balboa Ave. Historically, Stevenson Canyon drained directly to Mission Bay near De Anza Cove. However, in 1981 the City of San Diego implemented a new storm drain program to ensure the water quality and habitat protection for Mission Bay. To address the problem of water quality in Mission Bay the City retained the services of Tetra Tech, Inc. of Pasadena, California to conduct a comprehensive study of pollution sources within the bay and to analyze circulation and tidal flushing action for improving the dispersal of pollutants- especially coming from dry weather runoff. Computer and physical modeling of the bay as performed by Tetra Tech indicated that the major reconfiguration of Fiesta Island or the removal of the causeway would not significantly improve the tidal flushing of the bay. Interception of pollutants before

they reach the Bay was predicted to provide the most effective means of long-term improvement of bay water quality (Figure 7-4). This recommended approach was subsequently implemented with the construction of eight diversion systems on two contributory drainage control channels (Rose and Tecolote Creeks) and nine storm drains on the east side of Mission Bay.

These first diversion projects were simple gravity and pumped systems which allowed a controlled amount of low-flow runoff from the storm drains to enter an existing trunk sewer and to then be transported to the Point Loma Treatment Plant for treatment. The East Bay project was completed in 1986 at a cost of \$1 million and provided low flow storm drain diversion of runoff from 90 percent of the area tributary to Mission Bay and the San Diego River Channel west of Interstate 5.

Two other diversion projects were undertaken by the City of San Diego. In 1987, the City committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. The project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of \$9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). In 1997, the Beach Area Low Flow Diversion Project was created at the request of Council members Wear and Mathis. Storm drain outfalls along the coastline were inventoried and each drain outfall was rated for the potential for human contact with the flow from the drain (i.e. flow crosses the beach). As a result, low flow diversion facilities became operational in 1998 and 1999 at a cost of \$1 million dollars.

The main objectives of a storm drain system implementation are erosion control, sediment control, tracking control, wind erosion control, non-stormwater management control, waste management and materials pollution control which target constituents in sediment, nutrients, trash, metals, bacteria, oil and grease, as well as organics. There are potential alternatives to a storm drain intercept system which re-direct flow when the water has not reached flood potential. Potential alternatives consist of silt fences, fiber rolls, gravel bag berms, sandbag Barrier, straw bale barrier, and cobble fenced embankments. Storm drain inlet protection consists of a sediment filter around an impounding area upstream of a storm drain. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. An important

limitation of flood drains should be noted in that sediment removal may be difficult in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, the use of other onsite sediment trapping techniques in conjunction with inlet protection can be implemented.

7.3.1 Hydromodifications

As part of this assessment, existing hydromodification projects are being mapped and characterized. Initial data collection efforts have identified four concrete stormwater channels that discharge to Rose Creek between Interstate 805 and the confluence with Sycamore Creek. Additionally, there are approximately 3,000 feet of concrete trapezoidal channels, with both natural and concrete beds, from the confluence to the outlet at Mission Bay. Based on field work in both Rose and San Clemente Canyons, there are three man-made cobble embankments. The three implemented in the RCW are approximately 6 feet high and range in lengths of 30 to 69 feet. These three man-made embankments help reinforce and stabilize the RCW in high water events. In evaluation of the storm drains, diameters range from 6 inches to 180 inches. The 6 inch storm drains are all located west of Interstate 805 and compose 9% of the total storm drains in the RCW and total 7,960 feet or 1.5 miles. Eighteen inch (18") drains are the predominant pipe used throughout the RCW and compose 40% of the drainage pipes and total 118,692 feet in length or 22.5 miles. The 24 inch storm drains compose 12% of the storm drains and total 49,906 feet in length or 9.5 miles. Thirty inch (30") drains compose 4% of the total storm drain pipes and total 17,379 feet in length, or 3.3 miles.

THIS PAGE LEFT INTENTIONALLY BLANK

Figure 7-1: Reclaimed Water and SDCWA Aqueduct

Back of Figure 7-1

Figure 7-2: Sewer System

Back of Figure 7-2

Figure 7-3: Sanitary Sewer Overflows

Back of Figure 7-3

Figure 7-4: Storm Water Conveyance and Hydromodifications

Back of Figure 7-4

7.4 Electrical Distribution

San Diego Gas and Electric (SDG&E) operates and maintains a couple of high-voltage distribution lines that cross the RCW. The high voltage electric lines run predominantly east – west throughout the watershed with one main line running north – south along Interstate 805 and at Miramar Road directs east towards a SDG&E Substation just across the road from MCAS Miramar. A second SDG&E Substation is located in the northwest portion of the watershed in Sycamore Canyon off of Spring Canyon Road. The approximate length of the electrical lines that distribute power to the watershed totals 77,016 feet or 14.6 miles (Figure 7-5).

The electrical distribution system at MCAS Miramar contains more than 90 miles of transmission lines. The older high voltage distribution lines are typically wood pole construction. Newer electrical distribution lines are generally installed underground in concrete encased ducts.

7.5 Gas Distribution

San Diego Gas & Electric (SDG&E) operates and maintains a number of gas lines that distribute gas across the RCW. The main operating location of the gas lines is almost entirely between Interstate 5 and Interstate 805 excluding one line that runs west underneath Interstate 805 near Miramar Ranch North and re-directs to directly south expanding beyond the RCW. The approximate length of gas lines that distribute gas to the watershed totals 77,496 feet or 14.7 miles.

Natural gas is supplied to Miramar by SDG&E from its distribution main on station. Gas is distributed by buried pipes. All lines are located on the northern part of the Station. The total length of natural gas lines at Miramar is approximately 11 miles. Propane gas is limited to two propane gas tanks and associated distribution systems.

7.6 Flood Hazards

Flood hazard areas are determined using statistical analyses of records of river flow, storm tides, and rainfall. This information is obtained through consultation with the community, use of floodplain topographic surveys, and hydrologic and hydraulic analyses. The Flood Insurance Study (FIS) developed by Federal Emergency Management Agency covers those areas subject to flooding from

rivers and streams, along coastal areas and lakeshores, or shallow flooding areas. Flood Insurance Studies use detailed hydrologic and hydraulic analyses to model the 1% annual chance flood event or 100-year storm event to determine Base Flood Elevations (BFE), and designate floodways and risk zones (Zones AE, A1-30, AH, AO, VE, and V1-30). The flood hazard data are portrayed in tabular fashion in the FIS narrative and graphically as flood profiles that are attached to the narrative.

Floodplain mapping and management within the RCW is divided along the jurisdictional lines of the City of San Diego and MCAS Miramar. Both jurisdictions have relied on the Army Corps of Engineers to analyze and map the floodplains within their jurisdictions, but have done so at different points in time and have not collaborated to develop a comprehensive map of the floodplains within the RCW using consistent methodologies and data inputs. According to the 1997 FIS study that covers the City's jurisdictional area, only about 1% of the RCW lies within the 100 Year Flood Zone or Zone A (Table 7-2). Forty-four percent occurs in the undetermined category where there are possible yet undetermined flood hazards. The remaining 55% of the RCW falls outside the 100 Year Flood Zone (Figure 7-6). Twenty five percent of MCAS Miramar owned land within the RCW is under a Zone A category. Based on the 1997 FIS, the peak flow of a 10-year flood in Rose Creek is 2,700 cubic feet per second (cfs). During a 50-year flood event, the rate is 8,100 cfs and 12,000 cfs during a 100-year flood event.

Table 7-2: 100 Year Flood Zone

Flood Zone	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
100 Year Flood Zone: A flood having a 1% chance of being equaled or exceeded in any given year	131	7		3,059		10	19		117	3,343
Undetermined: Areas where there are possible, but undetermined flood hazards.		288		7,324	11			21	3	7,647
Outside Flood Zone: Areas outside the 100-year floodplains, areas of 100-year sheet flow flooding where average depths are less than 1 foot, areas of 100-year stream flooding where the contributing drainage area is less than 1 square mile or areas protected by levees.	2,909	574	823	1,818	75	43	502	800	4,894	12,438
Totals	3,040	869	823	12,201	86	53	522	821	5,014	23,428

7.7 Vehicular Transportation System

There are a total of 307 miles of road right-of-ways throughout the RCW which include freeways, major arterial streets and local streets. Local streets are the dominant form and total 264 miles, or 86 percent of the transportation system. Major arterial roads occupy 23 miles and freeways occupy 20 miles throughout the RCW. Interstate 5 (I-5) is the main north-south corridor on the western portion of the RCW that intersects with State Route 52 at the confluence of the San Clemente Creek and Rose Creek. This ten lane freeway (five northbound and five southbound) is the boundary separating the communities of Pacific Beach, La Jolla and Clairemont Mesa and the southwestern portion of University and roughly traverses 6 miles through the watershed. Interstate 805 (I-805) is also a ten lane north-south corridor that eventually merges with I-5 just north of the RCW and acts as westernmost boundary between the City of San Diego and MCAS Miramar. I-805 also separates the communities of Kearny Mesa and Clairemont Mesa. (Figure 7-7)

The easternmost freeway that crosses the RCW is Interstate 15 (I-15), also a north-south corridor. This ten to twelve lane freeway traverses 2.7 miles through the RCW in MCAS Miramar. State Route 163 (SR-163) is an eight lane freeway that connects to I-15 just inside the southern boundary of the RCW and still within MCAS Miramar. State Route 52 (SR-52), is the only east-west freeway within the RCW. This freeway begins as a four lane freeway from I-5 to I-805 then expands to an eight lane freeway and back to a four lane after it crosses I-15. SR-52 intersects with all the major freeways within the RCW except for I-15.

The average daily trips (ADT) of the freeways through the RCW are approximately over 187,000 trips per day. The ADT for arterial roads with roughly 50,000 trips per day and local streets are usually less than 10,000 trips per day. Of the all the freeways through the RCW, I-5, I-805, I-15 and SR-163 are the most heavily used averaging over 208,000 per day while SR-52 averages over 102,000 trips per day. The north-south freeways experience the most traffic due to their connection with the growing population of San Diego's North County and downtown San Diego. The highest ADT of the major freeways within the RCW is I-15 with over 305,000 trips per day.

7.8 Rail Service

Within San Diego County the coastal rail travels to and from Oceanside and follows the coast southward and eventually into Mexico. The railroad system traverses roughly 10 miles within the RCW through MCAS Miramar and predominantly through Rose Canyon. The railroad then follows the I-5 corridor south through the communities of University and Clairemont Mesa on its way to downtown San Diego. This coastal rail corridor, a predominantly double-track railway throughout the RCW, is shared by commuter, intercity passenger and freight rail services. On an annual basis, 1.8 million commuters ride Coaster trains south or Metrolink trains north from Oceanside using the coastal rail corridor. The corridor is part of Amtrak's second busiest intercity rail corridor nationwide (carrying another 1.8 million annual passengers). It comes second only to the Northeast Corridor. The coastal corridor is also served by the Burlington Northern Santa Fe freight rail service. The 2030 Regional Transportation Plan from SANDAG includes substantial improvements to the corridor including the completion of double tracking the rail line between Orange County and Center City San Diego and tunnels at Del Mar and University with a new Coaster station off Nobel Drive. These proposals are conditional upon appropriate environmental impact analysis.

Figure 7-5: Gas and Electrical Distribution

Back of Figure 7-5

Figure 7-6: FEMA/FIRM Flood Zones

Back of Figure 7-6

Figure 7-7: Major Transportation Systems

Back of Figure 7-7

8 Water Quality

As described in the Mission Bay and La Jolla Watersheds Urban Runoff Management Plan (2004), water quality pollution in Mission Bay, particularly bacterial contamination, has been the focus of investigations by various entities, since the early 1980's. Results of the initial comprehensive investigation indicated that the interception of pollutants before they reached the Bay would likely provide the most effective means of improving water quality within the Bay during the dry season as re-configuration of the Bay was shown to result in insignificant circulation and associated water quality improvements. The recommended approach was implemented in phases by the City of San Diego and has resulted in the construction of a low-flow interceptor system that diverts dry weather urban runoff out of the storm drain system into the sanitary sewer system at a cost of approximately \$10 million. Additionally, the City made significant improvements to the sewer system within the area, replacing and upgrading old pipes and pump stations, to help prevent future sewer overflows as well and cost over \$200 million. Over the last two decades since the initiation of these efforts, frequent postings due to bacterial contamination have continued to occur.

In 2002 the City of San Diego developed the Mission Bay Water Quality Management Plan that identified seven individual projects, including the Rose and Tecolote Creeks Water Quality Improvement Project, which is the first project to extend beyond the Bay and its adjacent land uses up into the tributary drainages of the two primary watersheds draining to the Bay. Other projects recently undertaken by the City of San Diego include: Mission Bay Bacteria Source Identification Project; Mission Bay Water Quality Survey; Mission Bay Epidemiology Study; Mission Bay Contaminant Dispersion Study; Mission Bay Water and Sediment Testing Project; Coastal Low Flow Storm Drain Diversion Project; Tecolote Creek Treatment Wetland Project; and the aforementioned Rose and Tecolote Creek Water Quality Improvement Project. Information on these projects have been collected and reviewed to determine how their findings, recommendations, or project configurations may provide insight, opportunities, or constraints to the analyses and recommendations associated with this assessment.

Understanding the pollutants of concern within Mission Bay and the RCW being addressed by the City of San Diego and others is important. Understanding which pollutants they are, what the likely sources are, and how they are transported can identify opportunities for indirect benefits within this

assessment's recommendations as they are developed and refined. Additionally, it is important to ensure that the recommendations generated by this assessment do not exacerbate the conditions that are contributing to the water quality issues to begin with.

8.1 Water Quality Issues

The San Diego Regional Water Quality Control Boards (SDRWQCB) have, through the CWA 303(d) Listings, identified the mouth of Rose Creek as being impaired by Lead and Eutrophic conditions, and all of Mission Bay with Bacterial contamination. These have been on the 303(d) list since 1996 and are identified as medium and low priorities for TMDL develop within the 2002 303(d) list. In addition to these pollutants the Rose and Tecolote Creeks Water Quality Improvement Project also referred to the Standard Urban Storm Water Mitigation Plan for San Diego County and determined that due to the land uses present within both the Rose and Tecolote Creeks watersheds that sediment, nutrients, other heavy metals, organic compounds, trash and debris, oxygen demanding substances, oil and grease, and pesticides should also be considered pollutants of concern.

The City of San Diego has undertaken three recent projects that have focused on water quality within the RCW: 1) Constructed Wetlands in the Rose Creek Watershed, City of San Diego Water Department - 2001; 2) Rose and Tecolote Creek Water Quality Improvement Project, City of San Diego Storm Water Pollution Prevention Program - 2003; and 3) Mission Bay Water Quality Survey, City of San Diego Storm Water Pollution Prevention Program. These three projects have focused on collecting dry and wet weather water quality samples and investigating the types of water quality improvement projects that may be most effective within the watershed.

The Constructed Wetlands in the Rose Creek Watershed focused on investigating the potential to construct different types of wetlands, their design requirements, including water supply, their potential to improve water quality, and on obtaining preliminary comments from community stakeholders and regulatory agencies. The research collected, design criteria developed, and comments received will all be leveraged and utilized during the development and refinement of recommendations pertaining to wetland restoration and enhancement within this assessment.

The Rose and Tecolote Creek Water Quality Improvement Project focused on identifying potential locations for the installation of structural water quality treatment devices and then evaluate several

alternate treatment devices for each site. Eight categories of structural treatment devices were considered: biofiltration, constructed wetlands, extended detention basins, infiltration, filtration, hydrodynamic separators, inlet filters, and off-line treatment plants. A total of 34 potential treatment locations were identified in the RCW and were processed through an evaluation procedure to determine which treatment alternatives would work best at each site. A ranking of these sites helped in identifying potential implementation phases and then rank the sites to establish which sites should be further evaluated for potential implementation. Three potential locations were identified within the RCW for further evaluation: 1) Clairemont Regents Road; 2) University City La Jolla Colony; and 3) University City Marcy Park West Outfall. After further evaluation, only the Clairemont Regents Road location was recommended for further design and implementation as a biofilter. The project has currently been put on hold due to community opposition voiced during initial public meetings.

The Mission Bay Water Quality Survey, initiated by the City of San Diego Metropolitan Wastewater Department in 2001, collected data from 14 stations within the RCW (Figure 8-1). The focus of this monitoring has been on bacterial contaminants, but other physical and chemical analytes have been collected as well. This program collected weekly samples during both dry and wet weather conditions for 36-months. The results from this effort will be incorporated into this assessment once they are available. Additionally, as part of the MOU with the City of San Diego for the project, the City has continued to collect dry weather monitoring data within the RCW at the 14 original stations, as well as from 10 additional stations. Sixteen of these stations are being used as field screening stations only and eight are being used for both field screening and laboratory analysis. As the results from this monitoring effort are released they will be incorporated into this assessment.

THIS PAGE LEFT INTENTIONALLY BLANK

Figure 8-1: City of San Diego Dry and Wet Weather Monitoring Stations

Back of Figure 8-1

9 Cultural Resources

The RCW has a rich history of settlement dating back to as early as 1769 when the Spanish traveled up Rose Canyon from the Presidio as a route from San Diego to Monterey. In the 1880s the small farming and ranching communities of Linda Vista and Miramar were established. The community of Linda Vista was centered in the eastern end of San Clemente Canyon and the surrounding mesa lands where the community of Miramar was settled. These settlements are currently situated at the intersection of Miramar Road and the Interstate 15 freeway. Patterns of prehistoric cultural records can be divided into zones. In areas with limited rainfall and ephemeral creeks and streams more permanent villages and camps can be found near the water. There was also a trend in which larger established communities would be centered around the coast and near stable water sources. Research has been conducted more recently between Interstate 5 and Interstate 805 which is on City of San Diego owned land. There are currently 47 recorded sites ranging from prehistoric pottery to railroad siding.

9.1 Prehistoric

The term San Dieguito was termed to refer to the early artifact assemblages in San Diego County in the PaleoIndian Period (11,500-8,500/7,500 B.P.). Pioneering survey work identified lithic scatters situated on the San Dieguito Plateau of San Diego County, which were initially termed Scrapper-Maker occupation areas. Attributes of these Scrapper-Maker areas include patinated scrapers, knives, rare crescentic stones and occasional manos and metates. Situated on terraces and ridge tops, these sites lacked a substantial midden deposit and were interpreted as evidence of a hunting-focused culture.

The Late Prehistoric Period (1300/800 B.P. – 200 B.P.) is characterized by the small, pressure flaked projectile points indicative of bow and arrow technology. The appearance of ceramics, the replacement of flexed inhumations with cremations and an emphasis on inland plant food collection and processing of acorns were also discovered.

The Late Prehistoric village of La Rinconada de Jamo, observed by the Spanish in 1769, is located at the mouth of Rose Canyon as it enters Mission Bay. Traveling north on Rose Creek from Mission Bay, smaller Archaic and Late Prehistoric camps are found within Rose Canyon on the banks and terraces

and it is likely that many sites have been buried by sediments over time and that many are deep beneath the existing surface. Many of these camps were probably established to take advantage of the seasonal availability of plants and animal resources.

9.2 *Historic*

At the time of Spanish contact in southern San Diego County, the people living in the area were called the Diegueno, after the mission at San Diego. However, many people living in the region were not affiliated with the mission. Yuman-speaking, whose origins can be traced along the Colorado River area were termed the Kumeyaay as a common name of these people living in the southern and central part of the county. The terms Tipai and Ipai referred to the southern and northern Kumeyaay respectively. The dividing line between the Tipai and Ipai is approximately Point Loma to Cuyamaca Peak and Julian.

When Spanish explorers made contact with Native Americans in 1769, they recruited the local Native Americans to be used as laborers and convert them to Catholicism. Missionization along with European diseases greatly reduced the Kumeyaay populations. In the early 1820's, California came into Mexico's rule; many missions were secularized which brought uprisings against Mexican rancheros. As California became a sovereign state in 1849, the Anglos again recruited the Kumeyaay as laborers but they received even harsher treatment. Conflicts between Native Americans and Anglos led to the establishment of reservations and villages.

Kumeyaay groups resided along Rose Canyon and San Clemente Canyon and focused on subsistence activities such as staple seed bearing plants during early and mid-summer months. Plant resources such as manzanitas, elderberries and sage were collected during summer months. During fall and winter months, settlements may have moved to higher elevations for acorn harvesting. Animal resources were exploited when meager plant supplies existed.

The lands in Rose Canyon and San Clemente Canyon became Pueblo Lands of the City of San Diego as the area was settled and land grants were made. In 1853, sections of the Pueblo Lands were offered for sale. Land was beginning to be purchased in the area and turned into dairy ranches and

pastures for cattle and horses. A San Diego entrepreneur named Louis Rose, was one of the first to purchase land and constructed a tannery along with a vineyard, garden, tobacco plants and grazing pastures. In 1882, the California Southern Railroad completed a track through the canyon and by 1912, a train stop, known as the Elvira Station could be found near the current Gilman Drive. The Rose Creek crossings were particularly problematic with floods and washouts in the winters of 1883-1884. The flood of 1916 washed out even more tracks, resulting in the re-routing of tracks to the north side of Rose Canyon at a higher elevation. The creek crossings were then eliminated, but portions of the old route can still be seen today, mainly in the form of dirt roads.

The United States Government has owned the site of MCAS Miramar in one form or another since World War I, when it was an Army Infantry Training Center called Camp Kearny. Prior to military control, the small farming community of Linda Vista had been established in what is now the MCAS Miramar Main Station area. The majority of the home sites associated with Linda Vista were along the San Clemente Canyon and the adjacent mesas and foothill lands between present day Interstate 15 and East Miramar.

When completed, Camp Kearny consisted of 8,000 acres of leased land upon which 1,162 buildings were constructed. An additional 5,000 acres of adjacent land was leased for practice and drill maneuvers. In 1922, Camp Kearny was closed and most of the buildings demolished. Following World War II, the southern half was utilized as an auxiliary air station to Naval Air Station North Island while the northern half was designated Marine Corps Air Depot Miramar.

In 1946, both activities were designated Marine Corps Air Station Miramar and Navy and Marine Corps aircraft and fleet units operated until June 1947, when Marine units moved to El Toro, California. In 1952, the station was re-designated as U.S. Naval Air Station Miramar. In 1993 the Base Closure and Realignment commission closed MCAS El Toro and MCAS Tustin and relocated the aircraft and helicopter fleets to NAS Miramar, NAS North Island and MCAS Camp Pendleton. Squadrons and related activities from NAS Miramar were relocated to NAS Lemoore and NAS Fallon.

9.3 History of Human Effects on Rose Creek

The earliest records and maps drawn by Mission Clerics from information gleaned from trappers and settlers of the San Diego area, refer to False Bay and major floods in the San Diego River Valley (now Mission Valley) beginning in 1770. Devastating floods were recorded in 1780, 1825 and 1862.

Floodwaters in 1825 caused the river to shift its normal course from False Bay, emptying instead, into San Diego Bay. The river mouth was diverted back to False Bay in 1876 when silt made San Diego Bay too shallow for large sailing ships. This hazard to shipping and commercial ventures dependent upon sea travel was resolved by men and machinery with the same mindset that would determine the future engineering to control rivers, creeks and estuaries.

In 1915, as San Diego was reveling in the fame of the World's Fair; False Bay officially became Mission Bay and was still occupied by waterfowl gunners who had turned the marsh into a sport hunting ground. Then the floods of 1916 occurred and redirected Rose Creek to where it is today. The flood velocity took a direct path to the bay, cutting a channel through the current area that is now the rock and concrete channel we see today. Business leaders of the time vowed to control the waters and had set their minds to turn the adjacent land into developable real estate.

Men and machinery began the task of draining the "swamp" of Mission Bay and preparing it for the Twentieth Century. Preoccupations with the Great War and the diversion of resources during the World War II gave Rose Creek's natural environment some time to re-grow, although agricultural practices and horse racing kept growth to a minimum.

Gradual improvements to the new channel were accelerated in the 1930's (Figure 9-1) to accommodate WWII military needs and to accommodate postwar land development in the 1940's. By 1949 heavy machinery began to erase the last vestiges of Rose Creek's natural course (Figure 9-2) ushering the post war building boom. The creek's straightened channel allowed development to squeeze the waterway in the same manner as many other urban streams. In less than 25 years, Rose Creek's channel was industrialized to prevent flood waters from flowing down El Camino Real-Coast Highway 101, inundating house and businesses on its way to the sea. When the U.S. Army Corps of Engineers proudly finished the flood control project in 1973, beach communities were safe from

unpredictable forces of nature. Amid the invasion of weeds, sewage and trash, nature sprung back to life only to be bulldozed every five years for flood control maintenance (Figure 9-3).

Figure 9-1. 1935 Aerial photograph of Rose Creek

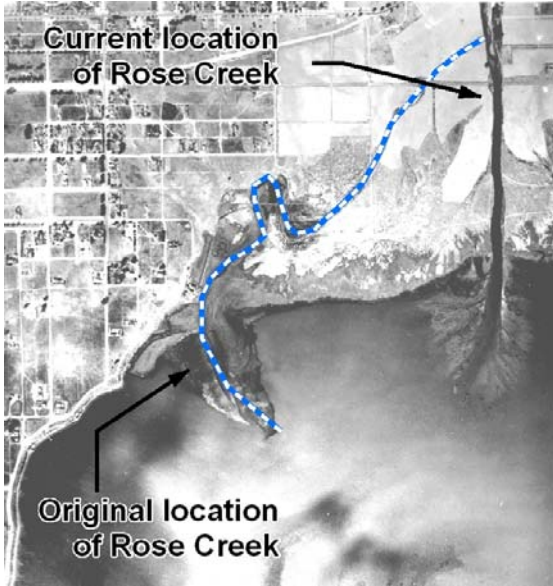


Figure 9-2: 1949 Oblique: Pacific Beach looking west from Highway 101

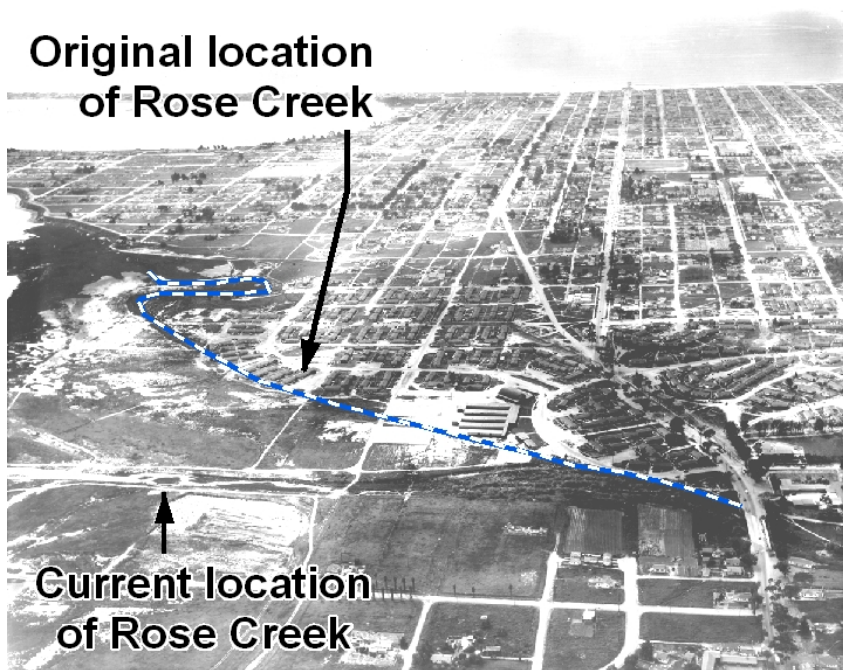
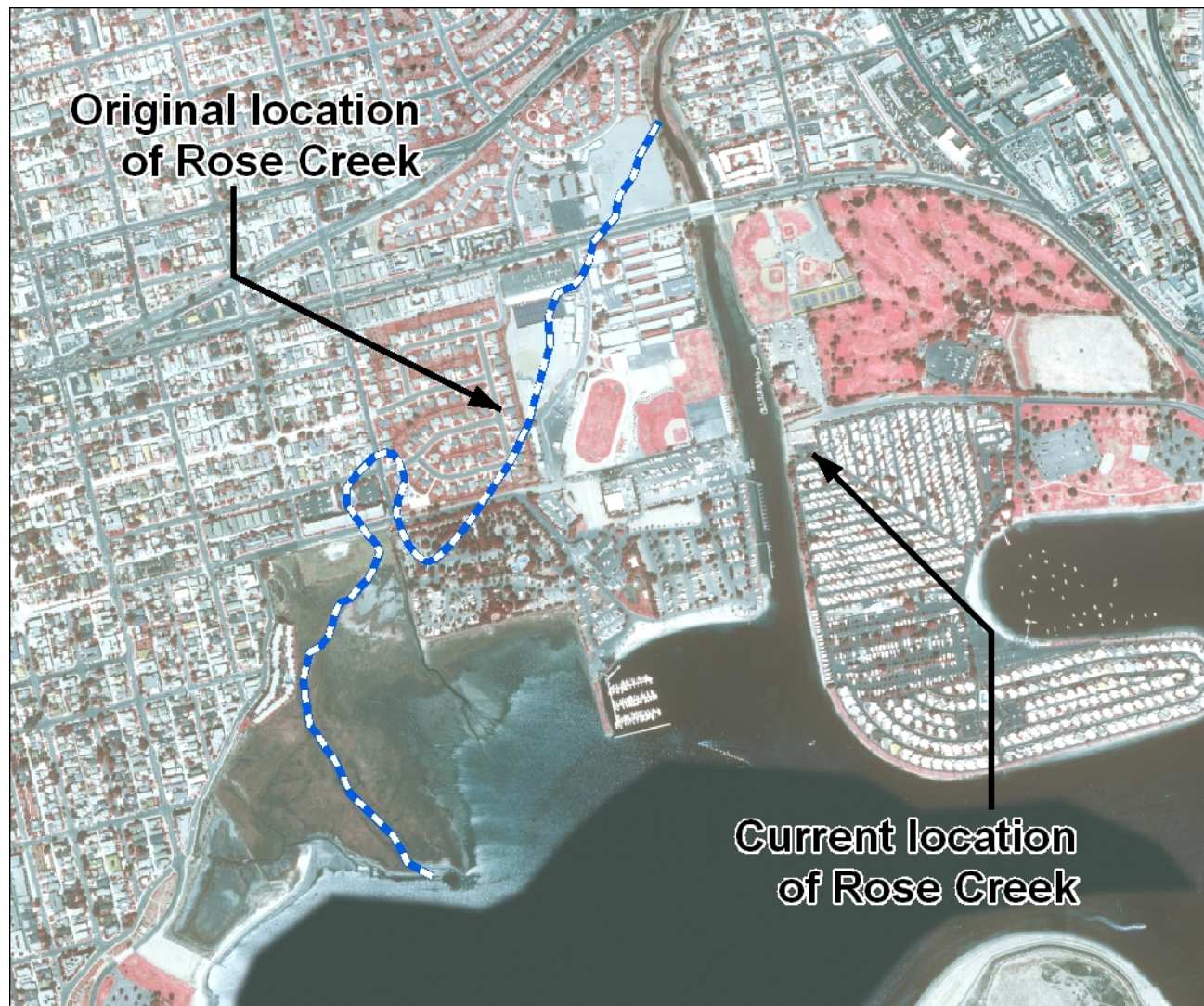


Figure 9-3: 2000 Aerial photograph of Rose Creek



10 Recreational Resources

The RCW offers a multitude of recreational opportunities for local residents and visitors alike. Two open space parks reside within the RCW that offer activities such as hiking, jogging, mountain biking and bird watching. The La Jolla Golden Triangle Rotary Club Nature Trail across the street from University High School offers educational opportunities with a self guided nature trail complete with an informative kiosk and plant signage and benches along the trail. Numerous City of San Diego owned active recreation parks also can be found scattered throughout the watershed offering facilities for soccer, baseball and softball. Accessibility to these parks and opens spaces are easily obtained through main arterial roads and even residential streets.

10.1 Open Space Parks

There is approximately 949 acres of open space within the RCW. Open Space within the City of San Diego is generally defined as areas free from development or developed with low intensity uses that respect the natural characteristics. Open Space is used for the preservation of natural and cultural resources, outdoor recreation, health and safety, and as a form of urban growth control. The largest area of open space lies within the Marian Bear Memorial Park just south of State Route 52 between Interstates 5 and 805 (Figure 10-1 and Table 10-1). Marian Bear Memorial Park encompasses 467 acres or 49% of open space while the Rose Canyon Open Space contributes 312 acres to the overall open space land. The Rose Canyon Open Space Park spans from the western most edge of Marian Bear Memorial Park and heads northeast following Rose Canyon towards Interstate 805 to the border of MCAS Miramar. The Soledad Natural Open Space Park west of Interstate 5 is the third largest open space area at 197 acres with 121 acres within the RCW. Marian Bear Memorial Park lies solely with the community of Clairemont Mesa, while Rose Canyon Open Space lies within the community of University and the Soledad Natural Open Space lies entirely in La Jolla. Additionally, a portion of Pottery Canyon (3 acres) is also within the RCW. Table 10-1 lists all the major open spaces within the RCW.

Marian Bear Memorial Park is located within San Clemente Canyon and his home to a mix of chaparral, sycamores, riparian woodland and oak woodlands. It supports a population of resident wildlife such as raccoons, skunks, rabbits, amphibians, reptiles, birds and serves as a corridor for coyotes, fox and other mammals. Fossilized mollusks, such as snails and clams can still be found in

the canyon walls dating back 40 million years. During the early 1900's, cattle grazed in the canyons and hillsides of San Clemente Canyon. Today the park offers plenty of recreational opportunities such as hiking and mountain biking.

Coastal-Sage scrub and chaparral cover the hills and fields of the Rose Canyon Open Space Park. Riparian habitats traverse the length of the park as oak woodlands take root along the north-facing slopes. Rose Creek meanders through the canyon floor from the east at Scripps Miramar Ranch southward through MCAS Miramar towards Mission Bay where it eventually drains. Raccoons, coyotes, mule deer, bobcats, fox, weasels, opossum and skunks can be found residing within the Rose Canyon Open Space Park. The San Diego Natural History Museum's bird atlas lists 99 species of birds that are resident to or migrate through the park. A few of these species are large raptors such as hawks, kites and owls. Hikes and walks are typically organized by the Friends of Rose Canyon which co-sponsors them with the City of San Diego Parks and Recreation Department. Hiking, mountain biking and bird watching are just a few of the activities that the Rose Canyon Open Space Park has to offer.

Table 10-1: Open Space Parks

Open Space	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Marian Bear Memorial Park	467									467
Bay Ridge	17									17
Clairemont	1									1
La Jolla			3							3
Pottery Canyon			3							3
Soledad Natural			121							121
Bayview							2			2
Capehart							5			5
Rose Canyon									312	312
University City									19	19
Totals	484	0	128	0	0	0	6	0	331	949

10.2 Neighborhood and Community Parks

Of the 234 acres of City of San Diego owned parks within the RCW (Figure 10-1 and Table 10-2), 52% can be found within the University community. The Nobel Athletic Field off of Nobel Drive is the

largest community park within the University community, currently at 31 acres. This park offers open fields for recreational activities such as soccer, baseball and softball. With the development of the Nobel Recreation Center and Library this acreage may change.

The small portion of Mission Bay Park within the RCW is part of the largest park in the region but only 49 acres fall within the RCW. Table 10-2 lists all the City of San Diego owned parks within the RCW. Mission Bay Park encompasses over 4,000 acres, approximately 46% land and 54% water. It offers a wide range of recreational activities such as boating, volleyball, basketball and bicycle/walkway paths throughout the park. It boasts 27 miles of shoreline of which 19 miles are beaches. Mission Bay Park is also home to several wildlife preserves, which include federally endangered species such as the Least Tern, the Brown Pelican and Lightfooted Clapper Rail. The Belding's Savannah Sparrow and Great Blue Heron can also be found within the preserves.

Table 10-2: City of San Diego owned Parks

Neighborhood & Community Parks	Clairemont Mesa	Kearny Mesa	La Jolla	MCAS Miramar	Mira Mesa	Mission Bay Park	Pacific Beach	Scripps Miramar Ranch	University	Totals
Cadman Park & Recreation	8									8
Campland Park						1				1
Clear Site 023A & 942	1									1
Clear Site 675									0	0
Doyle Community Park									26	26
Gershwin park	5									5
Hickman Field Park		42								42
Mac Dowell Park	3									3
Mandell Weiss / Eastgate Park									10	10
Marcy Park									11	11
Mission Bay Park						49	1			51
Nobel Athletic Field									31	31
Standley Park & Recreation									21	21
University Garden Park									13	13
University Village Park									4	4
Villa La Jolla Park									6	6
Totals	18	42	0	0	0	50	1	0	122	234

10.3 Trails

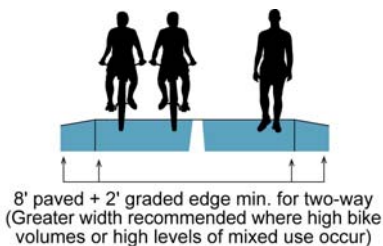
There are miles of hiking and mountain biking trails within the Rose Creek Watershed, predominantly traversing the larger Rose Canyon and Marian Bear Open Space Parks. Many of these trails are multi-

use and provide benches along the trail for rest stops and in some cases, informative kiosks and restrooms. The main trails of Rose Canyon and Marian Bear also serve as utility access paths that span almost the entire length of the parks. Connecting to these utility access paths are miles of foot trails or single-tracks that meander in and out of the adjacent vegetation and either connect back to the main utility access paths or into nearby neighborhoods. Some of these trails are volunteer trails whose long-term use should be assessed and coordinated with City of San Diego Park and Recreation Department staff as use of these volunteer trails may cause impacts to sensitive habitats.

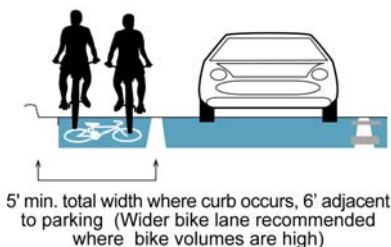
10.3.1 Bikeway Facilities

There are 37 miles of designated bikeway facilities on city streets within the RCW (Table 10-3 and Figure 10-2). To prevent confusion when referring to bikeways, bicycle lanes, bicycle paths and bicycle routes, a description of each bicycle facility type is as provided below.

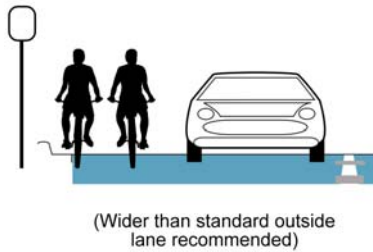
Class 1 – Paved “Bike Path” with an exclusive right-of-way, physically separated from vehicular roadways and intended specifically for non-motorized use.



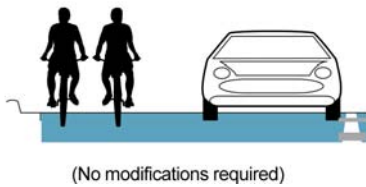
Class 2 – Signed and striped “Bike Lane” within a street right-of-way.



Class 3 – “Bike Route” within a street right-of-way identified by signage only.



Undesignated – An additional category defined as locally recommended on-street routes that appear on area bikeway maps only.



The largest bike facility found in the RCW is the Class 2 bike lane that meanders 17 miles primarily west of MCAS Miramar. A Class 2 bike lane on Genesee Ave provides access to both the Rose Canyon Open Space and the Marian Bear Memorial Park. Both parks can also be accessed from the Rose Canyon Bike Path, a Class 1 bikeway facility, at the northern end of Sante Fe Street in Clairemont Mesa. However, it should be noted that access to the open space parks from the Rose Canyon Bike Path currently requires recreational users to illegally cross the railroad tracks. For this violation an individual can be fined for \$1,000.00 by the local police department.

Table 10-3: Bikeway Facilities

Bikeway Facilities	Miles
Class 1: Bike Path	3
Class 2: Bike Lane	17
Class 3: Bike Route	7
Undesignated	10
Totals	37

There are roughly 15 miles of designated bike trails within the RCW (Figure 10-3). Three miles lie within the Rose Canyon Open Space Park and another 9 miles in the Marian Bear Memorial Park. These off-road bicycle trails are a shared-use facility with hikers. In addition to these designated trails, there are approximately 3 miles of utility access paths on the north side of the railroad tracks in Rose Canyon. This fire road extends from where Gilman Drive and Rose Canyon Bike Path merge eastward to Interstate 805. This trail is the potential site for the Class I Coastal Rail Trail intended to connect from Oceanside to the Santa Fe Depot in downtown San Diego. Just north of this fire road along the northern rim of the canyon is a trail made of fine crushed rock resembling asphalt. This trail begins from Regents Road and ends a half mile west near the rail road tracks. Currently there is no continuous off-road connection between Marian Bear Memorial Park and the Rose Canyon Open Space Park.

10.3.2 Community Plan Bikeway Facilities

Clairemont Mesa

The Clairemont Mesa Community Plan states that its objective, along with most other Plans, is to create a system of bicycle lanes and paths to link parks, recreation areas, schools and commercial areas throughout the community. Many Class I, II and III bikeways are proposed with an emphasis on the development of those south of SR-52 and along Genesee Avenue. The San Clemente Canyon Bikeway (I-805 to I-5) is recommended along the northern boundary of Marian Bear Memorial Park in order to ensure that the bikeway will not interfere with biological resources in the canyon park. The plan recommends that bikeway signs should include directional signage to lead bicycles to their destinations. The plan also suggests that secure bicycle racks should be placed in visible locations

near building entrances and employers should provide bicycle lockers for employees that commute by bicycle. Bikeways in this area should be directed to serve future Trolley and bus transit stations with bicycle racks and lockers at each location.

Kearny Mesa

According to the Kearny Mesa Community Plan, the high level of vehicular traffic on most streets does not encourage bicycling. Therefore, it recommends developing a community bikeway system, which includes covered parking and bicycle lockers at activity centers and commercial areas. The Plan also suggests the inclusion of a Bicycle Commuting Encouragement Program in a future Transportation System Management Program. It recommends promoting bicycle commuting in this heavy commercial area and that employers provide parking and locker and shower facilities for commuting bicyclists.

La Jolla

The La Jolla Community Plan recommends that priority be given to establishing bike paths in the community. It is also suggested that existing and proposed routes should be separated whenever possible for motor vehicle and bicycle safety.

Mira Mesa

The Mira Mesa Community Plan identifies a system of bikeways and standards. Class II bicycle lanes are recommended along major roadways including Carroll Canyon Road, Miramar Road, Camino Santa Fe and Camino Ruiz.

Scripps Miramar Ranch

The Scripps Miramar Ranch Community Plan states that non-motorized transportation be accommodated through the development of accessible pathways and/or sidewalks and bikeways along parking strips and sidewalks in all residential areas. A Non-Motorized Circulation Element included in the Plan identifies a system of bikeways and hiking and equestrian trails. The bikeways include the highly used Class I bikeways around Miramar Reservoir and along Interstate 15, which connects with Poway Road to the North.

University

As of the date of adoption of the University Community Plan (1990), a system of bikeways was already established. Class I bikeways include the Rose Canyon Bike Path and portions along North Torrey Pines Road. Since there are no parallel roadways from Sorrento Valley Road to Genesee Avenue, bicyclists are permitted to utilize the shoulder of Interstate 5 between these two freeway exits. The proposed Coastal Rail Trail project will traverse the University Community. The route is planned for Genesee Avenue from Rose Canyon to north of Eastgate Mall where a Class I path is planned to connect to Sorrento Valley Road.

Figure 10-1: Parks and Open Space

Back of Figure 10-1

Figure 10-2: Bikeway Facilities

Back of Figure 10-2

10.3.3 Official Trails

In both the Rose Canyon Open Space Park and Marian Bear Memorial Park, cyclists and hikers share the use of the designated 15 miles of trails (Figure 10-3). The Marian Bear Memorial Park has numerous entrances into the park from both residential neighborhoods and designated parking areas off of Santa Fe Street, Regents Road and Genesee Ave. Rose Canyon Open Space Park can be accessed from the same streets as Marian Bear but at different locations. Marian Bear Memorial Park has two residential access trails on its southern slopes. One is the Biltmore Trail that is about one-third of a mile in length and can be accessed from Biltmore Street in Clairemont Mesa. A concrete staircase off Cobb Place also in Clairemont Mesa can access Cobb Trail. Cobb Trail is roughly 900 feet in length from Cobb Place to the main trail in the Marian Bear Memorial Park. Both the Cobb and Biltmore Trails are highly shaded by a thick canopy of willows and oak woodlands keeping the trails moist and protected from direct rainfall which helps keep erosion to a minimum. A third access point is the Kroc Trail, which is a quarter-mile long trail and is the eastern most designated access into Marian Bear Memorial Park. The Kroc Trail follows a highly eroded tributary into San Clemente Creek and outlets onto a power line road that can be accessed from Lehrer Drive. Erosion can be found along certain sections of the Kroc trail making it challenging for cyclists but not for hikers. Kroc trail is almost void of any canopy and the adjacent tributary is eroding towards the trail, making the long-term stability of the trail uncertain without management intervention. The northern most access into Marian Bear Memorial Park is through the Standley Trail north of San Clemente Creek. This trail can be accessed from Governor Dr. at the Standley Community Park. The trail then heads south across Syracuse Ave, then continues beneath State Route 52 and connects with the main fire road in Marian Bear Memorial Park.

Designated trails throughout the Rose Canyon Open Space and Marian Bear Memorial Park are typically 3-6 feet in width and meander throughout the parks. These trails are designated for pedestrian and cycling use only.



Maintenance roads (also known as utility access paths) are typically the main trail type throughout these parks due to their heavy use and easy accessibility. The maintenance roads serve dual purpose in that they provide access for authorized vehicles for park management and recreational use for pedestrians and cyclists. These utility access paths also provide access to Metro Wastewater Department and San Diego Gas & Electric utilities. In many cases, these paths provide reasonable trail connections and linkages. As these paths are normally linear and bisect open space boundaries, they provide excellent connections between developed areas.



10.3.4 Un-official Trails

There are numerous miles of volunteer trails within the RCW particularly within the Rose Canyon Open Space Park and Marian Bear Memorial Park. These trails do not show up on official park maps or general plans and are not designated for “use”. These volunteer trails are mainly created by local residents who use these trails as access into the park. Many of these trails can be found parallel to the main trails as another means of recreation to avoid the main trails and utility access paths. Some volunteers trails are used as detours over obstacles such as fallen trees and will either be covered by vegetative growth if not regularly used or become a well-used un-paved trail through compaction by bicycle tires and hikers. All trails (including volunteer trails) will be evaluated by Open Space staff to

determine suitability. Trails approved by staff will be included in the City Master Trail Plan. Volunteer trails not designated for use will be closed and actively or passively restored. Users who create their own trails without proper planning can create detrimental issues within the park system by potentially causing erosion and loss of habitat.

10.3.5 Trail Amenities

Trail amenities can be found in both Marian Bear Memorial Park and Rose Canyon Open Space Park although they are very sparse in Rose Canyon. Marian Bear Memorial Park does have better amenities such as benches, restrooms and parking for users. Restrooms can be found at the Genesee Ave parking lot and both Regents Road parking lots in Marian Bear. Picnic tables can also be found on both Regents Road parking lots in Marian Bear Memorial Park. Here users can read informative kiosks to traverse east or west throughout the park. Individual trail maps can be found at the eastern parking lot of Regents Road before they head east on the main trail. The other kiosks at Genesee Ave and west Regents Road provide an outdated trail map for users to use. The kiosks at all the Marian Bear parking lots range in educational information from California's biodiversity to the wildlife and history of the Marian Bear Memorial Park. Plastic bags for picking up dog feces can be found at these entrances as well as drinking bowls for the dogs. Along the main utility access paths, benches are spread about for users needing a quick break. The current signage of Marian Bear Memorial park is adequate for the users but more informative kiosks along the main trail could educate users as they pass connecting trails, cultural resources and sensitive habitats.

Within Rose Canyon, there are benches near the La Jolla Golden Triangle Rotary Club Nature Trail off of Genesee Ave. There is no parking off Genesee to access Rose Canyon so users must either commute by foot or bicycle or park at University City High School across the street. Benches and kiosks are rare throughout Rose Canyon and can be found at the trail head off Genesee Ave and the Regents Road access trail. The kiosks at these two entrances do not provide as much educational information as those of Marian Bear and lack trail maps for users to orient themselves in the park. There are no public restrooms in Rose Canyon but plastic bags for dogs are present at these kiosks. Kiosks near the Rose Canyon Bike Path entrance would be a good place to put a kiosk for users entering the park from the west. More kiosks, benches, picnic tables and a public restroom would be a good start to promote the use and preservation of the Rose Canyon Open Space Park.

10.3.6 Park Accessibility

Accessibility in general is good but improvements can make these two parks even more educational and experience higher use. Essentially there are four main entrances to the parks. Both Rose Canyon Open Space Park and Marian Bear Memorial Park can be access from Genesee Ave and Regents Road. Only Marian Bear Memorial Park can boast restrooms and a parking lot. From the Marian Bear Memorial Park parking lots, kiosks will inform users the sensitive habitat throughout the park and a warning for poison oak. The parking lots are not striped or paved and do not provide dedicated improved handicapped parking. They are created with dirt and gravel and somewhat smoothed out. The Marian Bear Memorial Park parking lots do have potholes and can be difficult to drive through. From the west end, users can park at Sante Fe Street and use the Rose Canyon Bike Path to get near the Marian Bear Memorial Park trailhead. Accessibility from the west end does pose some danger. Users must cross the railroad tracks, without signage, then cross Rose Creek without a bridge. Currently disabled users cannot enter the park form the west end due to its difficulty and safety issues.

There are no parking lots or staging areas for the Rose Canyon Open Space Park so users must use residential streets to access the park from either Regents Road or Genesee Ave. There is parking on Santa Fe Street in Clairemont Mesa for users entering from the west end of the park. When entering Rose Canyon Open Space from Regents Road or Genesee Ave, users will be able to use the kiosks to guide their way into the park but there are no trail maps provided. From the west end, there is no signage to direct users to the appropriate trail. Users must cross the railroad tracks in order to enter the Rose Canyon Open Space Park similar to that or Marian Bear. Currently there is an existing railroad crossing to access Rose Canyon but has been closed. A bridge does exist for users to cross Rose Creek into Rose Canyon.

Figure 10-3: Hiking Facilities

Back of Figure 10-3

11 Informational Resources and Current Activities

The following chapter describes many of the projects and studies that have occurred in the recent years. There currently is a wide range of information available from City of San Diego community plans to in-depth water quality analysis for the RCW. Many of these plans have already been incorporated into this Existing Conditions report.

11.1 Guidance Documents

Mission Bay and La Jolla Watersheds Urban Runoff Management Plan – January 2003

http://www.projectcleanwater.org/pdf/wurmp/mb_2002_wurmp.pdf

The primary goal of this effort is to positively affect the water resources of the watersheds while balancing economic, social and environmental constraints. The objectives of the program are; 1) to develop/expand methods to assess and improve water quality within the watersheds; 2) integrate watershed principles into land planning; 3) enhance public understanding of sources of water pollution and; 4) encourage and develop stakeholder participation.

City of San Diego Storm Water Pollution Prevention Program: Urban Runoff Management Program

<http://www.sandiego.gov/stormwater/pdf/quality.pdf>

The goal of the water quality monitoring program element is to perform continuous and ongoing storm water conveyance system monitoring and water sampling within the City's six watersheds to better characterize urban runoff into and from the City of San Diego municipal storm water conveyance system with an emphasis on the detection of illicit discharges. The City's water quality monitoring programs incorporate knowledge of the latest environmental mapping and laboratory technologies, past water monitoring data, historical water quality problem areas, the goal and objectives of the City, and the requirements of the Municipal Storm Water Permit.

City of San Diego Bicycle Master Plan (May 2002)

This Master Plan serves as a policy document to guide the development and maintenance of a bicycle network, including other roadways that bicyclists have the legal right to use, support facilities and other programs for San Diego over the next 20 years. These policies address important issues related to San Diego's bikeways such as planning, community involvement, utilization of existing resources,

facility design, multi-modal integration, safety and education, support facilities, as well as specific programs, implementation, maintenance and funding.

The Plan urges the City to take measurable steps toward the goal of improving every San Diego citizen's quality of life, creating a more sustainable environment, reducing traffic congestion, vehicle exhaust emissions, noise and energy consumption. The importance of developing a bicycle system that is attractive and inviting is a key element in preserving San Diego as a place where people want to live, work and visit.

Mobility 2030: The Transportation Plan of the San Diego Region. (April 2003)

Mobility 2030 is the San Diego region's blueprint for a transportation system that enhances our quality of life and meets our mobility needs now and in the future. The foundation of the plan lies in better connecting our freeway, transit and road networks to our homes, schools, work, shopping and other activities. This plan discusses the methods and planning processes that go along with short-term and long-term transportation planning. A brief overview of the Mid-Coast Corridor is discussed along with other new and improved transit routes throughout the region.

Various Community Planning Documents

Community	Date	Prepared for	Prepared By	Contact:
Clairemont Mesa	Jan-90	The City of S.D.	The City of S.D. Planning Department	
Kearney Mesa	Oct-92	The City of S.D.	The City of S.D. Planning Department	
Miramar Ranch North	Apr-91	The City of S.D.	Miramar Ranch North Planning Committee Rick Engineering Company & City of S.D.	David Prewett (619) 291-0707
Rancho Encantada Precise Plan	Feb-00	Sycamore Estate, LLC	T&B Planning Consultants	
Mission Bay Park	Aug-94	The City of S.D.	Wallace Roberts & Todd	info@wrtdesign.com
Pacific Beach	Jul-99	The City of S.D.	The City of S.D. Planning Commission	
Reserve	Feb-94	The City of S.D.	Park & Recreation Dept., City of San Diego Marian Bear Natural Park Resource Council	
Scripps Miramar Ranch	Nov-89	The City of S.D.	Scripps Miramar Ranch Planning Committee Rick Engineering Company & City of S.D.	
University City	Oct-98	The City of S.D.	The City of S.D. Planning Department	

11.2 Previous Projects and Research Efforts

Marian Bear Memorial Park - February 1994

Enhancement and maintenance guidelines outlined in the management plan include: areas of suffering from public activity abuse that have been closed and re-vegetated with native vegetation; erosion areas vegetated with native vegetation; sensitive bird species nesting sites and sensitive plant areas posted "No Entry"; non-native, exotic plants eradicated and replaced with native vegetation; trails closed to allow native vegetation to recover and to provide erosion control; City departments notify the Park and Recreation Department, Open Space Division, of any maintenance activities being conducted; and fences and gates kept in good repair. For projects which are unable to eliminate impacts or for maintenance activities resulting in habitat disturbance, mitigation and restoration guidelines are outlined in the Plan.

These guidelines include: no net loss of riparian, coastal sage scrub, oak woodland, or chaparral habitat; mitigation and monitoring programs are required; re-vegetation projects should use a variety of habitat types, vertical and horizontal plant diversity, and irregular borders; temporary irrigation may be required; and appropriate native plants should be used as listed.

Suggested Guidelines for interpretive and research opportunities include: signage with a rustic appearance; limit interior Park signage to major trails, restoration projects, and nature trail identification; kiosks placed at three major access locations for information and interpretive signage and brochures; development of self-guiding, interpretive signage and brochures; development of self-guiding, interpretive trail research encouraged to gather unknown information on natural resources.

The Natural Resources Management Plan is responsible and provides for maintenance of the Park's natural resources while accommodating human activities in the park. Some of the responsibilities of the Natural Resources Management Plan is to establish practices which will preserve and protect biological resources while providing recreational use; emphasize improvements needed for environmental protection, protect cultural resources; selectively enhance and restore native vegetation in the Park, maintain access paths and trails in a natural condition to blend with the native character of the park and discourage illegal activities.

Constructed Wetlands in the Rose Creek Watershed – August 2001

This study includes general information about constructed wetlands and their ability to improve water quality in the two main creeks in the Rose Creek Watershed, Rose and San Clemente. Due to their capacity to remove bacteria, viruses, and chemical pollutants, they can assist in meeting the objectives of the National Pollution Discharge Elimination System (NPDES) and non-point source pollution (NPS) programs.

Rose & Tecolote Creeks: Water Quality Improvement Project – Final Planning Report - August 15, 2003

In July 2000, the State budget appropriation was made and in February 2001 the City of San Diego received a \$2,000,000.00 grant from the state water resources control board for Rose and Tecolote Creek Watersheds. The main focus in the scope of work is to provide planning mainly to implement water quality treatment devices in strategic placement sites that would address pollution concerns.

In addition, focus primarily on BMP's (Best Management Practices) eight categories for treatment were devices were considered including bio-filtration, constructed wetlands, extended retention basins, infiltration, filtration, hydrodynamic separators, inlet filter inserts, and offline treatment plants.

The scope of the project included services to provide water quality monitoring, preliminary engineering, design and environmental permitting for implementation of treatment devices. The \$2,000,000.00 grant fund from the state water resources control board includes funds to implement up to four water quality treatment devices to be selected from the alternatives identified in the planning process. In conclusion, the planning process yielded three projects selected for implementation of water treatment devices.

Rose Creek Canyon Enhancement Plan - June 2000

The Rose Creek Canyon Enhancement Plan (RCCEP) began as a project of the 'Nature School', an environmental education & ecological restoration academy, committed to revitalizing Rose Creek as the City of San Diego's first ecological preserve. Working with a vision of the future, the Nature School took the initiative to preserve Rose Creek from the fate of San Diego's imperiled waterways. Efforts

began with volunteering in 1996 – 1997 along with Project CREEK (Creek Restoration & Ecology Education for Kids)

The RCCEP has received recognition from a number of successful projects; the most ground breaking of each is a flagship project for improving urban wetlands - Rose Creek Restoration & Nature Preserve. The RCCEP was able to attain this thru partnership's with the City of San Diego, Pacific Beach Town Council, Surya Corporation, Wal-Mart Foundation, De Anza Bay Resort, & Wells Fargo Foundation as well as the many of the ecologically-minded citizens of San Diego who support the enhancement plan as a management tool. This enhancement plan represents a collaborative effort of the Nature School.

The intent of the Rose Creek Canyon Enhancement Plan is to establish existing conditions, develop alternative enhancement approaches, and provide a plan for the development of multi-phase construction documents and management plans.

MCAS East Miramar Housing, Phase One: Infrastructure Feasibility Report, Family Housing Site Alternative Study - July, 1996

This study was prepared to evaluate the feasibility of constructing military family housing on the eastern portion of MCAS Miramar. This housing is necessary in order to accommodate the Marine Corps housing requirement resulting from the realignment of Miramar and to help alleviate the housing deficiency present within the San Diego Naval Complex.

Draft Environmental Impact Statement for Military Family Housing in the San Diego Region: Volume 1, August 2004.

This EIS evaluates the potential environmental effects of the development of suitable and affordable military family housing for enlisted personnel and their families assigned to installations in the San Diego Region. MCAS Miramar is the main focus of the report due to its open space and central location in San Diego County. Three site alternatives have been developed are undergoing environmental impact reviews with two site within the Rose Creek Watershed. One site is just south of

Miramar Road, west of Interstate 15 and the other just south of Scripps Miramar Ranch and Pomerado Road.

Rose Creek Bridge Replacement

http://www.simonwongeng.com/projects_detail.asp?ProjectID=55

Simon Wong Engineering provided the project management, rehabilitation, design and PS&E for this 295' long, 10-span precast/prestressed concrete box girder bridge. It was designed to replace the existing ballasted deck timber trestle railroad bridge, which was severely damaged by a fire in 2002.

In order to maintain rail traffic during construction and to minimize environmental impacts, a precast structure was designed and constructed within 10 miles. The replacement bridge carries Coaster, Amtrak, and freight service across the environmentally sensitive Rose Creek.

Mission Bay Water and Sediment Testing Project

<http://home.sandiego.edu/~kaufmann/missionbay.html>

This project was undertaken by the University of San Diego in conjunction with San Diego BayKeeper and AMEC Earth and Environmental to develop baseline quality, sediment and benthic community monitoring data for Mission Bay and begin the process of analyzing the relationship between monitoring data and environmental factors in the watershed. Other tasks include providing the City of San Diego, regulatory agencies and other stakeholders with the necessary data to make informed choices while developing and implementing an effective Watershed Management Plan and other pollution prevention strategies.

Final Canyon Sewer Cleaning Program and Long-Term Canyon Sewer Maintenance Program PEIR

This project involves two Programs dealing with the near-term cleaning and the long-term maintenance of existing sewer infrastructure located in canyons, undeveloped land and other environmentally sensitive lands throughout San Diego County. The Canyon Sewer Cleaning Program is part of an effort by the Wastewater Collection Division of the Metropolitan Wastewater Department (MWWD) to clean sewer pipelines city-wide. The Canyon Sewer Cleaning Program is focused on sewer pipelines located in canyons and other environmentally sensitive lands. The Long-Term Canyon Sewer Program is focused on the need for, means of, and options to providing long-term

maintenance access to the manholes along sewer pipelines located in canyons and other environmentally sensitive lands.

Nobel Drive Coaster Station: Jurisdictional Delineation (July 2002)

This report presents the results of a jurisdictional delineation for the San Diego Metropolitan Transit Board's Nobel Drive Coaster Station in the community of University. A wetland delineation was conducted by HELIX Environmental Planning, Inc. to identify and map areas within the project area in compliance with State and Federal codes respectively. This information is necessary to evaluate impacts and permit requirements associated with the proposed construction of the Nobel Drive Coaster Station.

11.3 Current Projects and Research Efforts

Draft Environmental Impact Report for the University City North/South Transportation Corridor Study, October 2004.

http://www.rosecanyon.org/rose_canyon_plan.htm

The purpose of the projects is to relieve traffic congestion in the area between the northern and southern portions of University City. Specific objectives related to this project are; to improve intersection level of service; improve street segment level of service; decrease the duration or severity of peak hour traffic and increase traffic and pedestrian safety. This study was proposed as a means for improving traffic circulation within the University City community area. Two of the projects already identified in the University Community Plan were the widening of Genesee Avenue between Nobel Drive and State Route 52 and the construction of a bridge over Rose Canyon connecting the northern and southern portions of Regents Road.

**Wetland Expansion Science & Technology against Runoff (WESTAR).
www.waterboards.ca.gov/nps/docs/contsum/westar.doc**

Rose Creek's impairment from both identified and non-point sources of pollution poses a threat to Mission Bay. In support of state mandate to protect coastal water bodies and their wetland (Section 303(d) of the Clean Water Act), WESTAR intends to demonstrate specific methods of increasing wetland ecosystem functions and improve water quality in the lower reach of Rose Creek.

Water Quality Monitoring – Storm Water Pollution Prevention Program Urban Runoff Management Program

New Diversion Facilities:

Under the current capital program, more coastal storm drain outfalls are planned for design and construction. These planned improvements entail the construction of 18 sites under Phase II of the program at a cost of about \$2.8 million, and the design and construction of 9 sites under Phase III of the program for a combined cost of about \$2.1 million. 14 additional sites under a Phase IV of the program have been identified and are planned for inclusion into the CIP program for a combined design and construction cost of about \$3.3 million. The planned new diversion facilities and modifications to existing facilities are current at the time of printing and subject to change.

Modify Existing Facilities:

The current CIP program includes upgrades to the existing Mission Bay Sewer Interception System (MBSIS) low flow diversion facilities. Additionally, the current CIP program provides for the design and construction of upgrades to the existing 36 diversion valves and 14 interceptor pump stations of the MBSIS. The upgrades are intended to improve the operation of the system and lessen maintenance costs.

City of San Diego COMNET Project

<http://www.emersonprocess-powerwater.com/solutions/OV-EXP-PN-105.pdf>

The coastal low flow diversion facilities are intended to be controlled remotely by the Metropolitan Wastewater Department's SCADA telemetry system. The existing low flow diversion facilities of Phase I will be on-line in the Summer of 2002 for remote monitoring and operation. COMNET will enable City crews to receive "alarms" notifying of rain events or sewer spills at the site of the on-line low flow diversion facility. COMNET will also allow crews to operate the facilities remotely, thereby significantly increasing reaction time and reducing related field trips. The current design efforts under the COMNET component of the coastal low flow diversion program provides for the remote monitoring and operation of the low flow diversion facilities of Phases II, III and IV once they are operational.

Rose Creek Bike Path and Bridge - 2004

The development of a 1,710-foot long and 14-foot wide pedestrian, bicycle and emergency vehicle path that includes a 260 foot long and 16 foot wide clear-span bridge over the Rose Creek Channel to connect existing pathways at the easterly terminus of Pacific Beach Drive to the westerly terminus of North Mission Bay Drive within the RS-1-7 zone and within the boundaries of Mission Bay Park.

Santa Fe Public Safety and Restoration Project

This project is an effort to reduce threats to public safety caused by people who commit crimes in the overgrown section between Damon Ave and Santa Fe Street. In addition to improving public safety, this project can also provide other benefits such as improving water quality in Mission Bay by removing toxic material dumped along Rose Creek. Overgrown vegetation can be replaced with native plants which could potentially restore the natural wetlands in the area.

Constructed Wetlands for Urban Runoff BMP's in Rose Canyon

This project involves the installation of multiple small-scale constructed wetlands to capture and beneficially reuse water from urban runoff. Rose Creek Canyon currently has several hundred storm drain outlets which discharge polluted water from irrigation and runoff. Constructing small vegetated channel beds (sub-surface wetlands) at these outlets will provide biological filtration and reduce sediment and erosion problems throughout the canyon.

Rose Canyon Artificial Wetland Plan

Depending on funding under the City of San Diego's Wetlands Program, a project to create an artificial wetland at the mouth of Rose Creek and farther upstream. This wetland could help reduce the amount of pollutants entering the already polluted Mission Bay by acting as a natural filter. Other wetland projects could include Cudahay Creek and Tecolote Creek as they too enter Mission Bay.

The Stormwater Quality and Watershed Protection Manual – Looking at Alternative Development Practices

This manual take the first step towards developing a mechanism for watershed-based land use planning by providing land use professionals with a picture overview of the water quality problems and the need for more design solutions. The county anticipates that the draft should be finalized sometime in the summer of 2004.

Coastal Rail Trail

The Coastal Rail Trail (CRT) is a project sponsored by the cities of Oceanside, Carlsbad, Encinitas, Solana Beach and San Diego with each city serving as the lead agency responsible for development of the Coastal Rail Trail in that community. The location of the CRT is to be in areas of railroad right-of-way and if not feasible, the Cities intend to explore alternative alignments utilizing city, state or federal highway, utility right-of-ways and private property. Within the Rose Creek Watershed study area, the Coastal Rail Trail can potentially be accessed from the proposed Nobel Drive Coaster Station just east of Genesee Avenue. Class II bikeway facilities would connect from Nobel Drive north to Judicial Drive, east onto Eastgate Mall and north through Roselle Canyon to connect with the City of Del Mar.

Mid-Coast Corridor Study

The Mid-Coast Transit First Study has identified an effective network of transit services to improve mobility in the Mid-Coast corridor. These recommended transit projects and services include targeted near-term solutions, as well as a more comprehensive long-term network that will link with other key activity centers in the region. The study has defined routes, station locations, types of service, transportation mode, a mode integration with surrounding land uses and provides a blueprint for improving transit service in the corridor for the next 30 years. There is a Bus Rapid Transit (BRT) and Light Rail Transit (LRT) analysis to consider a variety of transit modes through the Mid-Coast Corridor particularly the UCSD and University Towne Center area. Ultimately, the LRT extension would extend from Old Town north in existing railroad right-of-way to UCSD and continue at its terminus at University Towne Center (UTC) transit center in the community of University.

Nobel Recreation Center and Library Project

The new branch library and recreation center, located at the City-owned Nobel Athletic Park, will be more than 15,000 square feet. Modern amenities include a state of the art computer lab, children's room and comfortable adult reading areas. Located on a knoll, the library will overlook a 30-acre park and the Nobel Athletic Area and a new 10,000 square foot recreation building. The athletic area will include two softball fields, three soccer fields, a multi-use hard court, a new playground, off-leash dog park and multiple picnic areas.

Draft MCAS Miramar Master Plan

The Marine Corps Air Station (MCAS) Miramar Master Plan identifies an overall plan for the construction and use of facilities on base. The Master Plan provides station commanders and facility planners detailed information on many considerations to be assessed when providing shore facility support to assigned Navy and Marine Corps units and other activities on base.

11.4 Future Projects

San Clemente Canyon Bikeway Project

At a cost of approximately \$4 million, this proposed project would create a continuous bikeway through the San Clemente Canyon on the border of the community of Clairemont. This Class I path would be located adjacent to the SR-52 freeway and would connect with the Rose Canyon Bike Path and head east toward I-805. The length of the bike path would be approximately 3.5 miles and would intersect Class II bike lanes on Genesee Avenue and a priority project along Regents Road/Clairemont Mesa Blvd.

Rose Creek Bike Path Improvement Project

This proposed project would close a gap in the regional bikeway network and provide connectivity through the Pacific Beach and Mission Bay Park Communities. Currently, a fenced path exists in this area that does not meet the criteria of a Class I bikeway facility. It is anticipated that the property in the area will be redeveloped in the next several years. Construction of a standard Class I bike path replacing the existing non-standard path is planned to be completed as part of this redevelopment project. This path would approximately be a quarter of a mile long. This bikeway project would serve

the Mission Bay Park area as provide a link with Mission Bay High School. This project would also link the Rose Creek Bridge Project which would connect with the proposed Pacific Beach Drive Class III project. This project is estimated to cost \$250,000.

12 Next Steps

Based on the information collected as part of this Existing Conditions report and the scope of work developed for this Assessment, several additional steps need to be undertaken or completed before recommendations can be formulated. These additional steps include filling identified data gaps, and conducting analyses to determine issues and opportunities related to: erosion and sedimentation; restoration potential; recreational usage potential; educational and interpretive potential; and fire risk characteristics.

While public safety is not part of the Coastal Conservancy's mission, no project of this type would be complete without considering public safety and hazard reduction – especially pertaining to fire prevention, crime reduction and landslide prevention. The Assessment will include recommendations for further review in those areas as well.

12.1 Data Gaps

Several data gaps were identified early on and are in the process of being resolved through field investigation efforts. Topic areas include: cultural resources; vegetation mapping; exotic species mapping; recreational trails mapping; areas subject to erosion or sedimentation; and the extent and characteristics of hydromodifications that include, channelized areas, bridges and culverts, drainage ditches, and various components of the storm drain system.

Dr. Susan Hector has already collected the cultural resources information for the areas within the City of San Diego, and was augmented with information from MCAS Miramar for the areas on the air station. This information will be used to determine resources with interpretive opportunities, as well as those that should be protected and avoided.

Merkel & Associates is completing their field investigations and detailed mapping of vegetation communities within the City of San Diego to enhance the regional vegetation information obtained from SANDAG. At the same time, both KTU+A and M&A staff are collecting detailed mapping information regarding the location and extent of various invasive exotic species as part of their field mapping

efforts. Both sets of data will be digitized and incorporated into the project GIS database by KTUA and used within the future analyses described below.

KTUA is conducting field investigations and mapping related to: recreational trails, both authorized and unauthorized; areas subject to erosion or sedimentation; and hydromodifications. This information will be digitized and incorporated into the project GIS database for use in the future analyses described below.

12.2 Future Analyses

A variety of analyses will be utilized to inform and guide the development of recommendations pertaining to: wetland restoration, enhancement or construction; best management practices to alleviate erosion and sedimentation issues; recreational trails that should be maintained and/or improved, as well as those that should be closed and/or restored; resources that have interpretive value; and the identification of areas subject to elevated fire risk and potential actions to help mitigate and alleviate the risk. Analytical procedures and results will be developed by the project team in collaboration with representatives from the City of San Diego Storm Water Pollution Prevention Program and the Open Space Division, San Diego Earthworks, and other key stakeholder groups such as the Marian Bear Natural Park Recreation Council and the Rose Creek Recreation Council. All analyses, and their results, will be presented to local community stakeholders and government agencies for review and comment via a public workshop.

12.2.1 Erosion & Sediment Management

The field mapping information regarding areas currently subject to erosion or sedimentation will be used in conjunction with GIS analyses to identify areas with elevated erosion or sedimentation potential. Recommendations will be made to address the current erosion and sedimentation issues, as well as determine management actions to help prevent future erosion or sedimentation issues from occurring.

12.2.2 Restoration Potential & Opportunities

The detailed vegetation mapping, invasive exotics species mapping, areas subject to erosion or sedimentation, and areas affected by current hydromodifications will be combined and evaluated through various GIS analyses to help identify which portions of the RCW have the greatest restoration potential for wetland or upland communities.

12.2.3 Trail Linkages

The recreational trails mapped in the field and augmented with other digital data sources will be reviewed and evaluated to determine which, if any, can serve as regional linkages for pedestrian or bicycle facilities, act as community or neighborhood connectors, provide access to natural resources for passive recreational opportunities, or act as active recreational opportunities for pedestrian or bicycle users. Those trails identified as redundant, unsafe or improperly designed or located will be recommended for re-design or closure and restoration as appropriate to the City Master Trails Plan.

12.2.4 Interpretive Opportunities

Natural and cultural resource-based interpretive and educational opportunities will be identified and incorporated into the recreation trail system. These opportunities will be determined by reviewing the resources identified during the data collection portion of this assessment to determine which resources are appropriate for direct access and interpretation versus those that should be indirectly interpreted via signage only. Resources occurring on MCAS Miramar are an example of those likely to be interpreted via signage only, which may also provide an opportunity to create a terminus of the trail system as it reaches the boundary of the base. This terminus will inform trail users of the mission of base, the resources being managed, and security issues preventing public access.

12.2.5 Fire Risk Characteristics

A preliminary assessment of physical fire risks including: slope, aspect, vegetative fuels, and fire history will be undertaken to determine those portions of the RCW with the highest fire risk. This information will be evaluated against the City of San Diego's Brush Management Policy to determine which portions of the RCW should be given priority for fuel reduction projects in both Zones 1 and 2, as well as determining if these projects fall within private lands or those owned and managed by the City of San Diego or some other public agency.

THIS PAGE LEFT INTENTIONALLY BLANK

13 References

Alta Transportation Consulting. 2002. Plan Report City of San Diego Bicycle Master Plan. May 2002

Boussard, Carla C., John M. Randall and Marc C. Hoshovsky. Invasive Plants of California's Wildlands.

University of California Press. 2000

CASQA (California Stormwater Quality Association). 2003. California Stormwater BMP Handbook

Construction. January 2003

<http://www.cabmphandbooks.com/Documents/Construction/SE-10.pdf>

CERES (California Environmental Resources Evaluation System). 1997.

http://ceres.ca.gov/wetlands/geo_info/so_cal/mission_bay.html

Last Modified August 1997.

CERES (California Environmental Resources Evaluation System). 1998.

Other Regional Summaries

http://ceres.ca.gov/wetlands/geo_info/so_cal/other_reg_summaries.html

Last Modified January 1998.

Carney, Daniel. 2001. Memorandum between Captain David Ramirez of San Diego Police Department and Daniel Carney, City of San Diego. Letter on March 2, 2001.

Carney, Daniel. 2001. Letter between Dennis Wolfe from U.S. Bureau of Reclamation and Daniel Carney, City of San Diego. Letter from August 22, 2001.

Castellanos, Delia, Carlos Santin and Richard Wright. 2000. Map 11. Slope, Fault and Flood Hazards. <http://www.-rohan.sdsu.edu/~irsc/atlas/text/slopeng.html>. Accessed December 21, 2004.

City of San Diego Park and Recreation Department and Marian Bear Natural Park Recreation Council.

1994. Marian Bear Memorial Park Natural Resource Management Plan. January 31, 1994.

City of San Diego Park and Recreation Department Open Space Division. 2004. Draft Trail Standards.

Revised December 2004.

City of San Diego. 2004. MSCP Plan Summary.

<http://www.sandiego.gov/mscp/plansum.shtml>.

Accessed 2004.

City of San Diego. 2002. Strategic Framework Action Plan. October 2002.

City of San Diego. 1983. Tecolote Canyon Citizen Advisory Committee.

<http://www.sandiego.gov/city->

[clerk/boards-commissions/830124.shtml](http://www.sandiego.gov/city-clerk/boards-commissions/830124.shtml). Accessed February 2005.

City of San Diego. 2001. Urban Runoff Management Program Storm Water Best Management Practices. February 21, 2001

<http://www.thinkbluesd.org/brochures/URMP/lowflow.pdf>

City of San Diego. 2003. Mission Bay and Coastal La Jolla Watersheds Urban Runoff Management Program – Fiscal Year 2003 Annual Report. 2003.

City of San Diego. 2003. Mission Bay and Coastal La Jolla Watersheds Urban Runoff Management Plan: Stormwater Pollution Protection Program. January 2003.

http://www.projectcleanwater.org/pdf/wurmp/mb_2002_wurmp.pdf

City of San Diego. 2003. Program Environmental Impact Report For The Canyon Sewer Cleaning

Program and Long-Term Canyon Sewer Maintenance Program. 2003.

City of San Diego. 2003. Rose and Tecolote Creeks Water Quality Improvement Project. February 2003.

City of San Diego Water Department. 2001. Constructed Wetlands in the Rose Creek Watershed. August 2001.

County of San Diego, Office of Emergency Services. 2004. Earthquake FAQs.

<http://www.sdcountry.ca.gov/oes/resources/basicinfo.html#Q1>. Accessed December 21, 2004.

Dames and Moore. 2002. Integrated Natural Resources Management Plan. Report to Marine Corps Air Station Miramar. May 2000.

Hector, Susan M. 2004. Cultural Resources Overview of Rose Canyon and San Clemente Canyon, City of San Diego, California – Draft. Report to San Diego Earthworks. August 2004.

HELIX Environmental Planning, Inc. 2002. Nobel Drive Coaster Station: Jurisdictional Delineation.

Report to Metropolitan Transit Development Board. July 2002.

KTU+A (Kawasaki, Theilacker, Ueno and Associates). 2000. Rose Creek Canyon Enhancement Plan.

Report to The Nature School. June 2000.

Metropolitan Transit System. 2005. Mid-Coast Corridor Study Features.

http://www.sdcommute.com/Major_Projects/Mid_Coast/studyfeatures.asp. Accessed
[January](#)

2005.

NCTD. 2004. NCTD and the Coastal Rail Trail. <http://www.gonctd.com/coaster/rt/rt.html>,
Accessed February 2005.

ProjectDesign Consultants. 2004. Draft Environmental Impact Report for the University City
North/South Transportation Corridor Study. Report to City of San Diego. October 2004.

Rick Engineering. 2003. Rose and Tecolote Creeks Water Quality Improvement Project:
Final Planning Project. Report to City of San Diego, Storm Water Pollution Prevention
Program. August 15, 2003.

SANDAG (San Diego Association of Governments). 2003. Mobility 2030: The Transportation
Plan for
the San Diego Region. April 2003.

SCEDA (Southern California Earthquake Data Center). 2004. Rose Canyon Fault Zone.
http://www.data.scec.org/fault_index/rosecany.html. Accessed December 20, 2004.

SOUTHWESTDIV (Southwest Division, Naval Facilities Engineering Command). 2004.
Marine Corps Air Station Miramar Master Plan – Draft. Prepared for Commander,
Marine Corps Air Station Miramar. February 2005.

San Diego Regional Water Quality Control Board. 2005. Sanitary Sewer Overflows.
<http://www.waterboards.ca.gov/sandiego/programs/sso.html>. Accessed 2005.

San Diego Sierra Club. Rare Plants of San Diego County.
<http://sandiego.sierraclub.org/home/index.asp>. Accessed 2004.

School of Earth and Environment. <http://earth.leeds.ac.uk>. Accessed December 20, 2004.

Stewart, Noah and Patrick McGinnis. 2004. Historical Overview Marine Corps Air Station. Report to Assistant Chief of Staff, Environmental Management, Natural Resource Division, Marine Corps Air Station Miramar. January 2004.

Unitt, P. 2004. San Diego County Bird Atlas. San Diego Natural History Museum and Ibis Publishing, Inc. 645 p.

USGS (United States Geological Survey). 2004. National Landslides Hazards Program. http://landslides.usgs.gov/html_files/landslides/program.html. Accessed December 20, 2004.