

**BIOLOGICAL RESOURCES
ASSESSMENT FOR THE
NEWHALL COUNTY WATER DISTRICT
VASQUEZ WATER MAIN PROJECT,
SANTA CLARITA, CALIFORNIA**

Prepared for:

NEWHALL COUNTY WATER DISTRICT

Mission Statement

*To provide quality environmental consulting services
with integrity that protect and enhance
the human and natural environment*

February 2003



**Biological Resources Assessment
for the Newhall County Water District
Vasquez Water Main Project,
Santa Clarita, California**

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TABLE OF CONTENTS

	Page
SECTION I. INTRODUCTION	1
PROJECT BACKGROUND	1
PROJECT SCOPE AND PURPOSE	1
PROJECT LOCATION	2
SECTION II. BIOLOGICAL RESOURCES	6
EXISTING CONDITIONS	6
BOTANICAL RESOURCES	6
FLORA	7
NCWD PROJECT SITE PLANT COMMUNITY DESCRIPTIONS	9
Upland Chenopod Scrub (Fourwing Saltbush Series)	10
Palustrine Forested Wetland (Freemont Cottonwood-Arroyo Willow Series)	11
Riverine Intermittent Streambed	13
WILDLIFE RESOURCES	14
FAUNA	14
WILDLIFE HABITAT QUALITY	16
Chenopod Scrub	17
Palustrine Riparian Woodland	17
Riverine Intermittent Streambed	18
SPECIAL-STATUS SPECIES/HABITATS	18
DEFINITIONS	19
SPECIAL-STATUS BOTANICAL RESOURCES	21
Special-Status Vascular Plants	21
Special-Status Nonvascular Plants (Lichens)	28
Special-Status Habitats	28
SPECIAL-STATUS WILDLIFE RESOURCES	30
SECTION III. IMPACT ASSESSMENT AND RECOMMENDATIONS	33
IMPACTS TO BOTANICAL RESOURCES	33
IMPACTS TO EXPECTED SPECIAL-STATUS PLANT SPECIES	34
Recommendations for Impacts to Expected Special-Status Plant Species	34
IMPACTS TO SENSITIVE RIPARIAN HABITAT	34
Recommendations for Impacts to Sensitive Riparian Habitat	35
IMPACTS TO WILDLIFE RESOURCES	36
IMPACTS TO SPECIAL-STATUS WILDLIFE SPECIES	36
Recommendations for Impacts to Special-Status Wildlife Species	37
IMPACTS TO TERRESTRIAL WILDLIFE SPECIES	37
Recommendations for Impacts to Terrestrial Wildlife Species	38
IMPACTS TO AQUATIC WILDLIFE SPECIES	38
Recommendations for Impacts to Aquatic Wildlife Species	38



IMPACTS TO RIVERINE HABITAT.....	38
Recommendations for Impacts to Riverine Habitat	39
IMPACTS TO FORAGING AND COVER HABITATS	39
Recommendations for Impacts to Foraging and Cover Habitats.....	39
SECTION IV. ACKNOWLEDGEMENTS.....	40
SECTION V. CITATIONS	40
PRINTED REFERENCES.....	40

LIST OF TABLES

Table	Page
1. Vascular Plants Observed at the Vasquez Water Main Project Site, including Vasquez Canyon Road Crossing and Sierra Highway	7
2. Voucher Numbers for Plant Specimens Collected at the Vasquez Water Main Project Site	9
3. Wildlife Species of the Vasquez Water Main Project Site.....	15
4. Definitions of Special-Status Species.....	19
5. California Native Plant Society List (CNPS List) Definitions	20
6. California Native Plant Society Rarity-Endangerment-Distribution Code (CNPS R-E-D Code)	20
7. Natural Diversity Data Base Element Ranking System	22
8. Special-Status Vascular Plants Potentially in the Vasquez Water Main Project Area	23
9. Special-Status Lichens Potentially in the Vasquez Water Main Project Area	29
10. Sensitive Habitats in the Vasquez Water Main Project Area	29
11. Special-Status Wildlife Potentially Occurring at the Vasquez Water Main Project Area.....	31

LIST OF FIGURES

Figure	Page
1. Map of Vasquez Canyon Pipeline Project Area	3
2. Aerial Photograph of Project Site Stream Crossings	4

LIST OF PHOTOGRAPHS

Photograph	Page
1. Ephemeral drainage crossing site along Sierra Highway	1
2. Mint Canyon Creek crossing site along Vasquez Canyon Road	2
3. Ephemeral drainage crossing site along Vasquez Canyon Road	2
4. Fourwing Saltbush Series vegetation on north side of Mint Canyon Creek	11
5. Cottonwood-Willow Riparian Woodland in Mint Canyon Creek upstream from Vasquez Canyon Road bridge	12
6. Riverine Habitat in Mint Canyon Creek upstream from Vasquez Canyon Road bridge.....	13

SECTION I. INTRODUCTION

PROJECT BACKGROUND

The Newhall County Water District (NCWD) is building a 3.2-mile-long water main pipeline, to provide water service to existing residences and businesses in the service area, and for proposed new housing developments on Vasquez Canyon Road in Santa Clarita, Los Angeles County, California (hereafter referred to as “Vasquez Water Main Project” or “the project”). The project site is outside the Santa Clarita city limits. The water main construction activities may substantially adversely affect existing fish and wildlife resources within the portion of Mint Canyon Creek and existing vegetation and habitat resources in the vicinity of the project site. Therefore, David Magney Environmental Consulting (DMEC) conducted an assessment of the project site biological resources as part of its analysis to comply with the California Environmental Quality Act (CEQA), and to satisfy regulatory requirements by the California Department of Fish and Game (CDFG) pursuant to Section 1600 et seq. of the California Fish and Game Code, and U.S. Army Corps of Engineers (Corps) permit requirements pursuant to Section 404 of the Clean Water Act.

PROJECT SCOPE AND PURPOSE

The NCWD Vasquez Water Main, which originates from an existing water main at the corner of Sand Canyon and Soledad Canyon Roads, will be installed under existing roads (Sand Canyon Road, Sierra Highway, and Vasquez Canyon Road) except in three locations where the water main will cross natural watercourses, including Mint Canyon Creek. The Mint Canyon Creek crossing will involve trenching through the creek bed a few feet upstream from the Vasquez Canyon Road bridge. The remaining two water main crossings, which cross over two ephemeral drainages, will span the drainages and will not involve any soil disturbances within the channels.



Photograph 1. Ephemeral drainage crossing site along Sierra Highway. View east/northeast. 8 May 2001.



Photograph 2. Mint Canyon Creek crossing site along Vasquez Canyon Road. View east/northeast. 8 May 2001.



Photograph 3. Ephemeral drainage crossing site along Vasquez Canyon Road. View east/northeast. 8 May 2001.

The proposed water main construction activities will be conducted in Mint Canyon Creek and within adjacent areas inhabited by Riparian Woodland. The water main installment project, within the vicinity of the Mint Canyon Creek portion of the project site, includes a maximum impact area of approximately 50 feet along the length of the water main (a maximum of 25 feet along each side). Therefore, this project has potential to negatively affect existing wildlife resources on site.

A project site biological resources assessment is necessary to, first identify sensitive biological resources, and second, to aid in avoiding and/or minimizing impacts to the biological resources at the project site to the maximum extent possible. The purpose of this assessment of biological resources is to describe existing flora, fauna, and wildlife habitat in the vicinity of the NCWD project site that may be adversely affected by the proposed water main installment, and to assess any impacts resulting from the project. Since the water main project will be installed under existing roads, everywhere except in Mint Canyon Creek and the two small tributaries, this report will focus only on those creek and tributary sites.

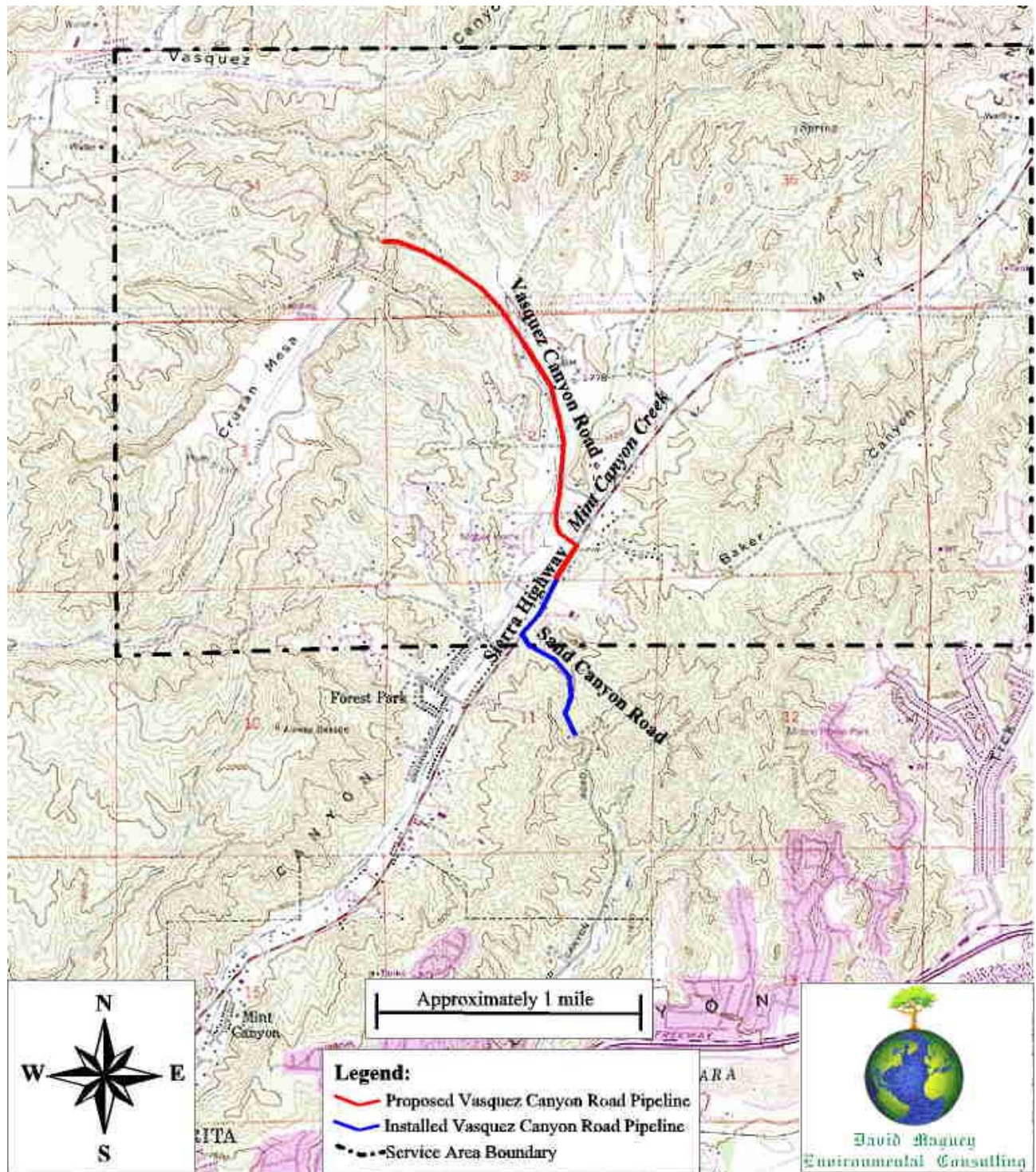
PROJECT LOCATION

The Vasquez Water Main Project is located in the Mint Canyon area, of the southern portion of the Liebre Mountains region (Western Transverse Ranges, California), at the eastern end of the City of Santa Clarita (Los Angeles County, California), but is outside the city limits (see Figure 1, Map of Vasquez Canyon Pipeline Project Area, and Figure 2, Aerial Photograph of Project Site Stream Crossings). The project site follows a total path length of approximately 2.4 miles.

A portion of the water main has already been installed immediately south of the southern project site boundary. The installed water main begins on Sand Canyon Road at the approximate coordinates of 34°26.671' north latitude, 118°25.204' west longitude; or, at the southwest ¼, of the northeast ¼, of section 11, township 4 north, range 15 west (SW¼, NE¼, S11, T4N, R15W), Mint Canyon, California Quadrangle (USGS 7.5-minute Series Topographic Map); at approximately 1,965 feet in elevation; and heads northwest for approximately 0.53 mile. The installed water main then heads northeast on Sierra Highway for approximately 0.25 mile, and ends where the proposed uninstalled portion of the project site begins.

The uninstalled portion of the project site follows the remaining approximate 1.65 miles beginning on Sierra Highway, at the approximate coordinates of 34°27.157' north latitude, 118°25.273' west longitude; or, SW¼, SE¼, S2, T4N, R15W; at approximately 1,723 feet in elevation; and heads northeast for approximately 0.18 mile.

Figure 1. Map of Vasquez Canyon Pipeline Project Area



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The proposed water main then heads north/northwest on Vasquez Canyon Road for approximately 1.47 mile, and intersects Mint Canyon Creek (Figure 3, Aerial Photograph of Proposed Water Main Crossing Mint Canyon Creek at Vasquez Canyon Road) at the approximate coordinates of 34°27.29' north latitude, 118°25.223' west longitude; or, NE¼, SW¼, SE¼, S2, T4N, R15W; and at approximately 1,702 feet in elevation. The water main will end on Vasquez Canyon Road at the approximate coordinates of 34°28.264' north latitude, 118°25.956' west longitude; or, at the western border of the SW¼, NW¼, SW¼, S35, T5N, R15W; and at approximately 1,939 feet in elevation.

Figure 2. Aerial Photograph of Project Site Stream Crossings



NCWD proposes to build a 2.4-mile-long water main water main, to provide water service to existing residences and businesses in the service area, and for proposed new housing developments on Vasquez Canyon Road in Santa Clarita, California.

The Vasquez Water Main service area includes an area of approximately seven square miles (Figure 2). The service area includes the following sections of the Mint Canyon, California Quadrangle (USGS 7.5-minute Series Topographic Map):

- Sections 1, 2, and 3 of T4N, R15W;
- Sections 34, 35, and 36 of T5N, R15W;
- The northern 1/3 of Sections 10, 11, and 12 of T4N, R15W;
- The western 1/3 of Sections 6 and 7 of T4N, R14W; and
- The western 1/3 of Section 31 of T5N, R14W.

The Vasquez Water Main Project path is adjacent to, or intersects with, the following Assessor's Parcel Numbers (APN):

- 3231-007-903 (the parcel in which the Mint Canyon Creek portion of the project is located);
- 3231-005-006, -010, -011, -013, -0014, -060, -500, and -501;
- 3231-004-025, -014, -015;-033, and -034;
- 3231-001-015 and -019;
- 3231-017-024 and -026; and
- 2813-015-024.

SECTION II. BIOLOGICAL RESOURCES

DMEC biologists conducted floristic and wildlife field surveys of the project site on 8 May 2001 (David Magney), and on 15 May 2001 (Mr. Magney, Cher Batchelor, and James Castle). A subsequent field visit was conducted by Mr. Magney on 20 October 2001. The biological resources assessment field survey objectives were to determine the existing conditions of the biological resources onsite, and to determine the presence of any special-status wildlife and plant species that could be negatively affected by the water main project. This biological resources section includes the existing general environmental conditions, as well as an inventory and discussion of botanical and wildlife resources observed, detected, and expected onsite, including vegetation types, wildlife habitat, special-status species, and sensitive plant communities.

EXISTING CONDITIONS

The habitats onsite are moderately diverse, and the project site landscape includes several unique plant species requiring specific microhabitats and microclimates. The NCWD project site is inhabited primarily by Riparian Woodland (Palustrine system), which exists along the banks of Mint Canyon Creek. The creek bed, comprised primarily of Riverwash (Riverine system), is less diverse than the creek banks, as this portion of the project site is prone to frequent natural disturbances (materials deposition by active flows) and unnatural disturbances (human influences, horseback riding). The Chenopod Scrub (Upland) onsite dominates the areas immediately above the channel banks and beyond, and consists of scattered drought-adapted shrubs and herbs.

The portion of Mint Canyon Creek that will be altered due to NCWD construction activities generally flows in a southwesterly direction; however, no active flows were present onsite during the biological survey. Although the project site portion of Mint Canyon Creek consists of a moderately species-rich flora, the project site exists in an area that is frequented often by humans, is littered with foreign material and trash, and is subject to high levels of air and noise pollution. Although the project site does not show significant evidence of a diverse fauna, several wildlife species are expected to frequent the area.

BOTANICAL RESOURCES

Botanical resources include the plants present at the project site, including vascular (e.g. trees, shrubs, herbs, and grasses) and nonvascular (e.g. lichens, liverworts, mosses) plant species. Some of these species may be considered special-status species for one or more reasons, as described in the Special-Status Species section below. Botanical resources also include all vegetation and plant communities occupying the landscape in the vicinity of the NCWD project site.

DMEC biologists (Mr. Magney and Ms. Batchelor) conducted the NCWD project site field survey for floristics and habitats, on 8 and 15 May 2001. Botanical survey objectives were to account for the plant species inhabiting the project site and to indicate the plant communities, which are comprised of those plant species. Biologists used direct observation to account for all plant species present at the time of the survey, they collected specimens for further identification, and attempted to locate evidence (and/or suitable habitat) for special-status plant species as well.

Flora

Various combinations of floristic taxa form unique plant communities and wildlife habitats contributing to the landscape of an area. The NCWD project site contains a moderately species-rich flora consisting of at least 62 vascular plants. All vascular plant species, observed and identified during the field surveys, are listed in Table 1, Vascular Plants Observed at the Vasquez Water Main Project Site, including Vasquez Canyon Road Crossing and Sierra Highway. Table 1, which is alphabetized by scientific (botanical) name (according to Hickman 1993), includes a common name, the growth habit, the wetland indicator status (according to Reed 1988), and a botanical family name for each vascular plant species.

Table 1. Vascular Plants Observed at the Vasquez Water Main Project Site, including Vasquez Canyon Road Crossing and Sierra Highway

Scientific Name ¹	Common Name	Habit ²	WIS ³	Family	Location ⁴			
					1	2	3	4
<i>Amaranthus</i> sp.	Amaranth	AH	.	Amaranthaceae			X	
<i>Ambrosia acanthicarpa</i>	Burweed	AH	.	Asteraceae	X		X	X
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Ranchers Fire	AH	.	Boraginaceae	X		X	
<i>Artemisia californica</i>	California Sagebrush	S	.	Asteraceae	X	X		
<i>Artemisia douglasiana</i>	Mugwort	PH	FACW	Asteraceae	X			
<i>Artemisia dracunculus</i>	Tarragon	AH	.	Asteraceae	X	X		
<i>Artemisia tridentata</i>	Great Basin Sagebrush	S	.	Asteraceae	X	X		
<i>Atriplex canescens</i> ssp. <i>canescens</i>	Fourwing Saltbush	S	FACU	Chenopodiaceae		X	X	X
<i>Avena barbata</i> *	Slender Wild Oat	AG	.	Poaceae	X			
<i>Avena sativa</i> *	Oat	AG	.	Poaceae			X	
<i>Baccharis salicifolia</i>	Mulefat	S	FACW	Asteraceae	X			
<i>Bromus carinatus</i> var. <i>carinatus</i>	California Brome	PG	.	Poaceae			X	
<i>Bromus diandrus</i> *	Ripgut Grass	AG	(FACU)	Poaceae			X	X
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	Red Brome	AG	NI	Poaceae	X	X	X	X
<i>Centaurea melitensis</i> *	Tocalote	AH	.	Asteraceae	X	X		
<i>Chenopodium album</i> *	Lambsquarters	AH	FAC	Chenopodiaceae	X		X	
<i>Cirsium</i> sp. *	Thistle	AH	.	Asteraceae	X			
<i>Conyza canadensis</i>	Horseweed	AH	FAC	Asteraceae				X
<i>Cryptantha</i> sp.	Forget-me-not	AH	.	Boraginaceae	X			
<i>Cynodon dactylon</i> *	Bermuda Grass	PG	FAC	Poaceae				X
<i>Datura wrightii</i>	Jimson Weed	AH	.	Solanaceae	X		X	

¹ * = Introduced/nonnative plant species. Scientific names follow Hickman (1993) and Boyd (1999).

² Habit definitions: AG = annual grass; AH = annual herb; PG = perennial grass; PH = perennial herb; S = shrub; T = tree.

³ WIS = Wetland Indicator Status. The following code definitions are according to Reed (1988):

OBL = obligate wetland species, occurs almost always in wetlands (>99% probability).

FACW = facultative wetland species, usually found in wetlands (67-99% probability).

FAC = facultative species, equally likely to occur in wetlands or nonwetlands (34-66% probability).

FACU = facultative upland species, usually found in nonwetlands (67-99% probability).

+ or - symbols are modifiers that indicate greater or lesser affinity for wetland habitats.

NI = no indicator has been assigned due to a lack of information to determine indicator status.

* = a tentative assignment to that indicator status by Reed (1988).

Parentheses around a status indicates a wetland status as suggested by David L. Magney based on extensive field observations.

⁴ Newhall County Water District Vasquez Water Main crossing site locations: 1 = Mint Canyon Creek; 2 = Upland of Mint Canyon Creek; 3 = Vasquez Canyon Road Crossing; 4 = Sierra Highway at Mint Canyon School.

Scientific Name ¹	Common Name	Habit ²	WIS ³	Family	Location ⁴			
					1	2	3	4
<i>Eleocharis macrostachya</i>	Common Spike-rush	PH	OBL	Cyperaceae	X			
<i>Emmenanthe penduliflora</i>	Whispering Bells	AH	.	Hydrophyllaceae	X			
<i>Encelia actoni</i>	Acton Brittlebush	S	.	Asteraceae		X		
<i>Eremocarpus setigerus</i>	Dove Weed	AH	.	Euphorbiaceae	X			
<i>Eriogonum</i> sp.	Buckwheat	AH	.	Polygonaceae	X			
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	Hoary California Buckwheat	S	.	Polygonaceae	X	X		
<i>Erodium cicutarium</i> *	Redstem Filaree	AH	.	Geraniaceae	X	X		X
<i>Grayia spinosa</i>	Hopsage	S	.	Chenopodiaceae	X	X		
<i>Heliotropium curassavicum</i>	Alkali Heliotrope	PH	OBL	Boraginaceae	X			
<i>Heterotheca grandiflora</i>	Telegraph Weed	BH	.	Asteraceae	X			
<i>Hirschfeldia incana</i> *	Summer Mustard	BH	.	Brassicaceae	X	X	X	X
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i> *	Mediterranean Barley	AG	FAC	Poaceae			X	
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	Hair Barley	AG	NI	Poaceae	X			X
<i>Hordeum vulgare</i> *+	Cultivated Barley	AG	.	Poaceae			X	
<i>Juncus balticus</i>	Baltic Rush	PH	OBL	Juncaceae	X			
<i>Juncus nevadensis</i>	Sierra Rush	PH	OBL	Juncaceae				
<i>Lepidium strictum</i>	Prostrate Peppergrass	AH	.	Brassicaceae				X
<i>Lessingia filaginifolia</i>	Cudweed-aster	PH	.	Asteraceae	X			
<i>Lotus scoparius</i> var. <i>scoparius</i>	Deerweed	PH/S	.	Fabaceae	X	X		
<i>Malva parviflora</i> *	Cheeseweed	AH	.	Malvaceae			X	
<i>Marrubium vulgare</i> *	White Horehound	PH/S	FAC	Lamiaceae	X	X		
<i>Melilotus</i> sp. *	Sweetclover	AH	FAC	Fabaceae	X			
<i>Nicotiana glauca</i> *	Tree Tobacco	S	FAC	Solanaceae	X	X	X	
<i>Phacelia</i> sp.	Phacelia	AH	.	Hydrophyllaceae	X			
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont Cottonwood	T	FACW	Salicaceae	X			
<i>Rumex hymenosepalus</i>	Curly Dock	PH	FACW-	Polygonaceae		X		
<i>Salix exigua</i>	Narrowleaf Willow	S	OBL	Salicaceae	X			
<i>Salix lasiolepis</i>	Arroyo Willow	S/T	FACW	Salicaceae	X			
<i>Salix lucida</i> ssp. <i>lasiandra</i>	Shining Willow	T	OBL	Salicaceae	X			
<i>Salsola tragus</i> *	Russian Thistle	AH	FACU+	Chenopodiaceae			X	X
<i>Salvia mellifera</i>	Black Sage	S	.	Lamiaceae	X			
<i>Sambucus mexicana</i>	Blue Elderberry	S	FAC	Caprifoliaceae	X			
<i>Schismus barbatus</i> *	Mediterranean Grass	AG	.	Poaceae	X	X		
<i>Senecio flaccidus</i> var. <i>douglasii</i>	Shrubby Butterweed	S	.	Asteraceae	X			
<i>Sisymbrium irio</i> *	London Rocket	AH	.	Brassicaceae	X		X	X
<i>Sonchus asper</i> *	Prickly Sow-thistle	AH	FAC	Asteraceae		X		
<i>Stephanomeria pauciflora</i>	Wire Lettuce	PH	.	Asteraceae		X		
<i>Tamarix</i> sp. *	Salt Cedar	T/S	FAC	Tamaricaceae	X			
<i>Ulmus minor</i> *	Elm	T	.	Ulmaceae				X
<i>Urtica dioica</i> ssp. <i>holosericea</i>	Giant Creek Nettle	PH	FACW	Urticaceae	X			
<i>Vulpia myuros</i> var. <i>hirsuta</i> *	Rattail Fescue	AG	FACU*	Poaceae	X			



The NCWD project site contains at least 62 vascular plants, 38 (61%) of which are native species, while the remaining 24 species (39%) are naturalized (nonnative) taxa. Twenty-two (22) of these taxa are considered hydrophytes. Ten (10) plant species have a wetland indicator status of FAC, 6 species are listed as FACW, and 6 species are listed as OBL (Reed 1988) (see footnote 2 for wetland indicator status definitions). Several additional annual species are likely to occur onsite during the late winter and early spring seasons.

The ratio of native to nonnative taxa for the project site, which is approximately 60% native to 40% nonnative, is much lower than the ratio for the entire California flora (Hickman 1993) and other smaller regions within California. This low ratio is likely the result of human influences, frequent disturbances, and adjacent urban/commercial areas.

Voucher specimens were collected for eighteen (18) of the 62 observed plant species according to CNPS (2001) and CDFG (1991) botanical survey protocols. Table 2, Voucher Numbers for Plant Specimens Collected at the Vasquez Water Main Project Site, lists the 18 plant species by scientific name and provides the voucher number assigned to each pressed specimen. These voucher specimens are available for reference at the Herbarium of the University of California, Santa Barbara (UCSB).

Table 2. Voucher Numbers for Plant Specimens Collected⁵ at the Vasquez Water Main Project Site

Scientific Name	Voucher Number
<i>Artemisia douglasiana</i>	169-01
<i>Baccharis salicifolia</i>	164-01
<i>Eremocarpus setigerus</i>	167-01
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	162-01
<i>Heliotropium curassavicum</i>	171-01
<i>Hirschfeldia incana</i>	168-01
<i>Juncus balticus</i>	161-01
<i>Juncus nevadensis</i>	173-01
<i>Lepidium strictum</i>	163-01
<i>Salix lucida</i> ssp. <i>lasiandra</i>	166-01
<i>Schismus barbatus</i>	170-01
<i>Ulmus minor</i>	165-01
<i>Vulpia myuros</i> var. <i>hirsuta</i>	172-01

NCWD Project Site Plant Community Descriptions

The references cited here for the descriptions of the vegetation and plant communities of the Vasquez Water Main project site include Cowardin et al. (1979) and Holland (1986), which are cited for the two wetland habitats onsite; and Sawyer and Keeler-Wolf (1995), which present the California Native Plant Society's (CNPS's) approach to hierarchical classification in *A Manual of California Vegetation*. The CNPS *Manual* provides the classification approach followed for the upland habitat, and is cross-referenced with Cowardin et al. (1979) and Holland (1986) for the wetland habitats as well.

⁵ The voucher specimens listed here were collected from the Vasquez Water Main Project Site by David L. Magney and Cher Batchelor on 8 and 15 May 2001 and are deposited at the UCSB Herbarium.

CNPS's approach to vegetative hierarchical classification forms a baseline for classifying the project site general vegetation into floristically based series (or plant communities). Plant communities are well-defined floristically based, plant series that include a dominant species and one or more associate species. A dominant species is defined as one taxon contributing to greatest percent ground cover of the vegetation. Associate species are (one or more) taxa that are not dominant in percent cover; rather, they are important secondary canopy contributors that make plant communities increasingly species-specific and unique.

Three habitat types currently exist in the immediate vicinity of the Mint Canyon Creek portion of the proposed NCWD water main project:

1. Upland Chenopod Scrub (approximately 0.14 acre), represented by Fourwing Saltbush Series (Sawyer and Keeler-Wolf 1995);
2. Palustrine Broad-leaved Winter-deciduous Forested Wetland (Cowardin et al. 1979), or Freemont Cottonwood-Arroyo Willow Series (Sawyer and Keeler-Wolf 1995) (approximately 0.11 acre); and
3. Riverine Intermittent Sand Streambed (Cowardin et al. 1979) (approximately 0.02 acre).

The determination of these habitat types and their approximate acreage are from the combined results of this biological resources assessment and the *Delineation of Jurisdictional Waters and Riparian Habitats for the Newhall County Water District Vasquez Water Main Project, Santa Clarita, California* (DMEC 2003a) (hereafter referred to as the wetland delineation report). These habitats, and their associated plant communities, are described in the following subsections.

Upland Chenopod Scrub (Fourwing Saltbush Series)

The upland habitat, along the length of the proposed water main and adjacent to Mint Canyon Creek, consists of shrubby, drought-adapted vegetation represented by Fourwing Saltbush Series (Sawyer and Keeler-Wolf 1995). This series is a Chenopod Scrub plant community dominated by *Atriplex canescens* ssp. *canescens*. This species is a many-branched shrub growing less than 20 dm tall, with densely white-scaly leaves. The National List of Wetland Plants (Reed 1988) lists Fourwing Saltbush as a facultative upland species (FACU). Fourwing Saltbush grows in shrublands at elevations below 2,400 meters (7,874 feet) in clay to gravelly soils (may be carbonate-rich) of flats and slopes (Hickman 1993).



Photograph 4. Fourwing Saltbush Series vegetation on north side of Mint Canyon Creek.
View north/northeast from Vasquez Canyon Road. 15 May 2001.

Fourwing Saltbush Series, in the vicinity of the Vasquez Canyon project site, exists on the lower gradual rocky slopes and on the flat areas along the creek fringes. This saltbush scrub forms an intermittent to open shrub canopy less than 2 meters tall, and is adapted to both upland and wetland habitats of elevations between 75 meters below sea level to 2,200 meters (246 feet below to 7,218 feet) (Sawyer and Keeler-Wolf 1995).

The associate shrub species observed occupying the Fourwing Saltbush plant community include: *Artemisia californica* (California Sagebrush), *A. tridentata* (Great Basin Sagebrush), *Encelia actoni* (Acton Brittlebush), *Eriogonum fasciculatum* var. *polifolium* (Hoary California Buckwheat), *Grayia spinosa* (Hopsage), *Lotus scoparius* var. *scoparius* (Deerweed), *Marrubium vulgare* (White Horehound), and *Salvia mellifera* (Black Sage). The predominant native herbaceous ground layer species are *Amsinckia menziesii* var. *intermedia* (Ranchers Fire), *Artemisia dracunculus* (Tarragon), *Eremocarpus setigerus* (Dove Weed), and *Rumex hymenosepalus* (Curly Dock), while the annual, nonnative, ground layer species include *Centaurea melitensis* (Tocalote), *Erodium cicutarium* (Redstem Filaree), *Hirschfeldia incana* (Summer Mustard), and *Sonchus asper* (Prickly Sow Thistle).

Palustrine Forested Wetland (Freemont Cottonwood-Arroyo Willow Series)

The Palustrine system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5‰. The riparian plant community observed and classified within the Palustrine system along the Mint Canyon Creek banks is Palustrine Broad-leaved, Winter-deciduous, Forested Wetland. The Forested Wetland class is characterized by woody vegetation that is at least 6 meters, and the Broad-leaved, Winter-deciduous sub-class is dominated by riparian species with large leaves (as opposed to coniferous or needle-like leaves) that fall during the winter season. (Cowardin et al. 1979.)

The riparian plant community observed and classified within the Palustrine System along the Mint Canyon Creek banks is Palustrine Broad-leaved Winter-deciduous Forested Wetland (Cowardin et al. 1979), or Southern Cottonwood-Willow Riparian Forest (Holland 1986), or Fremont Cottonwood-Arroyo Willow Series (Sawyer and Keeler-Wolf 1995). The CDFG's California Natural Diversity Data Base (CDFG 2002), which is defined and discussed in the following Special-Status Species section, lists Southern Cottonwood-Willow Riparian Forest as a sensitive habitat type known to occur in the vicinity of the project site.

Fremont Cottonwood-Arroyo Willow Series, at the Vasquez Water Main project site, is a woodland plant community co-dominated by two broad-leaved winter-deciduous trees, *Populus fremontii* ssp. *fremontii* (Fremont Cottonwood) and *Salix lasiolepis* (Arroyo Willow). The National List of Wetland Plants (Reed 1988) lists *P. fremontii* and *S. lasiolepis* as facultative wetland species (FACW). Fremont Cottonwood is a wide-crowned tree with a trunk growing to less than 20 meters and triangular, scalloped, yellow-green leaves. This species occurs scattered throughout alluvial bottomlands and streamsides, at elevations below 2,400 meters (7,874 feet). Arroyo Willow is a smaller tree, growing to less than 10 meters, with shiny dark green (upper surface) and white tomentose (lower surface) leaves. Arroyo Willow is an abundant species of shores, marshes, meadows, springs, and bluffs below 2,800 meters in elevation (9,187 feet). (Hickman 1993.)

Fremont Cottonwood-Arroyo Willow Series occurs in intermittently or seasonally flooded or saturated freshwater wetland habitats - such as riparian corridors, floodplains, low-gradient depositions along rivers/streams, and seeps - and occurs at elevations below 2,400 meters (7,874 feet). Cottonwood-willow woodland forms an intermittent to open tree canopy less than 25 meters tall, growing over sparse shrub layer and a variable ground layer. (Sawyer and Keeler-Wolf 1995.)

The cottonwood-willow woodland in the vicinity of the project area includes three important canopy contributors: *Salix exigua* (Narrow-leaved Willow), *S. lucida* ssp. *lasiandra* (Shining Willow), and *Sambucus mexicana* (Blue Elderberry). Fremont Cottonwood-Arroyo Willow Series also includes a sparse shrub stratum of associate species, such as *Artemisia californica*, *A. tridentata*, *Baccharis salicifolia* (Mulefat), *Nicotiana glauca* (Tree Tobacco), and *Senecio flaccidus* var. *douglasii* (Shrubby Butterweed).



Photograph 5. Cottonwood-Willow Riparian Woodland in Mint Canyon Creek upstream of Vasquez Canyon Road bridge. View ENE. 15 May 2001.

The ground layer consists predominantly of *Ambrosia acanthicarpa* (Burweed), *Artemisia douglasiana* (Mugwort), *A. dracunculus* (Tarragon), *Eleocharis macrostachya* (Common Spike-rush), *Eremocarpus setigerus*, *Heliotropium curassavicum* (Alkali Heliotrope), *Heterotheca grandiflora* (Telegraph Weed), *Hirschfeldia incana*, *Juncus balticus* (Baltic Rush), *J. nevadensis* (Sierra Rush), *Lessingia filaginifolia* (Cudweed-aster), and *Urtica dioica* ssp. *holosericea* (Giant Creek Nettle). Annual grasses observed throughout this plant series include: *Avena barbata* (Slender Wild Oat), *Bromus madritensis* ssp. *rubens* (Red Brome), *Hordeum murinum* ssp. *leporinum* (Hair Barley), *Schismus barbatus* (Mediterranean Grass), and *Vulpia myuros* var. *hirsuta* (Rattail Fescue).

Riverine Intermittent Streambed

A Riverine system includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens; and (2) habitats with water containing ocean-derived salts in excess of 0.5‰. The non-active, unvegetated, primary channel of Mint Canyon Creek, observed within the Riverine system throughout the vicinity of the proposed water main project, is further classified as Riverine Intermittent Sand Streambed. The Intermittent subsystem of the Riverine system exists where the channel contains nontidal flowing water for only part of the year. When active flows are not present, surface water may be absent or water may remain in isolated pools. The Streambed class includes all wetlands contained within the Intermittent subsystem of the Riverine system. Riverine Intermittent Streambed varies greatly in substrate and form depending on the gradient of the channel, velocity of the water, and sediment load. In most cases, streambeds are not vegetated because of the scouring effect when moving water is present, but they may be colonized by pioneering annuals and perennials during periods of low flows, or they may be too scattered to qualify as an Emergent or Scrub/Shrub Wetland. (Cowardin et al. 1979.)



Photograph 6. Riverine habitat in Mint Canyon Creek upstream from Vasquez Canyon Road bridge. View west/southwest. 15 May 2001.

The Riverine Intermittent Sand Streambed habitat onsite exists within the immediate creek bottom (within the scour lines) of Mint Canyon Creek and consists primarily of Riverwash materials (non-soils). Riverwash forms a natural barren habitat typical of active stream channels, and consists of highly stratified, water-deposited layers of stony, gravelly, cobble-stone sand. It contains relatively small amounts of silt and clay and typically results from streambank erosion. Riverwash is subject to frequent disturbance, scouring, and deposition, and the development and establishment of riparian vegetation is severely limited (Edwards et al. 1970; Shipman 1972). The substrate onsite consists of sand with patches of gravel, and pioneering annual and perennial herbs were scattered throughout the sand. The only plant species observed in the vicinity of this habitat are scattered *Hirschfeldia incana* and *Ambrosia acanthicarpa*.

WILDLIFE RESOURCES

Wildlife resources present at the NCWD project site include the observed and expected individuals and populations of animals, such as fishes, herptofauna (amphibians and reptiles), avifauna (birds), mammals, and invertebrates (spiders and insects) that frequent or occupy the project site habitats. Some of these species may be considered special-status species for one or more reasons, as described in the Special-Status Species section below. In addition to wildlife species, the wildlife resources of the project site also include any functional wildlife habitats that provide shelter and foraging resources for the wildlife species in the vicinity of the project site.

DMEC biologists (Mr. Magney, Mr. Castle, and Ms. Batchelor) conducted the wildlife field survey on 8 and 15 May 2001 for the project site. Wildlife survey objectives were to account for the wildlife species (including special-status species) inhabiting and frequenting the project site and to indicate functional wildlife habitat utilized by those species. Biologists used direct observation, and they used signs - such as calls, scat, and tracks - to determine what species are expected in the vicinity of the project site. In particular, DMEC looked for evidence, or suitable habitat, for special-status wildlife species, such as *Rana aurora draytonii* (California Red-legged Frog).

Fauna

DMEC's site visits allowed only a cursory survey of and the site's wildlife diversity of the area. The Vasquez Water Main project site wildlife survey found evidence of frequent disturbance (natural and human) and high levels of pollution (air and noise), which create an environment typically unsuitable for rich faunal diversity. Therefore, the project area appears to be quite depauperate of wildlife species due to the relatively disturbed nature of the creek channel and adjacent habitats.

Table 3, Wildlife Species of the Vasquez Water Main Project Site, lists the wildlife species directly observed (by sight), detected (by sign), and expected (based on habitat availability/suitability, literature searches [Williams 1986 and Stebbins 1985], and best professional judgment), and includes the scientific and common names of the project site herptofauna (amphibians and reptiles), avifauna (birds), mammals, and invertebrates (insects and spiders). This table is based on the wildlife survey results, literature searches, and best professional judgment.

Table 3. Wildlife Species of the Vasquez Water Main Project Site

Scientific Name ⁶	Common Name	Survey Results
<i>Herptofauna</i>		
<i>Bufo boreas</i>	Western Toad	Expected
<i>Pseudacris [Hyla] regilla</i>	Pacific Tree Frog	Expected
<i>Rana catesbeiana</i> *	Bullfrog	Expected
<i>Sceloporus occidentalis</i>	Western Fence Lizard	Observed
<i>Uta stansburiana</i>	Side-blotched Lizard	Observed
<i>Phrynosoma coronatum blainvillei</i>	San Diego Horned Lizard²	Observed
<i>Gerrhonotus multicarinatus</i>	Southern Alligator Lizard	Expected
<i>Crotalus viridis</i>	Western Rattlesnake	Expected
<i>Pituophis melanoleucus</i>	Gopher Snake	Expected
<i>Avifauna</i>		
<i>Cathartes aura</i>	Turkey Vulture	Expected
<i>Buteo jamaciaensis</i>	Red-tailed Hawk	Observed
<i>Callipepla californica</i>	California Quail	Observed
<i>Zenaida macroura</i>	Mourning Dove	Expected
<i>Selasphorus sasin</i>	Allen's Hummingbird	Expected
<i>Calypte anna</i>	Anna's Hummingbird	Expected
<i>Hirundo pyrrhonota</i>	Cliff Swallow	Expected
<i>Aphelocoma coerulescens</i>	Scrub Jay	Expected
<i>Corvus brachyrhynchos</i>	American Crow	Observed
<i>Corvus corvax</i>	Common Raven	Observed
<i>Mimus polyglottos</i>	Northern Mockingbird	Expected
<i>Dendroica coronata</i>	Yellow-rumped Warbler	Expected
<i>Junco hyemalis</i>	Dark-eyed Junco	Expected
<i>Pipilo crissalis</i>	California Towhee	Observed
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	Expected
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird	Expected
<i>Sturnus vulgaris</i> *	European Starling	Expected
<i>Carpodacus mexicanus</i>	House Finch	Expected
<i>Carduelis tristis</i>	American Goldfinch	Expected
<i>Mammals</i>		
<i>Didelphis virginianus</i>	Virginia Opossum	Expected
<i>Sylvilagus audubonii</i>	Audubon's Cottontail	Expected
<i>Sylvilagus bachmani</i>	Brush Rabbit	Expected
<i>Spermophilus beecheyi</i>	California Ground Squirrel	Observed
<i>Perognathus californicus</i>	California Pocket Mouse	Expected
<i>Dipodomys agilis</i>	Pacific Kangaroo Rat	Expected
<i>Peromyscus californicus</i>	California Mouse	Expected
<i>Peromyscus maniculatus</i>	Deer Mouse	Expected
<i>Mus musculus</i>	House Mouse	Expected

⁶ An * indicates nonnative species.

² Bold indicates that San Diego Horned Lizard (*Phrynosoma coronatum blainvillei*) is a special-status species. This species was observed onsite and is discussed in detail in the following section, Special-Status Species.

Scientific Name ⁶	Common Name	Survey Results
<i>Reithrodontomys megalotis</i>	Western Harvest Mouse	Expected
<i>Neotoma cf. fuscipes</i>	Dusky-footed Woodrat (nest/scat)	Detected
<i>Canis latrans</i>	Coyote (scat)	Detected
<i>Canis familiaris</i> *	Dog (tracks)	Detected
<i>Procyon lotor</i>	Raccoon	Expected
<i>Mephitis mephitis</i>	Striped Skunk	Expected
<i>Odocoileus hemionus</i>	Mule Deer (tracks)	Detected
<i>Invertebrates</i>		
<i>Agelenopsis</i> sp.	Funnel Web Spider	Observed
<i>Libellula saturata</i>	Red Skimmer (Odonata)	Expected
<i>Schistocerca nitens</i>	Gray Bird Grasshopper	Observed
<i>Gryllus pennsylvanicus</i>	Field Cricket	Observed
<i>Hippodamia convergens</i>	Convergent Lady Beetle	Observed
<i>Sitophilus</i> sp.	Brown Weevil	Observed
<i>Tipula planicornis</i>	Crane Fly	Observed
Culicidae	Mosquito	Observed
<i>Apis mellifera</i> *	European Honey Bee	Observed
<i>Vespula pensylvanica</i>	Yellow Jacket	Observed
<i>Pogonomyrmex californicus</i>	California Harvester Ant	Observed
<i>Iridomyrmex humilis</i> *	Argentine Ant	Observed
<i>Limenitis bredowii</i>	California Sister Butterfly	Expected
<i>Occidryas chalcedona</i>	Checkerspot Butterfly	Expected
<i>Pieris rapae</i>	Cabbage White Butterfly	Observed
<i>Danaus plexippus</i>	Monarch Butterfly	Expected
<i>Papilio rutulus</i>	Western Tiger Swallowtail	Expected

A total of 62 wildlife species (including observed, expected, and detected species) have the potential to, or do, contribute to the Vasquez Water Main project site fauna. A total of 21 species of wildlife were directly *observed* at the Vasquez Water Main project site, including 3 reptiles (lizards [including one special-status species]), 5 birds, 1 mammal, 1 spider, and 11 insects. Four (4) mammals were *detected* by nests, scat, and/or tracks. At least 37 wildlife species are *expected* to inhabit or frequent the habitats in the vicinity of the project site, including 4 amphibians, 3 reptiles, 14 birds, 11 mammals, and 5 insects. Additional wildlife may use the site at least seasonally, and species richness is likely to be higher than documented here, especially for invertebrates.

Wildlife Habitat Quality

The field survey of habitat quality of the project site discerned three primary wildlife habitat types: Chenopod Scrub, Riparian Woodland, and Aquatic/Riverwash. The habitat quality for each vegetation type providing food, shelter, cover, and breeding resources to wildlife is briefly described below. Detailed descriptions of the plant communities representing these habitat types, are provided above in the NCWD Project Site Plant Community Descriptions subsection.

Chenopod Scrub

Chenopod Scrub, or Fourwing Saltbush Series, dominates the project site immediately beyond the channel banks and the upland areas of the project site landscape. This plant community forms an open canopy over a sparse groundlayer of grasses and herbs. Plant species-richness in this habitat, alone, is moderately depauperate, and this plant community provides marginal functional habitat for most species of wildlife in the area. For example, the shrub canopy is sparse and creates interrupted shelter. The low plant species diversity in these areas also provides minimal foraging resources for wildlife attempting to frequent or inhabit the area.

The wildlife species observed inhabiting the Fourwing Saltbush Scrub onsite include the following: Western Fence Lizard taking cover in the shrubs, Red-tailed Hawk flying over-head; California Quail foraging amongst the shrubs; Common Raven foraging in shrub openings; California Towhee taking cover and foraging in the shrubs; and California Ground Squirrel foraging.

Additional wildlife species expected to frequent or inhabit the Fourwing Saltbush Scrub onsite include: Southern Alligator Lizard, Western Rattlesnake, Gopher Snake, Turkey Vulture, Mourning Dove, Scrub Jay, Northern Mockingbird, White-crowned Sparrow, Brewer's Blackbird, European Starling, House Finch, Virginia Opossum, Audubon's Cottontail, Brush Rabbit, several species of mice, Raccoon, Striped Skunk, California Sister Butterfly, Checkerspot Butterfly, Monarch Butterfly, and Western Tiger Swallowtail Butterfly.

Palustrine Riparian Woodland

The Palustrine Riparian Woodland (Cowardin et al. 1979) at the Vasquez Canyon project site is represented by Fremont Cottonwood-Arroyo Willow Series (Sawyer and Keeler-Wolf 1995), which is a special-status habitat type discussed in detail below in the Special-Status Species section. This habitat occurs along each bank of Mint Canyon Creek, and the riparian vegetation is comprised primarily of large and small hydrophytic (water-loving) trees growing over a variety of hydrophytic shrubs and herbs, and intergrading with scattered Chenopod Scrub species.

The Fremont Cottonwood-Arroyo Willow Series is relatively disturbed, especially in the direct vicinity of the Vasquez Canyon Road bridge. A significant portion of the riparian vegetation appears to be dead or dying (no active flows were present onsite), and many of the riparian trees near the bridge appeared to be cut off at around mid-length (the cause of this is unknown). Farther northeast (upstream) from the bridge crossing, however, the riparian vegetation is well established and the tree and shrub strata form a continuous canopy (thickets in some places), creating adequate cover and foraging resources for a variety of wildlife species, especially for reptiles, birds, and small mammals.

Wildlife species observed and detected living in the Riparian Woodland of the project site include: lizards (Western Fence, Side-blotched, and San Diego Horned Lizards) hiding behind tree trunks, American Crow perched in willow trees, California Towhee foraging through the riparian thickets, California Ground Squirrel protecting their holes in the creek banks, Dusky-footed Woodrat nests camouflaged by deposits of dead vegetation thickets, Coyote (scat), Dog (tracks), Mule Deer (tracks), and several invertebrates (Funnel Web Spider, Gray Bird Grasshopper, Field Cricket, Convergent Lady Beetle, Crane Fly, mosquitoes, European Honey Bee, Yellow Jacket, California Harvester Ant, and Argentine Ant).

Other wildlife species expected to frequent or inhabit the Freemont Cottonwood-Arroyo Willow Woodland onsite include: Pacific Tree Frog, Western Toad, Pacific Chorus Frog, Bullfrog, Gopher Snake, Allen's Hummingbird, Anna's Hummingbird, Cliff Swallow, Scrub Jay, Northern Mockingbird, Yellow-rumped Warbler, Dark-eyed Junco, American Goldfinch, Pacific Kangaroo Rat, several species of mice, Raccoon, Red Skimmer, California Sister Butterfly, Checkerspot Butterfly, Monarch Butterfly, and Western Tiger Swallowtail Butterfly.

Riverine Intermittent Streambed

The general stream condition of the Mint Canyon Creek project portion is a relatively flat, low velocity, intermittent stream with a sinuosity value of one (when flows are present). Although no active flows were present onsite during the wildlife survey, the creek bed habitat is classified as Riverine Intermittent Streambed (Cowardin et al. 1979), since Mint Canyon Creek has the potential for active flows (an ephemeral creek) during the rainy seasons, and it consists predominantly of Riverwash materials and little to no riparian vegetation. Disturbances in the sandy open stretch of this habitat are frequent, and may be quite intense, including horse, dog, and pedestrian traffic, in-stream trash (including dumping), off road vehicle use, and flash-flooding.

Very few wildlife species were directly observed in the immediate creek bed, except for San Diego Horned Lizard and several insects. San Diego Horned Lizard, which is a special-status species, was observed foraging for ants in the open sandy materials forming the Riverwash habitat. The invertebrates observed in this habitat include many of those mentioned above in Riparian Woodland. Three mammal species were detected in this Riverine habitat as well, and they include Coyote (scat), Dog (tracks), and Mule Deer (tracks).

The wildlife species expected to inhabit or frequent the immediate creek bed include: Pacific Tree Frog, Western Toad, Pacific Chorus Frog, Bullfrog, Cliff Swallow, American Crow, Common Raven, Virginia Opossum, Audubon's Cottontail, Raccoon, and several species of butterflies and many species of invertebrates.

SPECIAL-STATUS SPECIES/HABITATS

This section describes special-status species and the terms related to special-status species, including status definitions for both plants and animals, and status types for various protection acts and professional organizations. This special-status species section provides tables listing the likelihood of occurrence, status, and habitat requirements of special-status vascular and nonvascular plants (lichens), wildlife, and habitats known to occur in the vicinity of the project site. This section also discusses and describes in detail the special-status plant and animal species and habitats actually observed inhabiting or frequenting the project site during the DMEC biological surveys.

The following subsections, Special-Status Plants and Special-Status Wildlife, provide the status, habitat requirements, distribution patterns, and survey results for the special-status plant and animal species and sensitive habitats observed and expected in the vicinity of the project site. The information provided for the identified special-status species (and habitats) includes: scientific and common (vernacular) names; physical descriptions; habitat requirements; species distribution; survey results; and status, including federal and state, CDFG's CNDDDB Element (Global and State) Ranking, and CNPS List and Rarity-Endangerment-Distribution (R-E-D) Code. These status designations are defined further below.



Definitions

Special-status species are plants (including nonvascular plants) and animals that are either listed as endangered or threatened under the Federal or California Endangered Special Acts, or listed as rare under the California Native Plant Protection Act, or considered to be rare (but not formally listed) by resource agencies, professional organizations (e.g. Audubon Society, California Native Plant Society [CNPS], The Wildlife Society, California Lichen Society), and the scientific community. Special-status species are defined in detail below in Table 4, Definitions of Special-Status Species.

Table 4. Definitions of Special-Status Species

1. Plants and animals legally protected under the California and Federal Endangered Species Acts or under other regulations. 2. Plants and animals considered sufficiently rare by the scientific community to qualify for such listing; or 3. Plants and animals considered to be sensitive because they are unique, declining regionally or locally, or are at the extent of their natural range.	
Special-Status Plant Species	Special-Status Animal Species
<ul style="list-style-type: none"> • Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants & various notices in Federal Register for proposed species). • Plants that are Category 1 or 2 candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (64 CFR 205, pages 57533-57547, 25 October 1999). • Plants that meet the definitions of rare or endangered species under the CEQA (State CEQA Guidelines, Section 15380). • Plants considered by CNPS to be "rare, threatened, or endangered" in California (List 1B and 2 in CNPS [2001]). • Plants listed by CNPS as plants needing more information and plants of limited distribution (Lists 3 and 4 [CNPS 2001]). • Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.2). • Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.; 14 CCR 670.2). • Plants considered sensitive by other federal agencies (i.e. U.S. Forest Service, Bureau of Land Management) or state and local agencies or jurisdictions. • Plants listed and tracked by the CDFG's California Natural Diversity Data Base (CDFG 2002). • Plants considered sensitive or unique by the scientific community; occurs at natural range limits (<i>State CEQA Guidelines</i>, Appendix G). 	<ul style="list-style-type: none"> • Animals listed/proposed for listing as threatened/endangered under the Federal Endangered Species Act (50 CFR 17.11 for listed animals and various notices in Federal Register for proposed species). • Animals that are Category 1 or 2 candidates for possible future listing as threatened or endangered under Federal Endangered Species Act (54 CFR 554). • Animals that meet the definitions of rare or endangered species under the CEQA (<i>State CEQA Guidelines</i>, Section 15380). • Animals listed or proposed for listing by the State of California as threatened and endangered under the California Endangered Species Act (14 CCR 670.5). • Animal species of special concern to the CDFG (Remsen [1978] for birds; Williams [1986] for mammals). • Animals listed and tracked by the CDFG's California Natural Diversity Data Base (CDFG 2002). • Animal species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], 5050 [reptiles, amphibians]).

To determine which special-status species are likely to occur in the vicinity of the water main project, a literature survey (including the CNPS *Inventory* [CNPS 2001]), and a search of the CDFG's California Natural Diversity Data Base RareFind2 (CDFG 2002), was conducted for known occurrences in the vicinity of Mint Canyon.



Listed species are those taxa that are formally listed as endangered or threatened by the federal government (e.g. U.S. Fish and Wildlife Service [USFWS]), pursuant to the Federal Endangered Species Act or as endangered, threatened, or rare (for plants only) by the State of California (i.e. California Fish and Game Commission), pursuant to the California Endangered Species Act or the California Native Plant Protection Act.

The CNPS's *Inventory of Rare and Endangered Plants of California* (CNPS 2001) categorizes rare California plants into one of five lists (1A, 1B, 2, 3, and 4) representing the five levels of status. One status code is assigned to a sensitive species to indicate its status of rarity or endangerment and distribution. A CNPS List is a more general designation than the three separate sets of information provided in a CNPS R-E-D Code (defined in Table 6). However, the CNPS List is a significant designation in terms of a species' overall status throughout all of California, and it works best in conjunction with R-E-D Code specifications. Table 5, California Native Plant Society List (CNPS List) Definitions, defines each List code number.

Table 5. California Native Plant Society List (CNPS List) Definitions

CNPS List	Definition
1A	Presumed Extinct in California
1B	Rare or Endangered in California and elsewhere
2	Rare and Endangered in California, more common elsewhere
3	Need more information
4	Plants of Limited Distribution

CNPS 2001.

The CNPS R-E-D Code is a three-numbered numeric ranking, which is assigned to a special-status species, consisting of one number (1, 2, or 3) for each of the three categories (Rarity-Endangerment-Distribution). Each number accurately describes the species' population levels and distribution patterns within each category. The three number-codes for each category are described in Table 6, California Native Plant Society Rarity-Endangerment-Distribution Code (CNPS R-E-D Code), and are specific for each category.

Table 6. California Native Plant Society Rarity-Endangerment-Distribution Code (CNPS R-E-D Code)

Rarity (R)	
1	Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time
2	Distributed in a limited number of occurrences, occasionally more if each occurrence is small
3	Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported
Endangerment (E)	
1	Not endangered
2	Endangered in a portion of its range
3	Endangered throughout its range
Distribution (D)	
1	More or less widespread outside California
2	Rare outside California
3	Endemic to California

CNPS 2001.

The CDFG's CNDDDB Element Ranking system provides a numeric global- and state-ranking system for all special-status plant and wildlife species tracked by the CNDDDB. The global rank (G-rank) is a reflection of the overall condition of an element (a species or a natural plant community) throughout its global range. The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. This Element Ranking system is defined below in Table 7, California Natural Diversity Data Base Element Ranking System. (Note: Rarity G- and S-ranks devised for taxa of this report are followed by a "?", denoting tentative assignment.)

Plant species may also be considered rare or uncommon (Species of Special Concern [SSC], Forest Sensitive [FS], and Species of Local Concern [SLC]) by resource agencies and professional organizations (Audubon Society, CNPS, and The Wildlife Society). The CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001) lists all rare and endangered California vascular plants.

As described for the CNDDDB ranking, not all special-status plant species considered in this report are tracked by the CNDDDB, nor are R-E-D codes given to them; therefore, DMEC may apply the rules described above to "rank" those special-status species of the Vasquez Water Main region lacking such rankings or codes. This applies to rare lichen taxa as well, for which CNPS has not yet developed or incorporated into its *Inventory of Rare and Endangered Plants of California* or developed and established by the California Lichen Society.

Special-Status Botanical Resources

Special-status botanical resources include all vascular and nonvascular plants and habitat types that, in one way or another, are sensitive to the environment, have the potential to be threatened, are considered to be rare, or are actually federally or state listed as endangered, threatened, or rare.

Special-Status Vascular Plants

No special-status vascular plant species were observed on the NCWD project site during the botanical survey on 8 and 15 May 2001 by DMEC biologists. However, the literature review and database searches performed by DMEC identified 90 special-status species of vascular plants (including those considered locally rare and those listed by state and federal regulatory agencies) that are known, expected, or have the potential to occur in the vicinity of the project site (CDFG 2002; Boyd 1999). Table 8, Special-Status Vascular Plants Potentially in the Vasquez Water Main Project Area, summarizes literature searches and field survey results for special-status vascular plant species, including scientific and common names, species status, habitat requirements, and the likelihood of occurrence within the project site boundaries. The species status column includes a Federal listing, State listing, RareFind2 G-rank and S-rank (CDFG 2002), CNPS List/R-E-D Codes (CNPS 2001), and Species of Local Concern (locally uncommon or locally rare) (adapted from Boyd [1999]).

Table 8 includes special-status plant species that meet the definitions described above, and the table includes taxa with ten or fewer populations recorded in the Liebre Mountains/Northwestern Los Angeles County region and with habitat requirements similar to the habitat types present onsite. Table 8 was compiled according to definitions under the California Environmental Quality Act under Initial Study Checklist Section 6. Subsections A and E.



Table 7. California Natural Diversity Database Element Ranking System

Global Ranking (G-Rank)	
G1	Less than 6 viable element occurrences (populations for species), OR < 1,000 individuals, OR < 809.4 hectares (ha) (2,000 acres [ac]).
G2	6 to 20 element occurrences OR 809.4 to 4,047 ha (2,000 to 10,000 ac).
G3	21 to 100 element occurrences OR 3,000 to 10,000 individuals OR 4,047 to 20,235 ha (10,000 to 50,000 ac).
G4	Apparently secure; this rank is clearly lower than G3, but factors exist to cause some concern (i.e. there is some threat, or somewhat narrow habitat).
G5	Population, or stand, demonstrably secure to ineradicable due to being commonly found in the world.
GH	All sites are historic ; the element has not been seen for at least 20 years, but suitable habitat still exists.
GX	All sites are extirpated ; this element is extinct in the wild.
GXC	Extinct in the wild; exists in cultivation.
G1Q	The element is very rare, but there is a taxonomic question associated with it.
<p>Subspecies Level: Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire <u>species</u>, whereas the T-rank reflects the global situation of just the <u>subspecies</u> or <u>variety</u>. For example: <i>Chorizanthe robusta</i> var. <i>hartwegii</i> is ranked G2T1. The G-rank refers to the whole species range (<i>Chorizanthe robusta</i>), whereas the T-rank refers only to the global condition of the variety (var. <i>hartwegii</i>).</p>	
State Ranking (S-Rank)	
S1	Less than 6 element occurrences OR less than 1,000 individuals OR less than 809.4 ha (2,000 ac). S1.1 = very threatened S1.2 = threatened S1.3 = no current threats known
S2	6 to 20 element occurrences OR 3,000 individuals OR 809.4 to 4,047 ha (2,000 to 10,000 ac). S2.1 = very threatened S2.2 = threatened S2.3 = no current threats known.
S3	21 to 100 element occurrences OR 3,000 to 10,000 individuals OR 4,047 to 20,235 ha (10,000 to 50,000 ac). S3.1 = very threatened S3.2 = threatened S3.3 = no current threats known
S4	Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern (i.e., there is some threat, or somewhat narrow habitat). NO THREAT RANK.
S5	Demonstrably secure to ineradicable in California. NO THREAT RANK.
SH	All Calif. sites are historic ; the element has not been seen for at least 20 years, but suitable habitat still exists.
SX	All California sites are extirpated ; this element is extinct in the wild.
Notes	
<p>1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. Aerial views are important when ranking sensitive elements rather than simply counting element occurrences.</p> <p>2. Uncertainty about the rank of an element is expressed in two major ways: by expressing the rank as a range of values (e.g. S2S3 means the rank is somewhere between S2 and S3), and by adding a ? to the rank (e.g. S2?). This represents more certainty than S2S3, but less than S2. (Natural Diversity Data Base 2002.)</p>	



Table 8 was compiled from four primary sources:

- Review of the *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999) to consider taxa with ten or fewer populations recorded in the Liebre Mountains/Northwestern Los Angeles County region;
- Review of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001) to consider taxa that are considered rare or uncommon throughout California, even though more than ten populations are known from Los Angeles County;
- Search of the CNDDDB RareFind2 (CDFG 2002) for the Mint Canyon, California Quadrangle (USGS 7.5-minute Series Topographic Map) and its surrounding quadrangles, including the Warm Springs Mountain, Green Valley, Sleepy Valley, Newhall, Agua Dulce, Oat Mountain, San Fernando, and Sunland, California Quadrangles (USGS 7.5-minute Series Topographic Maps); and
- Known records, observations, field searches, and published reports by DMEC botanists.

Table 8. Special-Status Vascular Plants Potentially in the Vasquez Water Main Project Area

Scientific Name ⁷	Common Name	Status: Fed./State/ NDDDB/CNPS ⁸	Preferred Habitat ⁹ and Nearest Known Occurrence	Likelihood of Occurrence ¹⁰
<i>Acanthomintha obovata</i> ssp. <i>cordata</i>	Heart-leaved Thorn-mint	-/-/G3T3?, S3.2?/4, 1-2-3	Chaparral openings, woodland, grassland; low competition sites on clay soil; upper Osito Canyon, W end of Liebre Mtn Range	Unlikely
<i>Allophyllum glutinosum</i>	Sticky Allophyllum	-/-/LR	Moist sites; rocky to sandy soil; known from Newhall	Possible
<i>Androsace elongata</i> ssp. <i>acuta</i>	California Androsace	-/-/G?T3?, S3.2?/4, 1-2-2	Chaparral, woodland, CSS; N base of the Liebre Mtn range	Unlikely
<i>Arabis pulchra</i> var. <i>gracilis</i>	Desert Rockcress	-/-/LR	Canyons, slopes, washes; limestone soil; near Saugus	Unlikely
<i>Argemone corymbosa</i>	Prickly Poppy	-/-/LU	Dry slopes and flats; early collections in Mint, Soledad, and Bouquet Canyons	Possible
<i>Aster greatae</i>	Greata's Aster	-/-/G2, S2.3/1B, 2-1-3	Mesic canyons; springs below Oak Wld, near Cienaga Campground in Fish Cyn, early collection in Acton	Unlikely
<i>Astragalus preussii</i> var. <i>laxiflorus</i>	Lancaster Milkvetch	-/-/G4T2T3, S1.1/1B,3-3-2	Chenopod Scrub; SW Mojave Desert, Los Angeles County	Possible

⁷ * = The special-status vascular plant species determined for the Mint Canyon and surrounding, California Quadrangles (USGS 7.5-minute Series Topographic Map), according to DMEC's search of CDFG's CNDDDB RareFind2 (CDFG 2002). The remaining special-status plant species, with potential to inhabit the project site, were determined by a literature search of CNPS's *Inventory of Rare and Endangered Plants of California* (CNPS 2001) and a literature search of *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999) for locally rare plants within the Mint Canyon area of the Liebre Mountains.

⁸ See Tables 4 through 7 for definitions and explanations of rarity and legal status codes: R=listed Rare; E=listed Endangered; T=listed Threatened; SH=all sites historic in CA; LR-Locally Rare; LU-Locally Uncommon.

⁹ Definitions of abbreviations: Chap=chaparral; ChScrub=Chenopod Scrub; CmWld=Cismontane Woodland; CSS=Coastal Sage Scrub; D=desert; Dist=disturbed; E=east; For=forest; GBS=Great Basin Sagebrush; Gld=grassland; JTWld=Joshua Tree Woodland; LCFor=Lower Coniferous Forest; MDS=Mohavean Desert Scrub; Mtn=mountain; N=north; PJWld=Pinyon-Juniper Woodland; Rip=riparian; S=south; SoCal=southern California; W=west; Wld=woodland; VFGld=Valley & Foothill Grassland.

¹⁰ Likelihood of occurrence determinations are based on the CNDDDB (CDFG 2002) search, a literature search (CNPS 2001), regional occurrences (Boyd 1999) not tracked by the CNDDDB, and best professional judgment.

Scientific Name ⁷	Common Name	Status: Fed./State/ NDDB/CNPS ⁸	Preferred Habitat ⁹ and Nearest Known Occurrence	Likelihood of Occurrence ¹⁰
<i>Atriplex serenana</i> var. <i> davidsonii</i>	Davidson's Saltscale	-/-/G5T2?, S2?/1B, 3-2-2	Chenopod Scrub, Coastal Sage Scrub; alkaline soils; LA County	Possible
<i>Atriplex serenana</i> var. <i> serenana</i>	Bractscale	-/-/LR	Dry rocky stream channel at mouth of Agua Dulce Canyon	Possible
<i>Baccharis emoryi</i>	Emory's Baccharis	-/-/LU	Sandy edges of rivers and washes; Agua Dulce Canyon, Barrel Spring	Possible
<i>Berberis nevini</i> *	Nevin's Barberry	E/E/G2, S2.2/1B, 3-3-3	Chaparral, CmWld, CSS, Rip Scrub, planted in Liebre Mtn range	Possible
<i>Bowlesia incana</i>	Hoary Bowlesia	-/-/LR	Scrub habitats; Bouquet Canyon	Possible
<i>Calandrinia breweri</i>	Brewer's Calandrinia	-/-/G4, S3.2?/4, 1-2-2	Chap, CSS, Dist sites; LA County	Possible
<i>Calochortus clavatus</i> var. <i> clavatus</i>	Club-haired Mariposa Lily	-/-/G4T3, S3.3/4, 1-1-3	Chap, Wld, Gld, open scrub, recent burns; generally serpentine soil; throughout Liebre Mtn range	Unlikely
<i>Calochortus clavatus</i> var. <i> gracilis</i> *	Slender Mariposa Lily	-/-/G4T1, S1.1?/1B, 3-2-3	Chaparral, CSS; burns; within Liebre Mtn range, endemic to LA County; mapped in Mint Canyon Quad by CNDDDB (CDFG 2002)	Possible
<i>Calochortus plummerae</i> *	Plummer Mariposa Lily	-/-/G3, S3.2/1B, 2-2-3	Chap, Wld, CSS, rocky slopes, alluvial fans; granitic soils; above Bee Cyn Wash near Soledad Cyn	Possible
<i>Calochortus weedii</i> var. <i> intermedius</i>	Intermediate Mariposa Lily	-/-/G3T2, S2.2/1B, 2-2-3	Chaparral, grassland, CSS; rocky soils; Los Angeles County	Unlikely
<i>Calystegia peirsonii</i>	Peirson's Morning-glory	-/-/G3, S3.2/4, 1-2-3	Chap, CSS, ChScrub, woodland; throughout Liebre Mtn range	Possible
<i>Cardamine californica</i> var. <i> californica</i>	California Milkmaids	-/-/LU	Mesic shaded slopes, alluvial benches; Elizabeth Lake, San Francisquito, and Bouquet Canyons	Possible
<i>Cardamine californica</i> var. <i> integrifolia</i>	Simple-leaf California Milkmaids	-/-/LU	Mesic shaded slopes, alluvial benches; Elizabeth Lake, San Francisquito, and Bouquet Canyons	Unlikely
<i>Carex schottii</i>	Schott's Sedge	-/-/LR	Stream banks, swamps; early collection from S end Bouquet Cyn	Unlikely
<i>Castilleja exserta</i> ssp. <i> exserta</i>	Purple Owl's Clover	-/-/LR	Open fields, Gld, low elevations; southern edge of Liebre Mtn range	Possible
<i>Castilleja plagiotoma</i>	Mojave Indian Paintbrush	-/-/G3, S3.3/4, 1-1-3	GBS Scrub, alluvial soils; xeric scrub, upper slopes of Parker Mtn	Possible
<i>Chorizanthe parryi</i> var. <i> fernandina</i> *	San Fernando Valley Spineflower	C/E/G2T1, S1.1/1B, 3-3-3	Grassland habitats; Newhall and Valencia; mapped in Mint Canyon Quad by CNDDDB (CDFG 2002)	Possible
<i>Chorizanthe parryi</i> var. <i> parryi</i>	Parry's Spineflower	-/-/G2T2?, S2.1 /3, ?-2-3	Chap, CSS, sandy openings; immature specimen from Texas Cyn	Unlikely
<i>Chorizanthe procumbens</i>	Prostrate Spineflower	-/-/4, 1-2-2	Chap, CSS, Wld, Gld; LA County	Unlikely
<i>Chorizanthe spinosa</i>	Mojave Spineflower	-/-/G3, S3.2/4, 1-2-3	Chenopod Scrub, MDS; W Mojave Desert, Los Angeles County	Unlikely
<i>Chrysothamnus teretifolius</i>	Round-leaved Rabbit Brush	-/-/LU	Rocky flats, slopes; D margin, near Parker Mtn and Mint Canyon	Unlikely
<i>Clarkia bottae</i>	Nodding Clarkia	-/-/LU	Openings, Chaparral, woodland, CSS; Soledad Canyon region	Possible
<i>Claytonia parviflora</i>	Utah Miner's Lettuce	-/-/LR	Vernally moist, Dist sites; from	Unlikely

Scientific Name ⁷	Common Name	Status: Fed./State/ NDDB/CNPS ⁸	Preferred Habitat ⁹ and Nearest Known Occurrence	Likelihood of Occurrence ¹⁰
<i>ssp. parviflora</i>			Bouquet Canyon and Lake Hughes	
<i>Cyperus eragrostis</i>	Umbrella Sedge	-/-/LU	Wet soil; Castaic Creek and in Soledad Canyon	Unlikely
<i>Deinandra kelloggii</i>	Kellogg's Tarplant	-/-/LU	Open sites; Leona Valley and Bouquet Canyon	Unlikely
<i>Deinandra minthornii</i> *	Santa Susana Tarplant	-R/G2, S2.2/1B, 2-2-3	Chaparral, CSS; known only from Los Angeles and Ventura Counties	Unlikely
<i>Dodecahema leptoceras</i> *	Slender-horned Spineflower	E/E/G1, S1.1/1B, 3-3-3	Chaparral, CSS, AFSS; early collection near Newhall where extirpated; mapped in Mint Canyon Quad by CNDDDB (CDFG 2002)	Possible
<i>Eragrostis mexicana</i> <i>ssp. virescens</i>	Orcutt Lovegrass	-/-/LR	Moist soil along stream in Ruby Cyn; ruderal situation in Newhall	Possible
<i>Eriogonum nudum</i> <i>var. westonii</i>	Weston's Barestem Buckwheat	-/-/LU	Chaparral openings; head of Bouquet Canyon	Unlikely
<i>Eriogonum trichopes</i> <i>var. hooveri</i>	Little Trumpet	-/-/LR	Clay, often serpentine origin; early collection near head of Mint Canyon, desert transition	Possible
<i>Filago depressa</i>	Fluffweed	-/-/LR	Sandy washes, open alluvium; known at Bouquet Junction	Possible
<i>Forestiera pubescens</i>	Desert Olive	-/-/LU	Alluvial benches and about springs; Bouquet, Mint, and Clearwater Cyn	Possible
<i>Galium grande</i> *	San Gabriel Bedstraw	-/-/G1, S1.2/1B, 3-1-3	CmWld, Chap, Broadleaf Upland For, LCFOR; endemic to LA County	Unlikely
<i>Goodmania luteola</i>	Golden Goodmania	-/-/G3, S3.2/4, 1-2-2	Gld, MDS, playas; LA County	Unlikely
<i>Harpagonella palmeri</i>	Palmer's Grapplinghook	-/-/G4, S3.2 /4, 1-2-1	Chap, CSS, Gld; open clay soil in Plum Canyon near Cruzan Mesa, historic near Saugus (northern limit)	Unlikely
<i>Helianthus californicus</i>	California Sunflower	-/-/LU	Along drainages; Bouquet and Agua Dulce Canyons	Possible
<i>Hesperolinon micranthum</i>	Dwarf Flax	-/-/LR	Open areas, Wld margin, serpentine soil; early collection near Newhall	Possible
<i>Heterotheca sessiliflora</i> <i>ssp. echioides</i>	Hairy Golden-aster	-/-/LR	Grassland, Oak Wld, lower elevations; Newhall-Saugus area	Possible
<i>Lepidium fremontii</i>	Fremont Peppergrass	-/-/LU	Sandy washes, barren knolls, gravelly soil; Mint Canyon, upper desert transition area	Possible
<i>Lepidium virginicum</i> <i>var. robinsonii</i>	Robinson Peppergrass	-/-/G5T2?, SH/1B, 3-2-2	Chaparral, Coastal Sage Scrub; Los Angeles County	Possible
<i>Lepidium virginicum</i> <i>var. pubescens</i>	Hairy Poorman's Peppergrass	-/-/LU	Dist sites, abandoned fields, meadows, roadsides; southern edge of Liebre Mtn range	Possible
<i>Lithophragma affine</i>	Woodland Star	-/-/LR	Open grassy slopes; known from early collections near Newhall and Bouquet Canyon	Possible
<i>Loeflingia squarrosa</i> <i>var. artemisiarum</i>	Sagebrush Loeflingia	-/-/G5T2T3, S2.2/2, 2-2-1	Desert dunes, GBS Scrub; sandy soils; Los Angeles County	Possible
<i>Lotus hamatus</i>	Grab Lotus	-/-/LR	CSS, desert canyons, washes, Dist sites; S end of Liebre Mtn range	Possible
<i>Lupinus albifrons</i> <i>var. albifrons</i>	Silver Bush Lupine	-/-/LU	Chaparral, foothill woodland, low elevations; Newhall, Valencia	Possible

Scientific Name ⁷	Common Name	Status: Fed./State/ NDDB/CNPS ⁸	Preferred Habitat ⁹ and Nearest Known Occurrence	Likelihood of Occurrence ¹⁰
<i>Lupinus latifolius</i> ssp. <i>parishii</i>	Parish's Broad-leaved Lupine	-/-/LR	Moist sites; Bouquet Canyon near Saugus, and near Acton	Possible
<i>Madia exigua</i>	Threadstem Tarplant	-/-/LU	Scrub openings; eastern flank of Red Mtn; early collection from Newhall	Unlikely
<i>Malacothamnus</i> <i> davidsonii</i> *	Davidson's Bush Mallow	-/-/G1, S1.1/1B, 2-2-3	Chap, CSS, Rip Wld; Threatened by urbanization in LA County	Possible
<i>Malacothrix coulteri</i>	Snakeheads	-/-/LR	Sandy open areas, CSS, grassland, deserts; Bouquet Canyon	Possible
<i>Malacothrix glabrata</i>	Desert Dandelion	-/-/LR	Coarse soils in open areas and among shrubs; Mint Canyon	Possible
<i>Mentzelia gracilentia</i>	Slender Stickleaf	-/-/LR	Steep talus, Pine/Oak Wld; widely scattered sites, Saugus and Acton	Unlikely
<i>Monardella viridis</i> ssp. <i>saxicola</i>	Rock Monardella	-/-/G3T3, S3.2/4, 1-2-3	Chaparral, Lower Coniferous Forest; Los Angeles County	Unlikely
<i>Mucronea californica</i>	California Spineflower	-/-/G3, S3.2?/4, 1-2-3	Chaparral, CmWld, CSS, grassland; Los Angeles County	Unlikely
<i>Muhlenbergia californica</i>	California Muhly	-/-/G3, S3.3/4, 1-1-3	Chap, CSS, LCFor, mesic seeps, meadow; stream banks; LA County	Possible
<i>Navarretia fossalis</i> *	Spreading Navarretia	T/-/G2, S2.1/1B, 2-3-2	Drying mud of vernal pools, ChScrub; on Cruzan Mesa and in adjacent Plum Cyn; mapped in Mint Cyn Quad by CNDDDB (CDFG 2002)	Possible
<i>Nemacladus</i> <i> ramosissimus</i>	Nemacladus	-/-/LU	Dry sandy gravelly soil; widely scattered sites along S edge of LMR	Possible
<i>Nicotiana attenuata</i>	Coyote Tobacco	-/-/LR	Open, well-drained slopes; early collections from south and west edges of Liebre Mtn range	Possible
<i>Opuntia basilaris</i> var. <i>brachyclada</i> *	Short-joint Beavertail	-/-/G5T1, S1.2/1B, 3-2-3	Chaparral, JTWld, MDS, PJWld, Riparian Woodland	Possible
<i>Opuntia littoralis</i>	Coastal Prickly-pear	-/-/LR	Coastal Sage Scrub, chaparral; early collection near Newhall	Possible
<i>Orcuttia californica</i> *	California Orcutt Grass	E/E/G2, S2.1/1B, 3-3-2	Vernal pools; known only in SoCal & Baja; Cruzan Mesa, Plum Canyon; mapped in Mint Canyon Quad by CNDDDB (CDFG 2002)	Possible
<i>Oxytheca parishii</i> var. <i>abramsii</i> *	Abrams Oxytheca	-/-/G4?T2, S2.2/1B, 2-2-3	Chaparral; known only from Santa Barbara & Ventura Counties	Unlikely
<i>Paeonia californica</i>	California Peony	-/-/LU	Open scrub; Knapp Ranch, early collections near Newhall	Possible
<i>Perideridia pringlei</i>	Adobe Yampah	-/-/G3, S3.3/4, 1-1-3	Open Chap, CSS, Gld, clay soil; higher ridges of the Liebre Mtn range and on N face of Sawmill Mtn	Unlikely
<i>Petalonyx thurberi</i> ssp. <i>thurberi</i>	Petalonyx	-/-/LU	Local on sandy alluvial benches; upper Mint Canyon, lower San Francisquito Canyon	Possible
<i>Phacelia mohavensis</i>	Mojave Phacelia	-/-/G3Q, S3.3/4, 1-1-3	CmWld, LCFor, meadow, PJWld; sandy gravelly soil, dry stream- bed; Los Angeles County	Possible
<i>Phoradendron</i> <i> californicum</i>	Desert Mistletoe	-/-/LR	Desert habitats, on <i>Acacia</i> , <i>Cercidium</i> , <i>Olneya</i> , <i>Prosopis</i> ; early collection from Mint Canyon	Possible

Scientific Name ⁷	Common Name	Status: Fed./State/ NDDB/CNPS ⁸	Preferred Habitat ⁹ and Nearest Known Occurrence	Likelihood of Occurrence ¹⁰
<i>Purshia tridentata</i> var. <i>glandulosa</i>	Antelope Bush	-/-/LR	Sagebrush Scrub, LCFOR, Juniper Wld; early collection Bouquet Cyn	Possible
<i>Pycnanthemum</i> <i>californicum</i>	Sierra Mint	-/-/LR	Moist sites, Chap, Oak Woodland, Coniferous Forest; lower Bouquet Canyon and near Newhall	Possible
<i>Rhus trilobata</i> var. <i>anisophylla</i>	Skunkbrush	-/-/LR	Slopes, washes, shrubland; Mint Canyon	Possible
<i>Ribes divaricatum</i> var. <i>parishii</i>	Parish's Gooseberry	-/-/G4T1, S1.1/1B, 3-3-3	Riparian Woodland; Los Angeles County	Possible
<i>Romneya coulteri</i>	Coulters Matilija Poppy	-/-/G3, S3.2/4, 1-2-3	Chap, CSS, burns; LA County	Unlikely
<i>Scirpus pungens</i>	Common Threesquare	-/-/LU	Wet soil; Castaic Ck, Soledad Cyn	Possible
<i>Senecio aphanactis</i> *	Rayless Ragwort	-/-/G3?, S1.2/2, 3-2-1	CmWld, CSS, burns; Newhall area	Unlikely
<i>Sidalcea malvaeflora</i> ssp. <i>malvaeflora</i>	Checker Bloom	-/-/LR	Coastal prairie, scrub, open forest; Bouquet Canyon	Possible
<i>Sidalcea neomexicana</i>	Salt Spring Checkerbloom	-/-/G4?, S2S3/2, 2-2-1	Chap, CSS, LCFOR, MDS, playas; alkaline, mesic soil; early collection near Elizabeth Lake, and head of San Francisquito Canyon	Unlikely
<i>Sphaeralcea emoryi</i>	Emory's Globemallow	-/-/LR	Fields, roadsides; desert transition areas; upper Mint Canyon	Possible
<i>Stillingia linearifolia</i>	Narrow-leaf Stillingia	-/-/LR	Xeric scrub in upper Bee Canyon near Agua Dulce	Unlikely
<i>Stylocline masonii</i>	Mason Neststraw	-/-/G1, S1.1/1B, 3-3-3	ChScrub, PJ Wld; sandy benches of Soledad Canyon Wash near Acton	Possible
<i>Syntrichopappus lemmonii</i>	Lemmon Syntrichopappus	-/-/G3, S3.3/4, 1-1-3	Chap, JT Wld, open habitats, D transition; sand-gravel; E end LMR	Possible
<i>Tetradymia comosa</i>	Cotton-thorn	-/-/LU	Open scrub; S edge LMR	Possible
<i>Thysanocarpus laciniatus</i> var. <i>laciniatus</i>	Lace Pod	-/-/LU	Slopes, rocky ridges, shade; SW edge of Liebre Mtn range	Possible
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	Mojave-aster	-/-/LU	Rocky hillsides in Mint Canyon	Possible
<i>Zannichellia palustris</i>	Horned Pondweed	-/-/LU	Flowing water, shaded Riparian Woodland in Bouquet Canyon	Unlikely

Based on DMEC's field survey, knowledge of the region, and assessment of project site habitat conditions, DMEC determined, in part through an inventory of the Table 8 special-status plant species survey results, and the literature review results, that of the 90 special-status vascular plant species known to occur in the vicinity of the project site. Five (5) federally listed plant species (1 Threatened, 3 Endangered, 1 Candidate), and five (5) state listed plant species (4 Endangered, 1 Rare) have potential to inhabit the project site.

Although no special-status vascular plant species were observed at the Vasquez Canyon project site, several of the special-status plant species (listed above in Table 8) have a greater potential for occurring within the vicinity of the project site, since their habitat requirements are similar to the Chenopod Scrub, Riparian Woodland, or Riverine habitats currently existing onsite. For example, *Berberis nevini* and *Malacothamnus davidsonii* are special-status plant species with higher likelihood of inhabiting the Palustrine (Riparian Woodland) habitat onsite, *Astragalus preussii* var. *laxiflorus* and *Atriplex serenana* var. *davidsonii* are special-status species with higher likelihood of inhabiting the Upland (Chenopod Scrub) habitat onsite, and *Phacelia mohavensis* is more likely to inhabit the sandy gravelly soil of the dry Mint Canyon streambed.

The potential for impacts to the special-status species, expected within the riparian habitat, is higher than the for the special-status species expected within the upland habitat. Impact to riparian species is higher since a portion of the water main construction activities will be conducted within the channel banks of Mint Canyon Creek. The remaining construction will be conducted under existing roads, which will minimize potential impacts to special-status plant species expected within the upland plant communities.

It should be noted that the timing of the field surveys is just outside the preferred season to observe/detect some of the special-status species (late winter/early spring).

Special-Status Nonvascular Plants (Lichens)

The special-status nonvascular plants of the Vasquez Water Main project site include special-status lichens known to occur in the vicinity of the project area. Little is known about special-status lichen species, largely because much is still unknown about the distribution of California lichens. Riefner et al. (1995) and Hale and Cole (1988) identified a number of lichen taxa that they consider endangered to uncommon, and some of those species are used here as special-status lichens. In addition, Magney (1999) has prepared a list of rare California lichens, on behalf of the California Lichen Society, which is also referenced to identify potential special-status lichen species of California.

Since no federally or state listed lichens occur in California, and the lichen flora diversity throughout the project site is of low species richness, specific surveys for special-status lichen species were not conducted for this project. Although it is unlikely that any special-status lichen species exist onsite, five (5) special-status species of lichen are known to occur in the region of the project site. The five special-status lichen species are summarized below in Table 9, Special-Status Lichens Potentially in the Vasquez Water Main Project Area. This table is a compilation of rare lichens known to occur in Los Angeles County (Magney 1999). Table 9 includes scientific and common names, species status (Magney 1999 [status assigned according to the CNDDDB Global- and State-Ranking System]), habitat requirements, and likelihood of occurrence (Unlikely and Highly Unlikely).

Special-Status Habitats

Special-status habitat types include plant communities that are considered sensitive because they exhibit a limited distribution, have high wildlife value, contain sensitive species, or are particularly susceptible to disturbance. Special-status habitat types are typically threatened by urbanization and are continually negatively influenced by human activities. The database search (CDFG 2002) and field surveys resulted in twelve (12) sensitive/rare habitat types known or expected to occur in the vicinity of the project site. The sensitive riparian habitat observed along the Mint Canyon Creek portion of the project site is Southern Cottonwood Willow Riparian Forest (CDFG 2002). The observed sensitive habitat is discussed in detail following Table 10, Sensitive Habitats in the Vasquez Water Main Project Area. Table 10 (following page) summarizes the database search and field surveys, includes the CNDDDB Global- and State-Rank, and indicates whether or not each plant community was observed within the project site boundaries.



Table 9. Special-Status Lichens Potentially in the Vasquez Water Main Project Area

Scientific Name	Common Name ¹¹	Status: CALS ¹²	Preferred Habitat	Likelihood of Occurrence ¹³
<i>Phaeophyscia decolor</i>	Brown Blister Lichen	G2, S2.3	Oak trees	Unlikely
<i>Phaeophyscia kairomoi</i>	Kairomo Brown Rock Lichen	G2, S2.3	Rock outcrops	Highly Unlikely
<i>Teloschistes exilis</i>	Shore Lichen	G3, S3.3	Oak trees	Unlikely
<i>Teloschistes flavicans</i>	Yellow Shore Lichen	G3, S3.3	Shrubs, trees	Highly Unlikely
<i>Toninia submexicana</i>	Toninia Lichen	G4, S1.2	Basalt, serpentine surfaces	Highly Unlikely

Table 10. Sensitive Habitats in the Vasquez Water Main Project Area

Name of Sensitive Habitat Types (Holland 1986)		CNDDDB Status ¹⁴	Observed Onsite?
1	California Walnut Woodland	G2, S 2.1	No
2	Mainland Cherry Forest	G1, S1.1	No
3	Riversidian Alluvial Fan Sage Scrub	G1, S1.1	No
4	Southern California Arroyo Chub/Santa Ana Sucker Stream	G?, S?	No
5	Southern California Threespine Stickleback Stream	G?, S?	No
6	Southern Coast Live Oak Riparian Forest	G4, S4	No
7	Southern Mixed Riparian Forest	G2, S2.1	No
8	Southern Cottonwood Willow Riparian Forest	G3, S3.2	Yes
9	Southern Riparian Scrub	G4, S4	No
10	Southern Willow Scrub	G3, S2.1	No
11	Southern Sycamore Alder Riparian Woodland	G4, S4	No
12	Valley Oak Woodland	G3, S2.1	No

The special-status habitat type observed onsite is Southern Cottonwood Willow Riparian Forest. Although the habitat along the banks of Mint Canyon Creek is co-dominated by cottonwood and willow, it should be noted that the cottonwoods are not as dense as what is described for this habitat type (Holland 1986). For example, the cottonwood canopy onsite forms more of a woodland type habitat than a forest type habitat.

The Southern Cottonwood Willow Riparian Forest observed onsite is similar to other sensitive habitats, such as Southern Willow Scrub, Southern Riparian Scrub, and Southern Mixed Riparian Forest (CDFG 2002), because they share many similar plant species (willows, cottonwoods, Mulefat, California Sycamore, and several intergrading annual and perennial riparian herbs). Southern Cottonwood Willow Riparian Forest is described briefly below as a special-status habitat type, but is also described above in detail as Palustrine Forested Wetland, or Fremont Cottonwood-Arroyo Willow Series in the Botanical Resources section.

¹¹ Common names are devised here, as most lichens have not been assigned vernacular names.

¹² CALS = California Lichen Society (Magney 1999). See Table 7 in the Definitions subsection (above) for definitions of the CNDDDB Global- and State-Ranking System.

¹³ Likelihood of occurrence determinations are based on CALS's *Preliminary List of Rare California Lichens* (Magney 1999), and best professional judgment.

¹⁴ See Table 7 in the Definitions subsection (above) for definitions of the CNDDDB Global- and State-Ranking System.



SOUTHERN COTTONWOOD WILLOW RIPARIAN FOREST

<i>Federal</i>	<i>State / CNDDDB</i>	<i>CNPS</i>
None	None / G3, S3.2	Not Applicable

The Southern Cottonwood Willow Riparian Forest onsite forms a tall, open, broad-leaved, winter-deciduous, riparian canopy dominated by *Populus fremontii* (Freemont Cottonwood), and several tree willows (*Salix lasiolepis*, *S. lucida* ssp. *lasiandra*, and *S. exigua*) (see Photograph 2). The shrub stratum is composed of shrubby species of willows and Mulefat (patches of Southern Riparian Scrub and Southern Willow Scrub). The herb layer may include a mixture of hydrophytic and upland annual and perennial herbs, including many hearty introduced species as well. Required site factors include lands along rivers and streams that are sub-irrigated and frequently overflowed. The dominant plant species require moist, bare, mineral soil for germination and establishment. These soil conditions are typically provided after floodwaters recede, leading to uniform-aged stands in this seral type. Southern Cottonwood Willow Riparian Forest occurs along wet stream reaches of the Transverse and Peninsular ranges, from Santa Barbara County, south to Baja California Norte, and east to the edge of the deserts. (Holland 1986.)

Special-Status Wildlife Resources

Database searches revealed a total of twenty-eight (28) special-status wildlife species with the potential to, or that are known to occur in the vicinity of the Vasquez Water Main project site and surrounding areas (CDFG 2002). No federally or state listed wildlife species were observed during the project site survey; however, one special-status wildlife species, *Phrynosoma coronatum blainvillei* (San Diego Horned Lizard [CDFG California Special Concern and Forest Service Sensitive]), was observed in the Mint Canyon Creek portion of the Vasquez Water Main project site. Two colonies of a red ant species were observed onsite, and their presence also indicates appropriate habitat and a significant food base, for San Diego Horned Lizard. This special-status wildlife species is described in detail following Table 11, Special-Status Wildlife Species Potentially Occurring at the Vasquez Water Main Project Site.

Table 11 provides the scientific and common names of special-status wildlife species known to occur within the vicinity of the project site, it gives the species status (federal, state, and CNDDDB), likeliness to occur onsite (Observed [during the DMEC biological survey], Possible, and Unlikely), and habitat requirements of each sensitive species with potential to inhabit the area.

Not including the one special-status species observed onsite, eleven (11) special-status wildlife species, known to occur in the vicinity of the project site, have a greater potential of inhabiting or frequenting the project site (or the likelihood of their occurrence is *possible*). The higher likelihood of these species is based on the presence of suitable habitat requirements within the project site, especially in the vicinity of the Mint Canyon Creek portion of the project site. For example, these special-status wildlife species require soils, climate, altitude, and riparian scrub and woodland habitats consistent with the conditions and plant communities that are present onsite.

A one-time day and night survey was conducted for the Arroyo Toad. This survey was conducted in accordance with US Fish and Wildlife Service-approved survey protocol methods. The results of this one-time survey produced no Arroyo Toads. This is inconclusive, since a complete survey protocol time sequence was not conducted. This area supports habitat marginally acceptable for this species.

Table 11. Special-Status Wildlife Species Potentially Occurring at the Vasquez Water Main Project Site

Scientific Name	Common Name	Status: Fed./State/CNDDDB ¹⁵	Preferred Habitat ¹⁶	Likelihood of Occurrence ¹⁷
<i>Anniella pulchra pulchra</i>	Silvery Legless Lizard	FSC/-/G4QT3, S3	Sandy or loose loamy soils under sparse vegetation	Possible
<i>Bufo californicus</i>	Arroyo Toad	E/-/G2G3, S2S3	Semi-arid washes, intermittent streams, foothill/desert Rip areas	Possible
<i>Catostomus santaanae</i>	Santa Ana Sucker	T/-/G1, S1	Endemic to LA Basin; southern coastal streams	Unlikely
<i>Clemmys marmorata pallida</i>	Southwestern Pond Turtle	FSC/-/G4T2T3, S2	Permanent or nearly permanent bodies of water in many habitat types; <6,000 ft. in elevation	Unlikely
<i>Cnemidophorus hyperythrus</i>	Orange-throated Whiptail	-/-/G5, S2	Low elevation CSS, chaparral, and Valley Foothill Hardwood habitats	Unlikely
<i>Coccyzus americanus occidentalis</i> (nesting)	Western Yellow-billed Cuckoo	FC/E/G5T3, S1	Riparian Forest, nested along the broad lower flood-bottoms of larger river systems	Unlikely
<i>Danaus plexippus</i>	Monarch Butterfly	-/-/G4, S3	Winter roost sites extend along coast from northern Mendocino to Baja California, Mexico	Possible
<i>Gasterosteus aculeatus williamsoni</i>	Unarmored Threespine Stickleback	E/E/G5T1, S1	Weedy pools, backwaters, emergent vegetation, small stream edges	Unlikely
<i>Gila orcutti</i>	Arroyo Chub	-/-/G2, S2	LA Basin; southern coastal streams	Unlikely
<i>Gymnogyps californianus</i>	California Condor	E/E/G1, S1	Require vast expanses of open savannah, grassland, foothill chap; mountains of moderate altitude	Possible
<i>Lepus californicus bennettii</i>	San Diego Black-tailed Jackrabbit	-/-/G5T3?, S3?	Intermediate canopy stages of shrub habitats, open shrub/herbaceous edges, and tree/herbaceous edges	Possible
<i>Neotoma lepida intermedia</i>	San Diego Desert Woodrat	-/-/G5T3T4, S3S4	Coastal southern California from San Diego County to SLO County	Possible
<i>Oncorhynchus mykiss irideus</i>	Southern Steelhead-Southern California ESU (Ecological Significant Unit)	E/-/G5T2, S2	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek, San Diego County)	Unlikely
<i>Phrynosoma coronatum blainvillei</i>	San Diego Horned Lizard	-/-/G4T3T4, S2S3	Coastal Sage Scrub, chaparral, arid and semi-arid climates	Observed
<i>Poliophtila californica</i>	Coastal California Gnatcatcher	T/-/G4T2T3, S2S3	Obligate, permanent resident of CSS below 2,500 feet; SoCal	Unlikely

¹⁵ See Tables 4 and 7 for definitions of legal status and CNDDDB rarity rankings: E=listed Endangered; FC=Federal Candidate; FSC=Federal Species of Concern; PE=proposed Endangered; T=listed Threatened.

¹⁶ Definitions of abbreviations: Co. = County; CSS = Coastal Sage Scrub; Chap = chaparral; Rip = riparian; LA = Los Angeles; pops = populations; SLO = San Luis Obispo; SoCal = southern California; Veg = vegetation; Wld = woodland.

¹⁷ Likelihood of occurrence is based on a CNDDDB (CDFG 2002) search, regional occurrences not tracked by CNDDDB, and best professional judgment.

Scientific Name	Common Name	Status: Fed./State/CNDDB ¹⁵	Preferred Habitat ¹⁶	Likelihood of Occurrence ¹⁷
<i>Rana aurora draytonii</i>	California Red-legged Frog	T/-/G4T2T3, S2S3	Lowlands and foothills in/near permanent deepwater sources w/ dense, shrubby/emergent Rip Veg	Possible
<i>Rana muscosa</i>	Mountain Yellow-legged Frog	PE/-/G5, S2S3	Proposed Federal Listing refers to pops in the San Gabriel, Jacinto, & San Bernardino Mountains only	Possible
<i>Rhinichthys osculus</i> ssp. 3	Santa Ana Speckled Dace	-/-/G5T1, S1	Headwaters of the Santa Ana and Gabriel Rivers; may be extirpated from the LA River system	Unlikely
<i>Scaphiopus hammondii</i>	Western Spadefoot	FSC/-/G3?, S3	Primarily in grassland habitats, also in Valley Foothill Hardwood Wld; mapped in Mint Canyon Quad by CNDDB (CDFG 2002)	Possible
<i>Thamnophis hammondii</i>	Two-striped Garter Snake	-/-/G2G3, S2	Coastal California from vicinity of Salinas to NW Baja California; mapped in Mint Canyon Quad by CNDDB (CDFG 2002)	Possible
<i>Vireo bellii pusillus</i> (nesting)	Least Bells Vireo	E/E/G5T2, S2	SoCal summer resident; low Rip growth near water or in dry river bottoms; <2,000 ft. in elevation.	Possible

No raptor nests were located in the project site; however, a Red-tailed Hawk was heard in the project site vicinity. No bird nests of any kind were observed onsite.

SAN DIEGO HORNED LIZARD (*PHRYNOSOMA CORONATUM BLAINVILLEI*)

STATUS			
Federal	State	CNDDB	Other
None	None	G4T3T4, S2S3	CDFG: California Special Concern; Protected (Full Species) Forest Service: Sensitive

San Diego Horned Lizard is 6.2-10 cm long (2.5-4 inches). General coloration is yellowish, brown, reddish, or gray, and it has a pair of dark blotches on its neck. Like other horned lizards (“horny toads”), the San Diego Horned Lizard is armed with dagger-like head spines (“horns”) and sharp scales on its back. The number of rows of spines on each side of its body (2 rows) and throat (2-3 rows) helps distinguish this lizard from related subspecies. Horned lizards are usually solitary. They often sit still when approached, and blend in very well with the ground; as a result, they are often difficult to see. The horned lizard diet consists mostly of ants and other insects. Females lay a clutch of 6-21 eggs between April and June. San Diego Horned Lizard belongs to the iguana family (Iguanidae).

San Diego Horned Lizard inhabits open chaparral and Coastal Sage Scrub habitats and open-canopy riparian woodlands that cross scrub habitats. It occurs mostly on sandy or friable substrates along the coastal slope of southern California. Habitat destruction and fragmentation are responsible for the continuing decline of this subspecies. It has been collected in arid upland habitats around Ojai, in the Santa Clara River Valley, and in the Santa Paula Creek and Sespe Creek drainages (Hunt 1995), which are west of the project site. Suitable habitat exists on the sandy substrate associated with the areas dominated by open riparian vegetation and adjacent scrub habitat that occur throughout the project site.

SECTION III. IMPACT ASSESSMENT AND RECOMMENDATIONS

This section provides an assessment of potential project-related impacts on the biological resources of the project site. For all significant adverse impacts that the project is expected to have on these resources, DMEC provides recommendations to avoid, minimize, or mitigate the impacts to less-than-significant levels.

DMEC botanists and biologists assessed the potential impacts, which may result from the NCWD water main installment project. The impact assessment is based primarily on best professional judgment, a search of referenced sources, and DMEC's experience with, and knowledge of, the habitats and requirements of the plant and animal species in the vicinity of the project site. The impact assessment was also performed by directly observing the resources existing prior to water main construction, and predicting potential impacts in order to implement measures to avoid and minimize those potential impacts to a maximum extent.

DMEC biologists referenced several sources to quantify project site floristics and habitats - including Boyd (1999), Sawyer and Keeler-Wolf (1995), Hickman (1993), and Holland (1986), Munz (1974) - and they followed specific wildlife survey guidelines for Arroyo Toad habitat (USFW 2000). DMEC considered all physical attributes contributing to the integrity of the project site biological resources in order to understand what resource attributes may be affected by construction activities.

The biological resources onsite may be impacted by several general factors or mechanisms due to work performed by heavy equipment, including soil integrity degradation (i.e. increased erosion, soil compaction, sedimentation, and turbidity levels); vegetation damage, including sensitive/rare habitats; a temporary decrease in or alteration of habitat (quality) for plants and wildlife that might otherwise become established or frequent the area's habitats; noise and air pollution; and the potential for temporary or permanent damage or loss to wildlife and plant species, including special-status species.

Each of these potential impacts to the plants, wildlife, and habitats that may result from NCWD project construction contribute to the cumulative adverse affects of impacts to the total biological resources in the vicinity of the water main project and in the general region (Los Angeles County); however, not all of these impacts are considered significant impacts. If these impacts are determined to be significant, monitoring and/or mitigation measures are recommended to be implemented to prevent and/or reduce potential impacts to less than significant levels.

Each of these identified potential impacts to the biological resources onsite are discussed further in the following subsections. Impacts are assessed for direct, indirect, and cumulative resource losses for the botanical and wildlife resources onsite. Compensation measures are recommended for any significant adverse impacts resulting from the subject project.

IMPACTS TO BOTANICAL RESOURCES

The riparian vegetation onsite provides functional habitat for a number of plant and wildlife species. For example, riparian habitat is used for nesting and foraging sources for several species of birds, as well as cover and foraging habitat for small and large mammals, some of which may use the site as a movement corridor where the site vegetation provides cover from predators.

Impacts to botanical resources include permanent and temporary loss of, or damage to, plants at the project site, including the potential to impact special-status plant species and sensitive habitats. No significant

impacts to plant species of special status are expected to result from the water main construction work; however, damage or loss of any native, naturally occurring vegetation ultimately contributes to the degradation of a regions' species diversity and ecological integrity.

The identified impacts to the botanical resources, as a result of constructing the water main, include the following and are discussed in detail in the following paragraphs:

1. Potential impacts to *expected special-status plant species* known to occur in the vicinity of, or that may be inhabiting, the project site; and
2. Temporary damage to or loss of Palustrine riparian vegetation contributing to the existing functional Southern Cottonwood Willow Riparian Forest, a *sensitive riparian habitat*.

Impacts to Expected Special-Status Plant Species

While no special-status plant species were observed within the Vasquez Water Main project site, several special-status plant species are expected and known in the vicinity of the project site (as discussed above in the Special-Status Species section), which may contribute to the overall diversity of the region. Therefore, there is potential to impact special-status plant species, which may not have been in bloom and were therefore unidentifiable during the timing of the biological resources impact assessment.

Recommendations for Impacts to Expected Special-Status Plant Species

Depending on the timing of the water main construction in Mint Canyon Creek, supplemental field surveys for special-status plant species may be warranted. If the water main is not constructed until late winter, a botanical field survey should be conducted in late March to determine if any early flowering special-status plant species occur onsite. If the water main is constructed prior to March (i.e. Fall or Winter), a botanist should monitor all construction activities during work through and immediately adjacent to Mint Canyon Creek to ensure that sensitive botanical resources are not inadvertently impacted. In addition, the bounds of the work area should be fenced temporarily to clearly delineate where construction workers and equipment are, and are not, allowed. Although there is potential to impact special-status plant species onsite, the likelihood that any special-status plants will be affected by construction activities is low, especially considering the relatively disturbed nature of the project site and the limited area that will be disturbed.

Impacts to Sensitive Riparian Habitat

The special-status Palustrine habitat observed onsite, Southern Cottonwood Willow Riparian Forest, consists of a moderately diverse flora and currently forms a stratified canopy and a functional riparian corridor. This riparian vegetation provides suitable and functional habitat for foraging, nesting, and migrating wildlife onsite. Some of the riparian trees (especially *Salix lasiolepis*, *Baccharis salicifolia*, *Populus fremontii*, and *Sambucus mexicana*) along the channel banks of the project site creek portion will need to be pruned, cut back, and/or removed in order to create access for the water main construction across the channel. Although these riparian plant species are adapted to frequent natural environmental stresses, and most are able to resprout after being broken or cut, the temporary alteration or removal of one or more of these tree species in a concentrated area will cause temporary fragmentation of an otherwise functional riparian habitat depended upon by many species of wildlife, including several expected special-status wildlife species.

Southern Cottonwood Willow Riparian Forest is a sensitive habitat since this plant community, in general, is subjected to continual negative influences by humans. Its status is primarily due to depletion by residential and commercial development, including flood control measures for such urban development. It is this combination of its rapid depletion, and dependency by wildlife, that makes this habitat, and other sensitive plant communities, subject to strict protection and mitigation measures.

Direct impacts to wetland and riparian habitats are partially or wholly regulated by the Corps and/or CDFG pursuant to Section 404 of the Clean Water Act and Section 1600 et seq. of the California Fish and Game Code, respectively. Since over 90 percent of riparian wetland habitats have been lost in California over the last 200 years, the loss of, or damage to, riparian trees and shrubs that contribute to a special-status habitat type is considered a significant direct and cumulative impact, directly and indirectly negatively affecting wildlife inhabiting it.

The water main construction activities, associated with the NCWD Vasquez Water Main project and to be conducted at Mint Canyon Creek (an approximate 0.27-acre project site area), may substantially adversely affect existing biological resources of the project site and will result in the loss of or disturbance to a total of approximately 0.11 acre of the sensitive Forested Wetland. Although this number represents only a small portion of the creek to be impacted, all impacts should be minimized to the maximum extent possible, such as keeping the area of impact as small as possible. Impacts resulting from project construction activities within the sensitive riparian zone should also be compensated for by implementing specific mitigation measures (restoration).

Recommendations for Impacts to Sensitive Riparian Habitat

DMEC understands that it is necessary to install the water main under Mint Canyon Creek; therefore, NCWD must enter the creek, resulting in at least temporary disturbance to the existing riparian vegetation. Impacts to the sensitive Southern Cottonwood Willow Riparian Forest onsite can be minimized to the maximum extent possible by implementing the following measures:

- Ensuring that construction equipment only cut back or cut down what is absolutely necessary for water main and construction equipment access;
- All construction activities, within the banks of Mint Canyon Creek, should be conducted during seasons of no, or minimal, channel flows (summer/early fall);
- A pipeline path through the creek channel should be selected that minimizes impacts to the existing riparian vegetation;
- A fence should be placed around any (mature) trees, which are less efficiently replaced by mitigation/restoration efforts;
- All wildlife nests existing within the project site riparian vegetation should be protected and avoided by construction equipment; and
- A biological monitor should be present during all construction activities within Mint Canyon Creek.
- If work must be conducted when surface water flows are present, specific actions should be taken to avoid increasing water turbidity downstream. Surface water flows should be diverted around all construction activities and no equipment should be allowed to actively work in flowing water without sedimentation and turbidity control measures in place. These control measures are described in detail in the *Wetland Mitigation Plan and Monitoring Program for the Newhall County Water District Vasquez Water Main Project* (DMEC 2003b).

After efforts to minimize the impacts to the riparian vegetation are implemented, NCWD should restore the project site to pre-construction habitat conditions. This can be accomplished by implementing several mitigation measures, including the following (these measures are also described in detail in the wetland mitigation plan and monitoring program report [DMEC 2003b]):

- Regrading the project site to accommodate onsite revegetation and to accomplish natural sinuosity of the creek channel;
- Replacing and planting selected portions of the site with indigenous riparian plant species;
- Maintaining and irrigating the restored area;
- Removing invasive exotic plants, such as Tocalote (*Centaurea melitensis*), and replacing them with native species to increase species diversity and habitat function; and
- Monitoring the site for at least five (5) years after restoration plantings have been completed.

To compensate for the temporal loss of riparian habitat, the mitigation should be conducted at a ratio of 3:1. Suitable additional area for 3:1 mitigation is available immediately upstream from the pipeline-crossing site where habitat restoration and enhancement can be implemented to meet mitigation requirements. This mitigation measure is also described in the wetland mitigation plan and monitoring program report (DMEC 2003b).

IMPACTS TO WILDLIFE RESOURCES

The identified potential impacts to the wildlife resources, as a result of constructing the Vasquez Water Main, include the following:

1. Permanent loss of, or temporary impacts to, all *wildlife species*, due to the use of heavy equipment and temporary streambed alteration at the project site, such as:
 - Loss of, or harm to, observed and expected terrestrial wildlife, including disturbance of breeding and nesting activities of various songbirds and fall migratory birds depending on the timing of construction;
 - Loss of, or harm to, expected aquatic wildlife species; and
 - Loss of, or harm to, the San Diego Horned Lizard (*Phrynosoma coronatum blainvillei*) and other expected special-status wildlife; and
2. Permanent or temporary impacts to wildlife species due to permanent loss of, or temporary alteration of, functional wildlife habitat, including:
 - The potential to impact sensitive riparian plant communities providing qualitative and functional wildlife habitat;
 - Temporary or long-term alteration of Riverine habitat; and
 - Temporary loss of foraging and cover habitats and temporary reductions in food sources for aquatic, semi-aquatic, and terrestrial wildlife (including special-status) species.

Impacts to Special-Status Wildlife Species

Temporary harm to, or permanent loss of, any special-status wildlife species is considered a significant impact; therefore, all potential impacts to the special-status species, San Diego Horned Lizard (*Phrynosoma*

coronatum blainvillei), which was observed during wildlife surveys onsite, should be avoided and minimized to the maximum extent possible. This water main installment project may contribute to this species' habitat destruction and fragmentation, which are ultimately responsible for the continuing decline of this reptile.

Two additional expected special-status wildlife species, known to occur in the vicinity of the project site, have a higher likelihood of inhabiting or frequenting the project site, including Arroyo Toad and Two-striped Garter Snake. These species require riparian scrub and riparian woodland habitats consistent with the Palustrine plant community present onsite. Impacts to these or any other special-status wildlife species is considered a significant impact; however, the potential for impacting these species is low considering the relatively degraded condition of the riparian vegetation present onsite. Project-related impacts to the habitat for these special-status species would be temporary and mitigable.

Recommendations for Impacts to Special-Status Wildlife Species

Since potential for negative impacts to San Diego Horned Lizard exists at the project site, all areas with suitable habitat, especially the immediate area in which the lizard was observed, should be flagged or fenced off. In addition, the equipment operators should be informed of this species presence and its identification traits in order to aid in avoiding impacts to this species to the maximum extent possible (see the Observed Special-status Wildlife Species subsection above for a detailed physical description of the San Diego Horned Lizard).

To avoid impacts to all special-status wildlife species observed and expected onsite, equipment operators should avoid contact with or harm to any special-status species and any of their sources of cover (nest, midden, hole, etc.). If a special-status species is discovered or encountered during construction activities, animals should be allowed the chance to escape any danger that may result from construction work, and the onsite biological monitor should be notified in order to implement all measures necessary to protect the sensitive species. Again, having a biological monitor onsite during construction activities is often the best means for minimizing impacts to special-status species to the greatest extent possible, handling trapped or harmed wildlife, and documenting permanent or temporary losses requiring mitigation measures.

All existing habitat for the San Diego Horned Lizard should be replaced onsite in-kind after all water main installation activities have been completed. Implementation of the proposed habitat mitigation plan (DMEC 2003b) should result in full restoration of the San Diego Horned Lizard habitat onsite.

Impacts to Terrestrial Wildlife Species

While significant impacts to the project site wildlife are not expected, the potential for temporary harm to, or permanent loss of, observed and expected terrestrial wildlife within the NCWD project area still exists, especially with use of heavy equipment during water main construction. For example, wildlife inhabiting areas below ground (rabbits, squirrels, snakes), amongst rocks (lizards, snakes, invertebrates), within fallen or deposited vegetation (mice, Pacific Kangaroo Rat, Virginia Opossum, Dusky-footed Woodrat, rabbits, invertebrates), or amongst the riparian canopy (invertebrates and predacious, migratory, or nesting birds), may be harmed or lost due to vegetation clearing and creek channel trenching activities associated with the use of heavy equipment. Such construction activities produce air and noise pollution, and it causes damage to riparian vegetation (tree) by trimming/removal, earth excavation, soil backfilling, and soil compaction.

Recommendations for Impacts to Terrestrial Wildlife Species

To minimize impacts to terrestrial wildlife species observed and expected onsite, equipment operators are encouraged to avoid contact with or harm to any dens, middens, nests, etc. If nests, middens, or any other source of cover is discovered during construction activities, the nest should be flagged or fenced off as a protection measure. If wildlife is observed during construction activities, DMEC recommends that animals be allowed the chance to escape any danger that may result from construction activities. In addition, having a biological monitor onsite during construction activities is often the best means for (1) minimizing impacts to the area's wildlife (including special-status species) to the greatest extent possible, especially in the active channel and riparian vegetation; (2) handling trapped or harmed wildlife; and (3) documenting any permanent or temporary losses that require mitigation measures.

Impacts to Aquatic Wildlife Species

Aquatic wildlife are not present onsite for most of the year; however, these resources may be present when water is flowing in Mint Canyon Creek during the winter and early spring months. The potential for temporary harm to, or permanent loss of, aquatic wildlife species will remain low as long as NCWD implements measures to prevent discharge or disturbance to the active stream channel to the maximum extent possible. However, even temporary streambed alterations and filling by heavy equipment, in an active stream channel, creates potential for increased erosion, sedimentation, and water turbidity levels, and it reduces the ecological integrity of an otherwise functional Riverine habitat.

Recommendations for Impacts to Aquatic Wildlife Species

An important measure to minimize impacts to expected aquatic species inhabiting the project site is to ensure that the water main construction and installment will be conducted during times/seasons of no active channel flows. If construction activities are absolutely necessary at times when stream flows are present, then the same recommendations listed below in the Impacts to Riverine Habitat subsection should be implemented to reduce impacts as much as possible.

Impacts to Riverine Habitat

The function of Riverine habitats is largely dependent upon the maintenance of natural channel morphology and native plant communities, both of which will be temporarily altered by the water main project. Thus, the completion of the proposed project will have temporary negative effects on the overall ecosystem function of the Mint Canyon Creek portion of the project site and the associated riparian areas (an approximate 0.27-acre site), and will result in the loss of, or disturbance to, approximately 0.02 acre of Riverine habitat.

The potential for impacts to aquatic wildlife species inhabiting the Riverine habitat onsite may increase in significance if project construction is conducted during seasons of peak channel flows. If construction activities are performed in the presence of active flows, several additional issues - including soil compaction, new channel morphology, potential for increased channel sedimentation and deposition, increased water turbidity levels, and increased erosion due to unstable bank soils - need to be addressed in order to ensure that the Mint Canyon Creek Riverine System remains intact and sustainable after water main construction activities have ceased.

Recommendations for Impacts to Riverine Habitat

In order to minimize impacts to aquatic wildlife due to alteration of the Riverine habitat onsite, DMEC recommends that the water main construction and installment be conducted during times of no active channel flows.

However, if water main construction must be conducted while active flows are present within the Riverine system, NCWD should implement these measures to minimize impacts:

- Equipment contact with the active channel should be minimized to a maximum extent;
- Flows should be diverted from the work area;
- Sedimentation barriers should be installed and maintained;
- Arising groundwater should be allowed to settle behind a downstream diversion berm prior to discharge to the primary flow channel;
- Turbidity levels should be monitored and minimized (kept below a 20 percent increase over background turbidity); and
- All foreign materials and litter should be removed from the channel.

Impacts to Foraging and Cover Habitats

When functional wildlife habitat, consisting of ample foraging and cover resources, is degraded or negatively impacted, a temporary reduction in various food sources for aquatic, semi-aquatic, and terrestrial wildlife species typically follows. For example, stream channel disturbances - such as changes in channel morphology, filling of channel materials, surface water quality degradation (increased siltation, turbidity levels, and sedimentation), and removal of mature native vegetation within the water column of Riverine habitats - may result in short-term reductions of aquatic invertebrates, which are a valuable food source for many wildlife species. Furthermore, damaging or clearing plants contributing to a functional wildlife habitat will result in a shortage of cover, nesting, and breeding resources vital for several wildlife species' survival. Therefore, impacts to foraging and cover habitats, contributing to the function of a region's ecosystem, should be minimized and avoided as much as possible.

Recommendations for Impacts to Foraging and Cover Habitats

Impacts to foraging and cover habitats depended on by wildlife species of the project site may be minimized by similar recommendations as listed above in the Terrestrial Wildlife Species subsection: (1) keep habitat impacts to only those areas absolutely required for the water main installation; (2) avoid contact or harm to any dens, middens, and nests; (3) allow any wildlife observed during construction activities the chance to escape any danger; and (4) have a biological monitor onsite during construction activities to help prevent harm to wildlife and to document impacts that require mitigation.

SECTION IV. ACKNOWLEDGEMENTS

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The aerial photograph used for Figure 2 was provided courtesy of Mary Cook of AirPhotoUSA.

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SECTION V. CITATIONS

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