

Carmel Mountain Road rut 26 looking north

3.2.3 Mira Mesa

Eleven sites occur on Mira Mesa, remnants of the extensive vernal pool complexes that historically covered the mesa: Mesa Norte, Tierra Alta, Lopez Ridge, Crescent Heights, Fieldstone, Winterwood, Mira Mesa Market Center, Maddox, Parkdale Carroll Canyon, Carroll Canyon Preserve and Arjons. **3.2.3.a** Mesa Norte (B 11) is a mitigation site in northwestern Mira Mesa on Prairie Wood Drive. Forty-five vernal pools, totalling 25,298 square feet, were created or restored on this 5-acre site in 1998. Prior to restoration, this site was utilized as a BMX track; however, this privately owned site is now conserved and fenced. *E. aristulatum* covered approximately 186 square feet in 10 basins and *P. abramsii* covered approximately 296 square feet in 13 basins. *B. sandiegonensis* were observed in 25 vernal pools. *H. regilla* were observed in 14 vernal pools and unidenitifed tadpoles in 12 vernal pools. The Bauder report (1986) found *E. aristulatum*, *M. minimus*, and *P. abramsii* at B 11-13. Vernal pool indicator species and fairy shrimp observed at this site are listed in Table 10. Mesa Norte is located on map 274-1713 in Appendix C.

Table 10 Mesa Norte Presence of Vernal Pool Indicator Species			
Callitriche marginata	•	Myosurus minimus	
Crassula aquatica	•	Navarretia fossalis	
Deschampsia danthoniodes	•	Orcuttia californica	
Downingia cuspidata	•	Phalaris lemmonii	•
Elatine californica	•	Phalaris spp.	

Table 10, con't Mesa Norte				
Presence of	Vernal	Pool Indicator Species		
Epilobium pygmaeum		Pilularia americana	•	
Eryngium aristulatum	•	Pilularia spp.		
Isoetes howellii		Plagiobothrys acanthocarpus	•	
Isoetes orcuttii		Plantago elongata	•	
Isoetes spp.		Plantago spp.		
Lilaea scilloides	•	Pogogyne abramsii	•	
Marsilea vestita		Pogogyne nudiuscula		
Malvella leprosa		Psilocarphus brevissimus	•	
Branchinecta spp.	•	Branchinecta sandiegonensis	•	
Branchinecta lindahli		Streptocephalus woottoni		



Mesa Norte Vernal pool 5 looking south

3.2.3.b A single vernal pool is preserved at the Tierra Alta site (B 5-6), located north of Lopez Ridge Park. The 0.1-acre parcel is owned and maintained by the adjacent homeowner's association. No sensitive species were observed within the 241 square feet of vernal pool basin. Bauder (1986) noted *M. minimus* and *P. abramsii* at nearby B 5-6, but the Tierra Alta pool does not appear to have been included in previous surveys. Vernal pool indicator species and fairy shrimp observed at this site are listed in Table 11. This site is located on map 274-1713 in Appendix C.

Table 11 Tierra Alta				
Presence of Ve	ernal	Pool Indicator Species		
Callitriche marginata		Myosurus minimus		
Crassula aquatica	•	Navarretia fossalis		
Deschampsia danthoniodes		Orcuttia californica		
Downingia cuspidata		Phalaris lemmonii		
Elatine californica		Phalaris spp.		
Epilobium pygmaeum		Pilularia americana		
Eryngium aristulatum		Pilularia spp.		
Isoetes howellii		Plagiobothrys acanthocarpus	•	
Isoetes orcuttii		Plantago elongata		
Isoetes spp.		Plantago spp.	•	
Lilaea scilloides		Pogogyne abramsii		
Marsilea vestita		Pogogyne nudiuscula		
Malvella leprosa		Psilocarphus brevissimus		
Branchinecta spp.		Branchinecta sandiegonensis		
Branchinecta lindahli		Streptocephalus woottoni		

3.2.3.c The Lopez Ridge vernal pool preserve (B 5-8) is a 5.6-acre parcel bounded by Los Peñasquitos Canyon Preserve to the north and Calle Cristobal to the south. An additional vernal pool on a nearby 6.8-acre parcel is also included. The mitigation site is owned by the City of San Diego and includes 13 vernal pool basins covering 20,868 square feet. Lopez Ridge was the site of unauthorized impacts and subsequent restoration, including fencing. All of the basins support *P. abramsii* (covering a total of 395 square feet) while a single individual of *E. aristulatum* was noted on-site. *M. minimus* and *P. abramsii* were detected at this site in 1986 (Bauder, 1986). Vernal pool indicator species and fairy shrimp noted at this site are listed in Table 12. *B. sandiegonensis* were observed in two basins; this site was not surveyed for amphibians. Lopez Ridge is located on map 274-1713 in Appendix C.

Table 12 Lopez Ridge Presence of Vernal Pool Indicator Species				
Callitriche marginata	•	Myosurus minimus		
Crassula aquatica	•	Navarretia fossalis		
Deschampsia danthoniodes	•	Orcuttia californica		
Downingia cuspidate	•	Phalaris lemmonii		
Elatine californica		Phalaris spp.		
Epilobium pygmaeum		Pilularia americana	•	
Eryngium aristulatum	•	Pilularia spp.		

		12, con't z Ridge	
Presence of	Vernal	Pool Indicator Species	
Isoetes howellii	•	Plagiobothrys acanthocarpus	•
Isoetes orcuttii	•	Plantago elongata	•
Isoetes spp.		Plantago spp.	
Lilaea scilloides	•	Pogogyne abramsii	•
Marsilea vestita		Pogogyne nudiuscula	
Malvella leprosa		Psilocarphus brevissimus	•
Branchinecta spp.	•	Branchinecta sandiegonensis	•
Branchinecta lindahli		Streptocephalus woottoni	



Lopez Ridge Vernal pool 3 looking northeast

3.2.3.d Crescent Heights (B 5-8) borders Peñasquitos Canyon at the intersection of Camino Santa Fe and Calle Cristobal. Seven vernal pools with a total area of 1,837 square feet occur on this 36-acre parcel; the site is privately owned and is not conserved at this time. No rare, threatened, or endangered plant or animal species were observed on-site, and the area was not surveyed for amphibians. *M. minimus* and *P. abramsii* were noted at this series in 1986 (Bauder, 1986). Vernal pool indicator species and fairy shrimp noted at this site are listed in Table 13. Crescent Heights is located on map 274-1713 in Appendix C.

Table 13 Crescent Heights				
Presence of Ve	ernal	Pool Indicator Species		
Callitriche marginata	•	Myosurus minimus		
Crassula aquatica	•	Navarretia fossalis		
Deschampsia danthoniodes	•	Orcuttia californica		
Downingia cuspidata		Phalaris lemmonii		
Elatine californica		Phalaris spp.		
Epilobium pygmaeum		Pilularia americana	•	
Eryngium aristulatum		<i>Pilularia</i> spp.		
Isoetes howellii	•	Plagiobothrys acanthocarpus	•	
Isoetes orcuttii	•	Plantago elongata	•	
Isoetes spp.		Plantago spp.		
Lilaea scilloides	•	Pogogyne abramsii		
Marsilea vestita	•	Pogogyne nudiuscula		
Malvella leprosa	•	Psilocarphus brevissimus	•	
Branchinecta spp.		Branchinecta sandiegonensis		
Branchinecta lindahli		Streptocephalus woottoni		



Crescent Heights Vernal pool 7 looking south

3.2.3.e Nine vernal pools, totaling 13,790 square feet, occur on the 4.3-acre Fieldstone site (C 17-18). This privately owned site, accessed via Sunny Meadow Street in northwestern Mira Mesa, is fenced and conserved. *P. abramsii*, estimated to cover

4,754 square feet, was observed at eight of the nine vernal pools; *P. abramsii* was also observed on-site during the Bauder survey (1986). Vernal pool indicator species and fairy shrimp noted at this site are listed in Table 14. No fairy shrimp or amphibians were observed at this site. Fieldstone is located on map 266-1713 in Appendix C.

Table 14 Fieldstone				
Presence of V	ernal	Pool Indicator Species		
Callitriche marginata	•	Myosurus minimus		
Crassula aquatica	•	Navarretia fossalis		
Deschampsia danthoniodes	•	Orcuttia californica		
Downingia cuspidata	•	Phalaris lemmonii		
Elatine californica		Phalaris spp.		
Epilobium pygmaeum		Pilularia americana	•	
Eryngium aristulatum		Pilularia spp.		
Isoetes howellii	•	Plagiobothrys acanthocarpus	•	
Isoetes orcuttii		Plantago elongata	•	
Isoetes spp.		Plantago spp.		
Lilaea scilloides		Pogogyne abramsii	•	
Marsilea vestita		Pogogyne nudiuscula		
Malvella leprosa		Psilocarphus brevissimus	•	
Branchinecta spp.		Branchinecta sandiegonensis		
Branchinecta lindahli		Streptocephalus woottoni		



Fieldstone Vernal pool 6 looking west

3.2.3.f The Winterwood site (C 10-16) is located off of Parkdale Avenue adjacent to Challenger Middle School. Historic activity in this area includes unauthorized grading and the site is currently fenced on two sides. Sixty-one vernal pools were inventoried on-site. The 20-acre parcel is owned by the City of San Diego and twelve acres of the site are conserved. Forty-six basins (75%) were mapped within the conserved area. Vernal pool basins cover a total of 35,428 square feet, and support populations of *E. aristulatum* and *P. abramsii. E. aristulatum* was observed in seven vernal pools and covers 71 square feet; *P. abramsii* was observed in 27 vernal pools and covers 1,128 square feet. Field records from the Bauder report (1986) note *E. aristulatum* and *P. abramsii* at C 9-16. Vernal pool indicator species and fairy shrimp noted on-site are listed in Table 15. Fairy shrimp (*B. sandiegonensis*) were observed in two basins, while amphibians were not noted at this site. For a map of this site, please refer to 266-1713 in Appendix C.

Table 15 Winterwood Presence of Vernal Pool Indicator Species				
Callitriche marginata	•	Myosurus minimus		
Crassula aquatica	•	Navarretia fossalis		
Deschampsia danthoniodes	•	Orcuttia californica		
Downingia cuspidata	•	Phalaris lemmonii	•	
Elatine californica		Phalaris spp.		
Epilobium pygmaeum		Pilularia americana	•	
Eryngium aristulatum	•	<i>Pilularia</i> spp.		

		15, con't terwood	
Presence of		Pool Indicator Species	
Isoetes howellii		Plagiobothrys acanthocarpus	•
Isoetes orcuttii		Plantago elongata	•
Isoetes spp.	•	Plantago spp.	
Lilaea scilloides	•	Pogogyne abramsii	•
Marsilea vestita		Pogogyne nudiuscula	
Malvella leprosa		Psilocarphus brevissimus	•
Branchinecta spp.	•	Branchinecta sandiegonensis	•
Branchinecta lindahli		Streptocephalus woottoni	



Winterwood Vernal pool 12 looking west

3.2.3.g The only remaining vernal pool of the C 27 series is preserved at the Mira Mesa Market Center site. A small portion of the 17-acre parcel has been fenced to decrease impacts to the basin, which is located on the grounds of a multi-family residential development west of Interstate 15. However, trash has been observed at this restored site. The enhanced basin (2,483 square feet) and the watershed of the vernal pool are conserved. *P. abramsii* was observed in the basin, and covered an estimated 12 square feet. Field surveys conducted during for Bauder report (1986) did not detect any sensitive species at C 27. Vernal pool indicator species and fairy shrimp observed at this site are listed in Table 16. *B. sandiegonensis* were present, but no amphibians were observed at this location. For a map of this site, please refer to 266-1725 in Appendix C.

	Table 16				
Mira Mesa Market Center					
Presence of Ve	rnal	Pool Indicator Species			
Callitriche marginata		Myosurus minimus			
Crassula aquatica	•	Navarretia fossalis			
Deschampsia danthoniodes		Orcuttia californica			
Downingia cuspidate	•	Phalaris lemmonii			
Elatine californica	•	Phalaris spp.			
Epilobium pygmaeum		Pilularia americana	•		
Eryngium aristulatum		Pilularia spp.			
Isoetes howellii	•	Plagiobothrys acanthocarpus			
Isoetes orcuttii		Plantago elongata			
Isoetes spp.		Plantago spp.			
Lilaea scilloides		Pogogyne abramsii	•		
Marsilea vestita		Pogogyne nudiuscula			
Malvella leprosa		Psilocarphus brevissimus	•		
Branchinecta spp.	•	Branchinecta sandiegonensis	•		
Branchinecta lindahli		Streptocephalus woottoni			



Mira Mesa Market Center Vernal pool 1 looking northwest

3.2.3.h* Maddox (C 28) is a 13-acre site owned by the San Diego Unified School

*Maddox site discussion edited 9/10/04 per conversation with USFWS.

District. The 82 vernal pools on-site, covering 42,116 square feet, are not conserved. No sensitive plant species were observed on this site, which is south of Mira Mesa Boulevard along Parkdale Avenue. *Branchinecta* spp. were noted in one basin, *B. sandiegonensis* were noted in two basins, and *S. hammondii* were noted in a single basin. Vernal pool indicator species and fairy shrimp noted on-site are listed in Table 17. For a map of this site, please refer to 266-1713 in Appendix C.

	Table 17 Maddox				
Presence of Ve	ernal	Pool Indicator Species			
Callitriche marginata	•	Myosurus minimus			
Crassula aquatica	•	Navarretia fossalis			
Deschampsia danthoniodes	•	Orcuttia californica			
Downingia cuspidata		Phalaris lemmonii			
Elatine californica		Phalaris spp.			
Epilobium pygmaeum		Pilularia americana			
Eryngium aristulatum		<i>Pilularia</i> spp.			
Isoetes howellii		Plagiobothrys acanthocarpus			
Isoetes orcuttii		Plantago elongata	•		
Isoetes spp.	•	Plantago spp.			
Lilaea scilloides	•	Pogogyne abramsii			
Marsilea vestita		Pogogyne nudiuscula			
Malvella leprosa		Psilocarphus brevissimus	•		
Branchinecta spp.	•	Branchinecta sandiegonensis	•		
Branchinecta lindahli		Streptocephalus woottoni			



Maddox Maddox complex looking west



Maddox Vernal pool 2 looking south

3.2.3.i Parkdale Carroll Canyon (D 5-8) consists of four vernal pools (899 square feet) on the unconserved portion of the adjacent Carroll Canyon vernal pool preserve. The site, located at the southern terminus of Parkdale Avenue, is owned and managed by the City of San Diego and no sensitive species were observed on-site. Vernal pool

indicator species and fairy shrimp present at this site are listed in Table 18. Parkdale Carroll Canyon is located on map 266-1713 in Appendix C.

	Table 18				
	ale Carroll Canyon				
Presence of Vernal Pool Indicator Species					
Callitriche marginata	Myosurus minimus				
Crassula aquatica	Navarretia fossalis				
Deschampsia danthoniodes	Orcuttia californica				
Downingia cuspidata	Phalaris lemmonii				
Elatine californica	Phalaris spp.				
Epilobium pygmaeum	Pilularia americana				
Eryngium aristulatum	<i>Pilularia</i> spp.				
Isoetes howellii	Plagiobothrys acanthocarpus				
Isoetes orcuttii	Plantago elongata				
Isoetes spp.	Plantago spp.				
Lilaea scilloides	Pogogyne abramsii				
Marsilea vestita	Pogogyne nudiuscula				
Malvella leprosa	Psilocarphus brevissimus	•			
Branchinecta spp.	Branchinecta sandiegonensis				
Branchinecta lindahli	Streptocephalus woottoni				

3.2.3.j One hundred nineteen vernal pools occur at the 19-acre Carroll Canyon Preserve site (D 5-8). The basin area of these vernal pools totals 51,712 square feet. This mitigation site is located along the edge of Carroll Canyon and is owned by the City of San Diego. Basins within the Carroll Canyon Vernal Pool Preserve are conserved. This area is fenced but trash has been noted at the site. *E. aristulatum* covers a total of 2,550 square feet in 65 basins, *N. fossalis* covers a total of 9 square feet in one basin, and *P. abramsii* covers a total of 361 square feet in 42 basins. Bauder (1986) noted *E. aristulatum*, *P. abramsii*, and *M. minimus* and recorded 34 basins. Vernal pool indicator species and fairy shrimp observed at this site are listed in Table 19. *Branchinecta* spp. were observed in five vernal pools; and seven basins. Carroll Canyon is located on map 266-1713 in Appendix C.

Table 19					
Carroll Canyon Preserve					
Presence of Vernal Pool Indicator Species					
Callitriche marginata	•	Myosurus minimus			
Crassula aquatica	•	Navarretia fossalis	•		
Deschampsia danthoniodes	•	Orcuttia californica			
Downingia cuspidata	•	Phalaris lemmonii			

Table 19, con't Carroll Canyon Preserve Presence of Vernal Pool Indicator Species					
<i>Elatine californica</i>		Phalaris spp.	•		
Epilobium pygmaeum		Pilularia Americana	•		
Eryngium aristulatum	•	<i>Pilularia</i> spp.			
Isoetes howellii	•	Plagiobothrys acanthocarpus			
Isoetes orcuttii	•	Plantago elongate	•		
Isoetes spp.	•	Plantago spp.			
Lilaea scilloides	•	Pogogyne abramsii	•		
Marsilea vestita		Pogogyne nudiuscula			
Malvella leprosa		Psilocarphus brevissimus	•		
Branchinecta spp.	•	Branchinecta sandiegonensis	•		
Branchinecta lindahli		Streptocephalus woottoni			



Carroll Canyon Vernal pool 74 looking west

(Photo by Scott McMillan, 2001)



Carroll Canyon Vernal pool 5 looking northwest

(Photo by Scott McMillan, 2001)



Carroll Canyon Vernal pool 6

(Photo by Scott McMillan, 2001)

3.2.3.k The Arjons site (I 1) is located south of Carroll Canyon along Arjons Drive; the 8.7-acre parcel is privately owned, fenced, and conserved. This area was the site of unauthorized grading in 1999. Thirty-four vernal pools were mapped on-site, with a total basin area of 31,908 square feet. The site supports populations of *E. aristulatum* and *P. abramsii*: *E. aristulatum* covered at total of 617 square feet at 15 basins and *P*.

abramsii covered a total of 3,569 square feet at 22 basins. These species were also observed by Bauder in 1986. Vernal pool indicator species and fairy shrimp observed at this site are listed in Table 20. Nine vernal pools contained fairy shrimp; *B. sandiegonensis* were conclusively identified in one of these basins. *B. boreas* were observed in two basins and *H. regilla* were observed in three basins. For a map of this site, please refer to 258-1713 in Appendix C.

Table 20				
	A	rjons		
Presence of Vernal Pool Indicator Species				
Callitriche marginata	•	Myosurus minimus		
Crassula aquatica	•	Navarretia fossalis		
Deschampsia danthoniodes	•	Orcuttia californica		
Downingia cuspidata	•	Phalaris lemmonii	•	
Elatine californica	•	Phalaris spp.		
Epilobium pygmaeum		Pilularia americana	•	
Eryngium aristulatum	•	<i>Pilularia</i> spp.		
Isoetes howellii	•	Plagiobothrys acanthocarpus	•	
Isoetes orcuttii	•	Plantago elongata	•	
Isoetes spp.		Plantago spp.		
Lilaea scilloides	•	Pogogyne abramsii	•	
Marsilea vestita		Pogogyne nudiuscula		
Malvella leprosa		Psilocarphus brevissimus	•	
Branchinecta spp.	•	Branchinecta sandiegonensis	•	
Branchinecta lindahli		Streptocephalus woottoni		



Arjons Vernal pool 13 looking southeast

3.2.4 Nobel Drive

The area along the eastern end of Nobel Drive includes five vernal pool sites: Pueblo Lands, Bob Baker, Bob Baker 2, Nobel Research Park, and Nobel Drive. **3.2.4.a** The Pueblo Lands vernal pool site (I 12) is located on a 10.3-acre parcel owned by the City of San Diego that is not conserved at this time. Three road ruts totalling 737 square feet occur on the site, which is located east of I-805 along Eastgate Mall Road. No sensitive plant species were observed on-site; however, *B. sandiegonensis* were found in each of the three basins. This site was not discussed in Bauder's 1986 report. Vernal pool indicator species and fairy shrimp observed at this site are listed in Table 21. The area was not surveyed for amphibians. For a map of this site, please refer to 258-1701 in Appendix C.

Table 21 Pueblo Lands Presence of Vernal Pool Indicator Species					
Callitriche marginata	•	Myosurus minimus			
Crassula aquatica	•	Navarretia fossalis			
Deschampsia danthoniodes	•	Orcuttia californica			
Downingia cuspidata		Phalaris lemmonii			
Elatine californica		Phalaris spp.			
Epilobium pygmaeum		Pilularia americana			
Eryngium aristulatum		<i>Pilularia</i> spp.			
Isoetes howellii		Plagiobothrys acanthocarpus			