

1998

Aliso Creek 9-15

291

303(d) Fact Sheet Region 9 Water Quality Control Board

(Addition, deletion or change to list and waterbody/pollutant being addressed)

Summary of Proposed Action

Provide a brief summary of the proposed action. Aliso Creek from Cooks Corner downstream to the Pacific Ocean impaired due to toxicity as evidenced by low survival of *Ceriodaphnia dubia* in acute 48 hour survival tests, and low survival of fathead minnow in acute 96-hour survival tests.

303(d) Listing / TMDL Information

- ✓ Waterbody Name Aliso Creek, Orange County
- ✓ Hydrologic Unit San Juan Hydrologic Unit, HSA 901.13
- ✓ Total Waterbody Size approximately 16.5 miles
- ✓ Pollutants / Stressors Toxicity
- ✓ Suspected Sources Point and Nonpoint Sources
- ✓ Extent of Impairment the entire reach
- ✓ Further Location Descriptors
- ✓ TMDL Priority High
- ✓ Notes Regional Board File 19 #10-6000.03; Orange County Copermittees Municipal Storm Water Permit Order no 96-03; 12/98-06/99
- ✓ References Aliso Creek Water Quality Planning Study, Quarterly Progress Report, January 1, 1999 – March 31, 1999. Agreement No. 7-042-250-0,,Aliso Creek 205(j) Water Quality Planning Study.
- ✓ Aliso Creek Water Quality Planning Study, Draft Final Report, Aliso Creek 205(j) Water Quality Planning Study Agreement No. 7-042-250-0, 12pp + tables and appendices.

Watershed Characteristics

This should include a brief description of the major characteristics of the watershed and of the waterbody.

The following description of the Aliso Creek Watershed is taken from the Aliso Creek Water Quality Planning Study, Quarterly Progress Report.

The Aliso Creek watershed encompasses a drainage area of 34.6 square miles in southern Orange County including the communities of Portola Hills, Leisure World, and Aliso Viejo, and the cities of Lake Forest, Laguna Hills, Laguna Niguel and portions of Mission Viejo and Laguna Beach. The watershed drains for a distance of 16.5 miles in a northeast to southwest direction from the Santa Ana mountains of the Cleveland National Forest to the Pacific Ocean south of Laguna Beach. The upper half of the watershed, north of Interstate 5, is relatively narrow (1-2 miles), while the lower half broadens to a maximum of 5 miles in Laguna Niguel. The major tributaries of Aliso Creek are Sulphur Creek, Wood Canyon, Aliso Hills Channel, Munger Creek, Dairy Fork, and English Canyon.

The upper three miles of the watershed are relatively undeveloped. The creek is well vegetated and shaded throughout the length of this reach. From its headwaters the creek flows south 0.5 miles before passing beneath Santiago Canyon Road where it turns to the southeast and follows the highway for 0.5 miles to Cook's Corner. The community of Portola Hills is located southwest of this section of Aliso Creek on the canyon bluffs.

Below Cook's Corner the creek parallels El Toro Road flowing in a generally southerly direction, crossing the road twice before entering Whiting Ranch Wilderness Park. The creek

traverses approximately 0.5 miles bisecting the park before exiting just north of Glen Ranch Road. For the next mile the creek flows southwest through the newly developing northern limits of the city of Mission Viejo, passing beneath the Foothill Transportation Corridor (FTC).

Below the FTC the watershed becomes increasingly developed and the appearance of Aliso Creek is transformed. Among the first indications of land use change is the El Toro Materials mining site on the banks of the creek south of Portola Parkway. Immediately north of the city of Lake Forest, intermittent sections of the creek are lined with concrete blocks as the creek flows west-southwest along El Toro Road. The creek bed is generally wider, more open, and less vegetated than in the upper reaches of the watershed. Extended reaches of the channel have been downcut by as much as 10-15 feet exposing eroded banks and degraded stream habitat.

Aliso Creek flows south-southwest for approximately six miles through Lake Forest before passing beneath Interstate 5. Sections of well-vegetated stream are interspersed with concrete-lined reaches, and more open, degraded segments. South of I-5 the creek flows approximately one mile through Laguna Hills and the community of Leisure World. Residential and commercial developments, schools, playgrounds, roads, and urban parks dominate the landscape throughout the length of this reach...

The creek enters the narrow northeastern extreme of Aliso/Wood Canyons Regional Park south of Moulton Parkway and meanders for approximately 3.0 miles through an area adjacent to which is a rapidly developing segment of the Aliso Creek watershed. This reach of Aliso Creek is characterized by geomorphic instability resulting from steep slopes and highly erodible channel materials. South of Alicia Parkway, the Sulphur Creek tributary enters Aliso Creek. Sulphur Creek drains the largely residential community of Laguna Niguel and is dammed approximately one mile upstream of the confluence with Aliso Creek forming Sulphur Creek Reservoir...

Downstream of this confluence, the Niguel Hills rise steeply on either side of the creek as it flows through a broad plain within the Aliso/Wood Canyons Regional Park. In some places the creek banks have been highly eroded creating 15-20 foot high unstable sides. The Wood Canyon channel, with its headwaters in the community of Aliso Viejo, enters Aliso Creek approximately 1.5 miles downstream of the Sulphur confluence.

The final section of Aliso Creek flows through a steep-sided canyon that is the location of a golf course/resort complex upstream of Pacific Coast Highway. Portions of this reach have been channelized and stabilized with riprap and concrete. There is little natural vegetation remaining within this stretch beyond the narrow riparian corridor, as the golf course dominates the narrow valley on either bank of the creek.

At its mouth, Aliso Creek flows under the Pacific Coast Highway and empties into the Pacific Ocean. The creek in this area is not artificially lined but there is very little natural vegetation. Shorebirds use the creek mouth for foraging but the overall quality of the habitat is limited. During low flows the creek water may stagnate behind berms formed by deposited sediments. This low-quality stagnant water is unusually warm, and often has low dissolved oxygen. High concentrations of coliform bacteria are common in these stagnant pools and have resulted in a permanent sign from the County of Orange Health Officer warning of contaminated water.

Water Quality Objectives Not Attained (or Objectives being Attained for Delisting)

Specific reference to the water quality objectives in the Basin Plan (or Cal or National Toxics Rule) not being attained should be made. If a narrative objective is not attained, the applicable criteria or guidelines being used should be described.

The narrative objective for "Toxicity" is not being attained. The water quality objective for Toxicity states: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological response in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods specified by the Regional Board.

The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge or, when necessary, for other control water that is consistent with requirements specified in US EPA, State Water Resources Control Board or other protocol authorized by the Regional Board. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour acute bioassay.

In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.

Evidence of Impairment

The data demonstrating impairment should be described here (or data demonstrating attainment). A summary of the data/information (including refs), along with a comparison to water quality objectives should be provided. See attachments for a copy of the data from the 205(j) report. The references and water quality objective are described below in section entitled "References".

Extent of Impairment (or Extent of Attainment)

The specific reach or area that is impaired should be described. Any inferences drawn in determining the extent of impairment based on sampling location, land uses, or other watershed characteristics should be described here.

The toxicity impairment in Aliso Creek occurs at all sampling locations tested in the Aliso Creek Water Quality 205j Planning study. The sampling locations include (from the upstream to downstream): Cook's Corner, d/s English Canyon, d/s Dairy Fork and Aliso Hills Channel, d/s Sulphur Creek, and at Pacific Coast Highway (PCH) Bridge. The extent of impairment is estimated to be the entire reach of Aliso Creek from just upstream of the first sampling point at Cooks Corner all the way downstream to the Pacific Ocean. See map from 205j report for location.

Potential Sources

~~The potential sources of the pollutant should be described here. Try to distinguish between suspected sources and known sources (e.g. available data indicates that urban storm drains have levels of diazinon several times higher than creek levels versus urban land uses and are a suspected source since 80% of the watershed is commercial/residential and diazinon is~~

a commonly used pesticide for pest control on lawns and landscape). Point and/or nonpoint sources of pollution.

TMDL Priority

The rationale for the priority ranking must be given. The TMDL priority (high, medium, low) must take into account the severity of the pollution problem and the beneficial uses of the waterbody. Other rationales that could be applied include: community interest in addressing the problem, other resources/agencies working on the problem; available funding; the need to develop TMDLs at an adequate pace.

High priority

Information Sources

The following references can be found in Regional Board File 19 #10-6000.03; Orange County Copermittees Municipal Storm Water Permit Order no 96-03; 12/98-06/99. Regional Board staff contact assigned to this project (7/18/01) is Mr. Jeremy Haas.

References:

Aliso Creek Water Quality Planning Study, Quarterly Progress Report, January 1, 1999 – March 31, 1999. Agreement No. 7-042-250-0., Aliso Creek 205(j) Water Quality Planning Study.

Aliso Creek Water Quality Planning Study, Draft Final Report, Aliso Creek 205(j) Water Quality Planning Study Agreement No. 7-042-250-0, 12pp + tables and appendices.

Summary of Surface Water Monitoring for Toxicity within Aliso Creek

		Ceriodaphnia dubia acute 48-hour						Pimephales promelas 96-hour Survival			Pimephales promelas 7-day Survival and Growth					
		Mean % survival Control	% Survival in 100% Concentration	LC ₅₀	NOEC	LOEC	TUa	LT50	Mean % survival Control	LC ₅₀	TUa	Mean % survival Control	LC ₅₀	NOEC Survival	NOEC Growth	TUc
Station	Sample Date	%	%	%	%	%	hours	hours	%	%		%	%	%	%	
Aliso Creek @ Cook's Corner	9/29/98													100	100	1/1
Aliso Creek @ Cook's Corner	11/8/98		5 (48 hr)						90	0.59						
Aliso Creek @ Cook's Corner	1/20/99		100 (48 hr)						50	1.0						
Aliso Creek d/s English Canyon	9/29/98								100	0.0				100	100	1/1
Aliso Creek d/s English Canyon	11/8/98		0 (48 hr)						100							
Aliso Creek d/s English Canyon	1/20/99		0 (48 hr)						70	0.87						
Aliso Creek d/s Dairy Fork & Aliso Hills Channel (Leisure World)	9/29/98		0 (48 hr)						100	0.0				100	100	1/1
Aliso Creek d/s Dairy Fork & Aliso Hills Channel (Leisure World)	11/8/98		0 (48 hr)						100							
Aliso Creek d/s Dairy Fork & Aliso Hills Channel (Leisure World)	1/20/99		100 (48 hr)						45	<1.0						
Aliso Creek d/s Sulphur Creek (NPDES station)	9/29/98		0 (48 hr)											100	100	1/1
Aliso Creek d/s Sulphur Creek (NPDES station)	11/8/98		0 (48 hr)						90	0.59						
Aliso Creek d/s Sulphur Creek (NPDES station)	1/20/99		0 (48 hr)						80	0.76						
Aliso Creek @ PCH Bridge	9/29/98								90	0.59						
Aliso Creek @ PCH Bridge	11/8/98		0 (48 hr)						90							
Aliso Creek @ PCH Bridge	1/20/99		15 (48 hr)						75	0.82						

Aliso Creek (901.130) – 303(d) Fact Sheet
Aliso Creek 205(j) Water Quality Planning Study

Aliso Creek should be 303(d) listed due to toxicity to laboratory minnows and *ceriodaphnia dubia*.

Watershed Characteristics

Aliso Creek is a 7.20 mile waterway in the San Juan Watershed of Region 9. It is classified inland surface water with the following beneficial uses: AGR, REC1, REC2, WARM and WILD¹. The mouth of the creek is currently on the 1998 303(d) list because of high coliform counts from non-point sources.

Water Quality Objectives not Obtained

Toxicity results during storm sampling violate the narrative standard set forth in the Basin Plan¹ for water quality objectives for toxicity.

Evidence of Impairment

Table 9.11 of the attached documents² shows 11 of 20 toxicity tests had survival rates less than 70%, with 10 of those 11 having survival rates of less than 50%. Some of the tests at this same time had survival rates of 100%. Low flow sampling 5 weeks previously showed no toxicity to some of the same test species (Fathead minnows). This toxicity data is direct evidence of impairment of the WARM and WILD¹ beneficial uses of this waterbody.

Extent of Impairment

Five stations, from the headwaters to the mouth, were sampled 3 times in 4 months. All five sites showed toxicity for one or both of the storm event samplings. Therefore, the entire stream should be listed due to storm water toxicity to laboratory animals.

Potential Sources

The water planning study indicates that organophosphate pesticides are a significant component of the aquatic toxicity in the storm samples.

TMDL Priority

A medium TMDL is recommended.

Information Sources

¹ Water Quality Control Plan for the San Diego Basin (9), 1994

² Aliso Creek 205(j) Water Quality Planning Study, Agreement No. 7-042-250-0, June 2000

Table 9.11 - Toxicity Results in Aliso Creek During Low Flow and Storm Conditions

Sampling Location	Date	Time	Chronic 7-day fathead minnow % survival /growth	Acute 96-hr fathead minnow % survival	Acute 48-hr Ceriodaphne % survival
Aliso Crk at Cooks Corner	9/29/98	12:45	100 /100		
	11/8/98	06:22		90	5
	1/20/99	11:45		50	100
Aliso Crk d/s English Canyon	9/29/98	12:20	100 /100		
	11/8/98	06:46		100	0
	1/20/99	12:05		70	0
Aliso Crk d/s Dairy Fork & Aliso Hills Ch.	9/29/98	11:45	100 /100		
	11/8/98	07:06		100	0
	1/20/99	12:20		45	100
Aliso Crk d/s Sulphur Creek	9/29/98	10:55	100 /100		
	11/8/98	07:21		90	0
	1/20/99	12:35		80	0
Aliso Creek @ PCH Bridge	9/29/98	-	NA		
	11/8/98	07:46		90	0
	1/20/99	13:00		75	15

Aliso Creek – Summary of Fact Sheets

The NPDES report contains sufficient evidence for 303(d) listing for phosphate, ammonia, cadmium and turbidity. A threatened listing is recommended for chromium and copper.

In-house monitoring (Linda Pardy Sheet 1) had only one sample at two sites, but does lend supporting evidence to the 303(d) listing for ammonia-nitrogen and phosphate.

Toxic Substance Monitoring Data shows high levels of chlordane, dieldrin, heptachlor epoxide and PCB in whole fish tissues. This warrants a listing of threatened.

The Aliso Creek Planning Study (205j) show toxicity to two species of laboratory animals at levels high enough to warrant 303(d) listing.

↳ Also, some evidence of high PO_4-P , Turbidity in Fall '88

Aliso Creek

303d

PO ₄	NPDES	97%	39/40	
NH ₄	NPDES	60%	24/40	
cd	NPDES	5/42	12%	Beach Plan
	CD	2/42	5%	Ocean
cr	NPDES	5/42	12%	Ocean
Ca	NPDES	6/42	14%	Ocean

} threatened

In house = LP sheet 1 = One Sample @ 2 sites

Nitrogen } adds to 303 from above NPDES data

PO₄

TDS = threatened

TSM_P = 1999 & 95 whole Fish Only!

threatened since only 1 sample point

Chlordane - MTR, subsist
 Dieldrin - MTR, Fishery
 Hepta chlor epoxide MTR
 PCB MTR, Fishery

MTR = Edible Only

205J = Toxicity

11 of 20 less than 70%

10 of those 11 = 50%

303

*Table 2
Nutrients*

**Table 2
Nutrients In Aliso Creek Watershed September 30 - October 21, 1998**

STATION	DATE/TIME	Turb NTU	NO3-N mg/L	NH3 mg/L	Total Inorg N	NH3* mg/L	TKN mg/L	PO4-P mg/L	N : P Ratio	TSS mg/L	VSS mg/L
Cook's Corner	9/30/1998 @ 1110	2.7	1.4	<0.05	1.40	0.0014	0.77	<0.02	71.8	10	5
	10/7/1998 @ 1115	2.2	1.6	0.14	1.70	0.0039	1.15	0.14	12.1	8	5
	10/14/1998 @1115	5.0	1.5	0.11	1.62	0.0049	1.53	0.18	9.0	12	12
	10/21/1998 @ 1210	2.2	1.5	0.15	1.64	0.0038	0.75	0.14	11.7	11	6
d/s English Canyon	9/30/1998 @ 1050	2.0	1.8	<0.05	1.83	0.0038	0.72	<0.02	93.7	9	6
	10/7/1998 @1100	1.4	2.0	<0.05	2.06	0.0022	0.64	0.11	18.5	4	2
	10/14/1998 @1100	1.3	1.8	<0.05	1.81	0.0053	0.97	0.13	13.9	5	6
	10/21/1998 @ 1140	39	1.99	<0.05	2.04	0.0033	0.64	0.18	11.4	92	20
d/s Sulphur Creek	9809291000 - 9809300900	6.5	1.17	<0.05	1.22	0.0021	1.15	0.15	8.2	28	9
	9810060953 - 9810070853	4.1	1.45	0.12	1.57	0.0037	0.98	0.21	7.5	18	6
	9810131000 - 9810140900	8.5	1.49	0.17	1.66	0.0137	1.5	0.28	5.9	26	12
	9810201000 - 9810210900	6.6	1.96	0.16	2.12	0.0079	1.08	0.24	8.9	40	12
J03P02 tributary	10/21/1998 @ 1055	3.4	2.96	0.25	3.21	0.0059	1.45	0.24	13.5	22	8

NH3* un-ionized ammonia

Concentrations exceeded San Diego RWQCB Basin Plan Table 3.2 surface water standard

Hydrology Studies – San Juan and Aliso Creeks Watersheds

San Juan and Aliso Creeks Watershed Management Study. 1997. Orange County, California. Reconnaissance Report. The U.S. Army Corps of Engineers, Los Angeles District.

San Juan Creek Watershed Management Study. 1999. Orange County, California. Feasibility Phase, Draft Watershed Management Report. U.S. Army Corps of Engineers, Los Angeles District.

Data Synopsis

The U.S. Army Corps of Engineers (USACE) has assessed available water quality data in the Aliso Creek and San Juan Creek watersheds as part of comprehensive watershed studies to determine a process for restoring habitat and alleviating potential flood damage. Lower Oso Creek, just before the confluence with Trabuco, and the lower portion of Trabuco Creek, are heavily influenced by urban run-off that is creating excess flow. The disappearance of historical flood plains, upstream development and partial channalization of the stream have increased flow rates and volume. Heavy undercutting of banks in the lower portion of Oso Creek makes excess turbidity a likely concern and is leading to loss of riparian habitat. See the attached document for further descriptions of the data

This data set alone does not constitute enough information to list the waterbodies on the 303(d) list. It may be combined with other data sets, and this could then constitute enough information for 303(d) listing.

**SAN JUAN AND ALISO CREEKS
WATERSHED MANAGEMENT STUDY
ORANGE COUNTY, CALIFORNIA**

RECONNAISSANCE REPORT

RECEIVED
MAR 18 1997
SAN DIEGO REGIONAL WATER
QUALITY CONTROL BOARD
PR

**The U.S. Army Corps of Engineers
Los Angeles District**

February 1997

9/26/01 - CA.

Aliso Creek on 303(d) list for

Enterococci

E. coli

Fecal coliform

} 205(g) Planning Study

Phosphate
Toxicity

NPDES Monitoring
205(f)

On potential impairment list due to

chlordane

dieldrin

heptachlor epoxide

PCB

} TSMP

Aliso Creek NPDES Data

	date	PO4 (mg/L)	P (mg/L)	P (avg)	P (median)	Exceed (count)	
July 2, 1997	7/2/97	0.420	0.137				
August 7, 1997	8/7/97	0.730	0.239				
September 17, 1997	9/17/97	0.930	0.304				
October 9, 1997	10/9/97	0.830	0.271				
June 19, 1998	6/19/98	0.610	0.199	0.230	0.239	5 of 5	
September 2, 1998	9/2/98	0.000	0.000				
October 1, 1998	10/1/98	0.000	0.000				
December 7, 1998	12/7/98	0.670	0.219				
January 13, 1999	1/13/99	0.340	0.111				
January 25, 1999	1/25/99	1.530	0.500				
January 25, 1999	1/25/99	1.010	0.330				
January 26, 1999	1/26/99	2.510	0.820				
January 27, 1999	1/27/99	0.640	0.209				
February 8, 1999	2/8/99	0.460	0.150				
February 9, 1999	2/9/99	1.070	0.350				
February 9, 1999	2/9/99	1.010	0.330				
February 10, 1999	2/10/99	0.460	0.150				
March 1, 1999	3/1/99	0.340	0.111				
March 11, 1999	3/11/99	0.400	0.131				
March 25, 1999	3/25/99	2.690	0.879				
March 25, 1999	3/25/99	1.380	0.451				
March 26, 1999	3/26/99	0.430	0.141				
April 29, 1999	4/29/99	0.360	0.118				
May 20, 1999	5/20/99	0.490	0.160				
June 9, 1999	6/9/99	0.490	0.160				
July 12, 1999	7/12/99	0.610	0.199				
August 17, 1999	8/17/99	0.670	0.219	0.261	0.180	20 of 22	90.9%
October 27, 1999	10/27/99	0.550	0.180				
December 16, 1999	12/16/99	0.370	0.121				
January 7, 2000	1/7/00	1.220	0.399				
February 29, 2000	2/29/00	0.610	0.199				
March 3, 2000	3/3/00	1.930	0.631				
March 4, 2000	3/4/00	0.950	0.310				
March 6, 2000	3/6/00	0.890	0.291				
March 8, 2000	3/8/00	0.980	0.320				
March 23, 2000	3/23/00	0.460	0.150				
April 6, 2000	4/6/00	0.520	0.170				
April 18, 2000	4/18/00	2.600	0.850				
May 30, 2000	5/30/00	0.490	0.160				
June 29, 2000	6/29/00	0.520	0.170	0.304	0.199	13 of 13	
	Avg =	0.829	0.271				
	Median =	0.610	0.199				
	Std Dev =	0.637	0.208				
	95% Con Inter. =	0.197	0.064				

Phosphorus Basin Plan Water Quality Objective for flowing streams = 0.1 mg/L and is not to be exceeded more than 10% of the time in any one year

Table 1
Linda Pardy Sheet 1 = R9 In-house Sampling
Aliso Creek

	Pacific Park Dr /				
	Country Club Rd (mg/L)	Oso Prkwy (mg/L)	Basin Plan Std (mg/L)		
Ammonia-N	3.30	0.18	0.025 as N		
Nitrate, as N	3.10	1.00	45 as NO ₃	10.16 as N	
Nitrite-N	1.00	0.03	1.0 as N		
Total K. Nitrogen	0.81	0.56	?		
Orthophosphate-P	1.10	0.15	?		
Total Phosphate as P	0.93	0.81	0.1 as P		
Total Dissolved Solids	1712.00	1961.00	1000		
Turbidity (NTU)	4.10	1.10	20		

*one sampling date!
not enough!*

	Sediments (mg/Kg)	Sediments (mg/Kg)
Antimony	ND	-
Arsenic	1.20	-
Beryllium	ND	-
Cadmium	ND	-
Chromium, Total	7.60	-
Copper	2.20	-
Lead, Total	ND	-
Mercury	ND	-
Nickel	3.40	-
Selenium	ND	-
Silver	ND	-
Thallium	1.20	-
Zinc, Total	16.00	-

Mg/l kg = pp
 u/g kg

Truesdail
 Lab
 Inc

mg/l

Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Ammonia-N	Nitrate as N	Nitrite-N	Total Kjeldahl Nitrogen	Orthophosphate-P	Total Phosphate as P (revised)	Total Phosphate as PO ₄	Total Dissolved Solids	Turbidity NTU	Calcium	Sodium	Magnesium	Potassium	Chloride	Sulfate	Total Hardness	EC (umhos)	Antimony	Arsenic
					0.14	0.20	0.01	0.1	0.02	5.0		10.0		0.10	0.25	0.15	0.56	1.0	40.0	1.0		0.005	0.0
					Detection Limit																		
5/20/98	LAC-CB-T1	DFG-978-300	-	Loma Alta Creek at College Blvd	0.23	0.61	0.04	0.70	0.12	0.40		2800	0.98										
5/20/98	BVC-SVW-T3	DFG-978-301	-	Buena Vista Creek at South Vista Way	<.14	2.50	0.02	0.42	0.22	0.22		1378	0.79										
5/20/98	SLRR-FR-T1	DFG-978-302	✓	San Luis Rey River at Foussat Road	<.14	2.40	0.01	0.39	0.58	0.24		850	5.10										
5/20/98	LAC-ECR-A	DFG-978-303	✓	Loma Alta Creek at El Camino Real	<.14	0.27	0.00	0.36	0.44	0.14		2459	0.58										
6/2/98	SR-79	DFG-978-304	✓	Sweetwater River at Hwy 79 near Interstate 8	<.14	0.33	0.00	0.29	0.13	0.13		224	1.90										
6/2/98	SR-94	DFG-978-305	✓	Sweetwater River upstream of Hwy 94 (Campo Road)	<.14	0.36	0.01	0.16	0.07	0.06		397	2.80										
6/2/98	SR-WS	DFG-978-306	✓	Sweetwater River downstream of Willow Street	<.14	0.35	0.01	0.40	0.05	0.20		825	0.76										
6/2/98	SDR-MD	DFG-978-307	7.11	San Diego River up stream of Mission Dam	0.19	0.35	0.02	0.38	0.22	0.09		1038	3.70										
6/2/98	SDR-MT	DFG-978-308	7.11	San Diego River at Mission Trails Regional Park	<.14	0.28	0.01	0.49	0.14	0.05		1046	0.77										
6/2/98	SDR-FVR	DFG-978-309	7.11	San Diego River at Fashion Valley Road	<.14	0.23	0.00	0.42	0.23	0.06		1217	5.00										
6/3/98	LPC-BMR	DFG-978-310	-	Los Penasquitos Creek upstream of Black Mountain Road	<.14	0.34	0.01	0.76	0.30	0.55		1678	0.67										
6/3/98	LPC-CCR	DFG-978-311	✓	Los Penasquitos Creek at Cobblestone Creek Road.	<.14	1.10	0.03	1.90	0.17	0.55		1633	3.80										
6/3/98	RC-HP	DFG-978-312	6.20	Rattlesnake Creek at Hilleary Park, off Community Road	<.14	1.50	0.02	1.50	0.46	0.67		1412	0.54										
6/3/98	EC-HRB	DFG-978-313	4.60	Escondido Creek below Harmony Grove Bridge.	<.14	7.20	0.07	0.46	0.46	0.37		1196	0.99										
6/3/98	EC-EF	DFG-978-314	4.60	Escondido Creek at intersection Elfin Forest and Harmony Grove (end of Elfin Forest Resort).	<.14	6.90	0.02	0.55	0.77	0.29		1145	0.38									ND	3.8
6/3/98	EC-LCA	DFG-978-315	-	Encinitas Creek at Green Valley Road	<.14	0.34	<.01	0.54	0.34	0.32		2082	3.70										
6/3/98	SMC-RSFR	DFG-978-316	4.51	San Marcos Creek at Rancho Santa Fe Road	<.14	0.00	0.01	0.60	0.42	0.52		780	0.99										
6/3/98	SMC-M	DFG-978-317	4.51	San Marcos Creek at McMahr	<.14	6.20	0.04	0.62	0.49	0.56		1346	13.80										
6/9/98	MC-WB	DFG-978-318	✓	Murrieta Creek at Calle Del Oso Rd	<.14	1.29	<.01	0.31	0.21	0.28		709	0.38									ND	3.0
6/9/98	MC-GS	DFG-978-319	✓	Murrieta Ck behind cement factory	<.14	0.32	0.01	0.44	0.09	0.06		753	2.31									ND	3.1
6/9/98	TC-115	DFG-978-320	✓	Temecula Ck east of confluence, west of I-15	<.14	1.40	0.01	0.44	0.30	0.17		840	0.67										

Linda Parady
 Sheet

Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Detection Limit	Beryllium	Caesium	Chromium Total	Chromium Dissolved	Copper	Lead Total	Lead Dissolved	Mercury	Nickel	Selenium	Silver	Thallium	Zinc Total	Zinc Dissolved	Caridaphnia-survival	Caridaphnia-reproduction	Pimephales-survival	Pimephales-growth
						0.0005	0.0005	0.4	0.01	0.01	0.001	0.001	0.0005	0.01	0.002	0.01	0.001	0.01	0.01	0.01	0.01		
5/20/98	LAC-CB-T1	DFG-978-300		Loma Alta Creek at College Blvd																			
5/20/98	BVC-SVW-T3	DFG-978-301		Buena Vista Creek at South Vista Way																			
5/20/98	SLRR-FR-T1	DFG-978-302		San Luis Rey River at Foussat Road																			
5/20/98	LAC-ECR-A	DFG-978-303		Loma Alta Creek at El Camino Real																			
6/2/98	SR-79	DFG-978-304		Sweetwater River at Hwy 79 near Interstate 8																			
6/2/98	SR-94	DFG-978-305		Sweetwater River upstream of Hwy 94 (Campo Road)																			
6/2/98	SR-WS	DFG-978-306		Sweetwater River downstream of Willow Street																			
6/2/98	SDR-MD	DFG-978-307	7.11	San Diego River up stream of Mission Dam																			
6/2/98	SDR-MT	DFG-978-308	7.11	San Diego River at Mission Trails Regional Park																			
6/2/98	SDR-FVR	DFG-978-309	7.11	San Diego River at Fashion Valley Road																			
6/3/98	LPC-BMR	DFG-978-310		Los Penasquitos Creek upstream of Black Mountain Road																			
6/3/98	LPC-CCR	DFG-978-311		Los Penasquitos Creek at Cobblestone Creek Road.																			
6/3/98	RC-HP	DFG-978-312	6.20	Rattlesnake Creek at Hilleary Park, off Community Road																			
6/3/98	EC-HRB	DFG-978-313	4.60	Escondido Creek below Harmony Grove Bridge.																			
6/3/98	EC-EF	DFG-978-314	4.60	Escondido Creek at intersection Elfin Forest and Harmony Grove (end of Elfin Forest Resort).		ND	ND	11.0		13.7	150		ND	2.4	ND	ND	ND	72.8					
6/3/98	EC-LCA	DFG-978-315		Encinitas Creek at Green Valley Road																			
6/3/98	SMC-RSFR	DFG-978-316	4.51	San Marcos Creek at Rancho Santa Fe Road																			
6/3/98	SMC-M	DFG-978-317	4.51	San Marcos Creek at McMahr																			
6/9/98	MC-WB	DFG-978-318		Murrieta Creek at Calle Del Oso Rd		ND	1.1	16.2		26.3	36.7		0.068	9.4	ND	ND	ND	182					
6/9/98	MC-GS	DFG-978-319		Murrieta Ck behind cement factory		ND	ND	2.8		6.1	9.2		ND	1.9	ND	ND	3.0	53.8					
6/9/98	TC-I15	DFG-978-320		Temecula Ck east of confluence, west of I-15																			

These are in units of mg/kg wet weight.

Total = TKP + NO₂ + NO₃
 NH₃-N
 NO₃-N
 NO₂-N
 Organic + NH₃
 PO₄³⁻

Fingy OK
 w/ w/

Sampling Date	Station Name	Station ID	Hydrologic Subarea	Station Location	Ammonia-N	Nitrate as N	Nitrite-N	Total Kjeldahl Nitrogen	Orthophosphate-P	Total Phosphate as P (revised)	Total Phosphate as PO ₄	Total Dissolved Solids	Turbidity/NTU	Calcium	Sodium	Magnesium	Potassium	Chloride	Sulfate	Total Hardness	Ecumino	Antimony	Arsenic	Detection Limit
6/9/98	RC-WGR	DFG-978-321	✓	Rainbow Creek at Willow Glen Rd	<.14	11.47	0.02	0.44	0.95	0.77		810	0.30											
6/9/98	SMR-WGR	DFG-978-322	—	Santa Margarita at Willow Glen Rd (Stage Coach Ln)	<.14	3.76	0.02	0.47	0.11	0.62		913	0.46											
6/9/98	SMR-SCD	DFG-978-323	✓	SMR at DeLuz/ Pico Rd near Sandia Ck	<.14	4.69	0.01	0.34	0.18	0.35		923	0.50											
6/9/98	SC-SCR	DFG-978-324	—	Sandia Ck at Sandia Ck Rd, 0.5 to 1 mile above confluence	<.14	5.83	0.01	0.17	0.24	0.30		817	1.80									ND	7.8	
6/9/98	SMR-CP	DFG-978-325	✓	Santa Margarita River below diversion weir on Camp Pendleton	<.14	2.71	0.01	0.34	0.23	0.41		667	3.77									ND	5.9	
6/9/98	SMR-SMB	DFG-978-326	✓	SMR at Stuart Mesa Rd bridge on Camp Pendleton	<.14	1.63	0.01	0.28	0.23	0.35		713	3.60									ND	2.3	
6/10/98	BVR-ED	DFG-978-327	✓	San Marcos Creek at Rancheros Drive	<.14	14.70	0.05	0.53	1.00	0.95		1372	0.49											
6/10/98	AHC-SA	DFG-978-328	—	Agua Hedionda Ck at Sycamore Ave	0.17	15.30	0.08	0.58	1.00	0.90		1144	1.10											
6/10/98	SMC-SP	DFG-978-329	✓	Buena Vista Ck at Wildwood Park	0.23	3.40	0.09	0.62	0.12	0.75		1360	1.70											
6/10/98	AC-CCR	DFG-978-330	—	Aliso Ck along Country Club Rd	3.30	3.10	1.00	0.81	1.10	0.93		1712	4.10									ND	1.2	
6/10/98	AC-PPD	DFG-978-331	✓	Aliso Ck at Pacific Park Dr/ Oso Pkwy	0.18	1.00	0.03	0.56	0.15	0.81		1961	1.10											
6/10/98	AHC-ECR	DFG-978-332	✓	Agua Hedionda Ck at El Camino Real	<.14	5.80	0.02	0.53	0.44	0.61		1716	0.55											
6/11/98	SLRR-395	DFG-978-333	✓	San Luis Rey River at old Hwy 395 (Couser Canyon Rd)	<.14	4.20	0.03	0.42	0.75	0.99		970	3.73											
6/29/98		LLP-978-405-BUV	✓	Buena Vista Creek	<.14	1.20	0.02	0.64	0.83		7.1	1133	1.3	120	254	80.7	3.6	454	281	570	1965	ND	ND	
6/29/98		LLP-978-405-AGH	✓	Agua Hedionda Creek	<.14	4.50	0.03	0.76	0.25		4.2	1624	0.6	168	255	97.9	3.3	465	363	745	2300	ND	ND	
6/29/98		LLP-978-405-ESC	✓	Escondido Creek	<.14	3.60	0.01	0.76	0.25		4.6	1382	4.4	109	251	87.5	3.4	322	342	570	1969	ND	ND	

These are

WQO

- Inorganics in Mn - NO₃ - 45
- Nitrates 45 ppm
- Bio Stim Subst. ⇒ Narr.
 - TN 1.0 ppm
 - TP 0.1 ppm
 - Concen prevent NO₃ algae nuisance

Bio Stim
 Municipal
 9/25

NO₃ 45 mg/L
 NO₃-N 10 mg/L
 4.43

9/25/10
 P in PO₄ = 3.08 mg/L
 Std = 0.10 = PHS

4 Un-ionized NH₃
 5 NO

From: Linda Pardy
To: Tracy_Weddle@nps.gov
Date: 3/5/01 2:45PM
Subject: Re: Cabrillo National Monument Water Quality Data

Tracy, FYI. In reply to your email:

The source of 1998 water quality data was the San Diego Regional Water Quality Control Board (Regional Board). The Regional Board collected water samples at selected sites throughout the Region to scan sites for elevated levels of the sampled parameters. The June 1998 sampling was limited to those samples/constituents shown. The samples were delivered to the lab by the Regional Board. The contract lab which did the analyses was Truesdail Laboratories, Inc is located at 14201 Franklin Ave, Tustin, CA 92780-7008. The project manager at that time for the testing was Divina B. Pascual. Their phone number was 714 730-6239. -Linda

>< >< >< >< >< >< >< >< >< ><
Linda Pardy, Environmental Specialist
California Regional Water Quality Control Board
San Diego Region
9771 Clairemont Mesa Blvd, Suite A
San Diego, CA 92124-1324
(858) 627-3932, fax (858) 571-6972
calnet 8-734-3932
email <PARDL@RB9.SWRCB.CA.GOV>
Internet Address <www.swrcb.ca.gov/~rwqcb9>
Primary Office Phone Number (858) 467-2952
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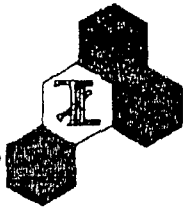
The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>

>>> <Tracy_Weddle@nps.gov> 03/05/01 10:18AM >>>
Ms. Pardy,

I am currently establishing a baseline water quality report for Cabrillo National Monument for the National Park Service. I am taking over the work of Brett Atkinson, whom you spoke to previously. Brett prepared the data which you sent him for these reports, but there is one bit of information missing before these reports can be completed and the data uploaded to the EPA database STORET. A paragraph description is needed, describing the source of data and purpose for data collection and monitoring. I have looked on your agency's website to try and determine this, but there are so many projects that I could not determine where the data you sent came from. Could you please describe to me what the monitoring was for, the extent of monitoring, and any other information you feel is significant? I am attaching a copy of the data you sent in case you are unsure about what data I'm referring to. Thank you for your help!

Sincerely,

Tracy Weddle
Water Quality Data Analyst
National Park Service
Water Resources Division
1201 Oakridge Drive, Suite 250
Fort Collins, CO 80525



TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES

Established 1931

14201 FRANKLIN AVENUE • TUSTIN, CALIFORNIA 92780-7008
PHONE (714) 730-8238 • FAX (714) 730-8462

REPORT

CLIENT: CRWQCB-San Diego
9771 Clairemont Mesa Blvd., "B"
San Diego, CA 92124
Attention: Greig Peters

DATE: Oct. 8, 1998

RECEIVED: June 30, 1998

SAMPLE: 978-330

LABORATORY NO. 410996-61

INVESTIGATION: Analysis as requested

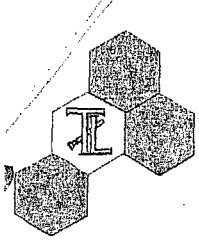
RESULTS

<u>Parameter</u>	<u>Date Analyzed</u>	<u>Method</u>	Milligrams per Kilogram (wet weight)	
			<u>Detection Limit</u>	<u>Concentration</u>
Antimony	9/28/98	EPA 6010	1.0	ND
Arsenic	9/28/98	EPA 6010	1.0	1.2
Beryllium	9/28/98	EPA 6010	0.4	ND
Cadmium	9/28/98	EPA 6010	0.4	ND
Chromium	9/28/98	EPA 6010	0.4	7.6
Copper	9/28/98	EPA 6010	0.4	2.2
Lead	9/28/98	EPA 6010	1.0	ND
Mercury	9/25/98	EPA 245.1	0.05	ND
Nickel	9/28/98	EPA 6010	0.4	3.4
Selenium	9/21/98	SM3114B	0.10	ND
Silver	9/28/98	EPA 6010	0.4	ND
Thallium	9/28/98	EPA 6010	1.0	1.2
Zinc	9/28/98	EPA 6010	0.4	16.0

ND = not detected, below the detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Divina B. Pascual, Project Manager
Water and Waste Laboratory



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PHONE (714) 730-6239 • FAX (714) 730-6462

REPORT

CLIENT: CRWQCB-San Diego
Clairemont Mesa Blvd., "B"
San Diego, CA 92124
Attention: Greig Peters

DATE: July 6, 1998

RECEIVED: June 11, 1998

LABORATORY NO. 409363-4
SAMPLER: Linda Pardy

SAMPLE: DFG-978-330

INVESTIGATION: Analysis as requested

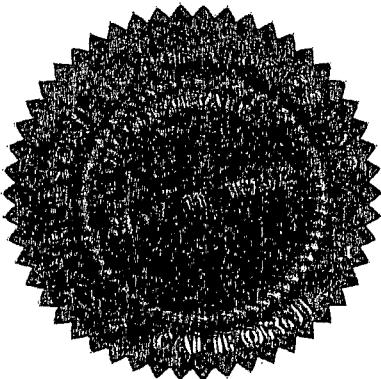
RESULTS

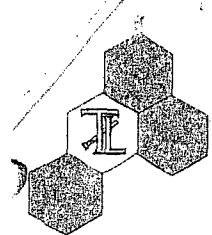
MILLIGRAMS PER LITER

<u>Parameter</u>	<u>Date Analyzed</u>	<u>Method</u>	<u>Detection Limit</u>	<u>Concentration</u>
Ammonia-N	6/16/98	SM 4500NH	0.14	3.3
Nitrate-N	6/11/98	EPA 300.0	0.20	3.1
Nitrite-N	6/11/98	EPA 354.1	0.01	1.0
Total Kjeldahl Nitrogen	7/2/98	ASTM D3590	0.1	0.81
Orthophosphate-P	6/12/98	SM 4500PE	0.04	1.1
Total Phosphate	6/17/98	EPA 365.3	1.0	14.0 14.0
Total Dissolved Solids	6/12/98	EPA 160.1	10.0	1,712
Turbidity, NTU	6/12/98	EPA 180.1	0.10	4.1

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Divina B. Pascual, Project Manager
Water and Waste Laboratory





TRUESDAIL LABORATORIES, INC.

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Established 1931

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PHONE (714) 730-6239 • FAX (714) 730-6462

REPORT

CLIENT: CRWQCB-San Diego
Clairemont Mesa Blvd., "B"
San Diego, CA 92124
Attention: Greig Peters

DATE: July 6, 1998

RECEIVED: June 11, 1998

LABORATORY NO. 409363-5
SAMPLER: Linda Pardy

SAMPLE: DFG-978-331

INVESTIGATION: Analysis as requested

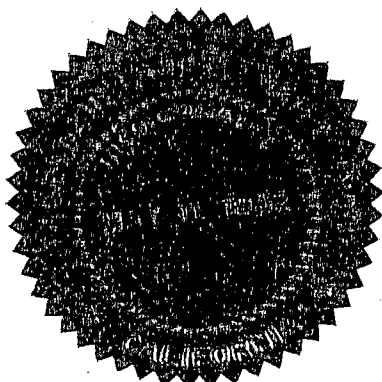
RESULTS

MILLIGRAMS PER LITER

<u>Parameter</u>	<u>Date Analyzed</u>	<u>Method</u>	<u>Detection Limit</u>	<u>Concentration</u>
Ammonia-N	6/16/98	SM 4500NH	0.14	0.18
Nitrate-N	6/11/98	EPA 300.0	0.20	1.0
Nitrite-N	6/11/98	EPA 354.1	0.01	0.03
Total Kjeldahl Nitrogen	7/2/98	ASTM D3590	0.1	0.56
Orthophosphate-P	6/12/98	SM 4500PE	0.04	0.15
Total Phosphate	6/17/98	EPA 365.3	1.0	18.5 revised
Total Dissolved Solids	6/12/98	EPA 160.1	10.0	1,961
Turbidity, NTU	6/12/98	EPA 180.1	0.10	1.1

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Divina B. Pascual, Project Manager
Water and Waste Laboratory



This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.