

HORNKOHL LABORATORIES

CHEMICAL AND TESTING ENGINEERS

714 TRUXTON AVENUE
BAKERSFIELD, CALIFORNIA

October 8, 1954

Laboratory No. 79494

Sample Water

Marked 9/25, Well # 10

Received September 29, 1954

Submitted by A.F. Peterson
1603 California Ave.
Bakersfield, Calif.

IRRIGATION WATER ANALYSIS

CONSTITUENTS			PARTS PER MILLION	GRAINS PER GALLON	IRRIGATION WATER CLASSIFICATION
CARBONATES	(ALKALI)	(CO ₃)	0.0	0.00	Good
BICARBONATES		(HCO ₃)	169.6	9.92	Good
CHLORIDES	(SALT)	(Cl)	122.0	7.14	Good
SULPHATES		(SO ₄)	418.3	24.46	Good
SULPHIDES		(S)	0.0	0.00	Good
NITRATES		(NO ₃)	7.6		Good
CALCIUM	(LIME)	(CA)	197.6	11.56	Good
MAGNESIUM		(Mg)	33.7	1.97	Good
SODIUM		(NA)	52.9	3.09	Good
BORON		(B)	.05		Good
IRON		(FE)	.1		Good
HARDNESS AS CaCO ₃			632.0	36.96	Good
TOTAL SOLIDS @ 105°C			916.9	53.62	
TOTAL SOLIDS @ RED HEAT			854.3	49.96	
pH (HYDROGEN ION CONCENTRATION)			7.9		
SODIUM PERCENTAGE 15.4%					Good
COLOR	Water White				Good
ODOR	None				Good
TURBIDITY	Clear				
CONDUCTIVITY, MHOS/CM ² X10 ⁵ @25°C.			147.3		

THEORETICAL ANALYSIS

Calcium Bicarbonate	225.3	13.18
Calcium Sulfate	483.3	28.26
Magnesium Sulfate	97.5	5.70
Magnesium Chloride	54.3	3.18
Sodium Chloride	134.5	7.87

REMARKS: As noted by the classification column above, this sample would be classified as excellent for irrigation use.

105/6E-29K1

September 25, 1978



Borrego Springs Water Co.
Box B
Borrego Springs, California

3538 HANCOCK STREET
SAN DIEGO, CALIF. 92110
P. O. BOX 81789
SAN DIEGO, CALIF. 92138
PHONE: 298-6131

LABORATORY REPORT

Water samples received on September 14, 1978

<u>Sample</u>	<u>Nitrate (N) mg/l</u>	<u>Fluoride mg/l</u>
3 & 4 mixed	10.4	
Well # 4	14 ^{61.6 as NO3}	
Well # 3	1.3	
Well # 2		1.6

Submitted by,

Robert L. Chambers

Robert L. Chambers
Director

CHEMICAL ANALYSIS (mg/liter)

WELL NO. 4 *	9/25/54 <u>Horn Kohl Lab.</u>	5/16/72 ** <u>Env.Engr.Lab.</u>	5/23/73 <u>Env.Engr.Lab.</u>	5/5/75 <u>Env.Engr.Lab.</u>	2/15/75
Silica (SiO ₂)	--	32.0	28.0	36.0	
Iron	.1	.55	.05	.0	
Manganese	--	.0	.0	.0	
Fluoride	--	.68	.46	.47	
Calcium	198.0	196.0	152.0	83.0	
Magnesium	34.0	32.0	22.0	13.0	
Sodium	53.0	162.0	76.0	59.0	
Potassium		8.3	6.0	2.1	
Bicarbonate	170.0	171.0	195.0	148.0	
Chloride	122.0	120.0	131.0	60.0	
Sulfate	418.0	417.0	283.0	127.0	
Nitrate	8.0	312.0	16.0	2.2	58
Total Dissolved Solids	917.0	1310.0	856.0	508.0	
Total Hardness as CaCO ₃	632.0	620.0	470.0	263.0	
Elect. Cond. K x 10 ⁶ @ 25°C.	1473.0	1970.0	1280.0	790.0	
pH	7.9	7.6	7.4	7.76	

* Well No. 4 was originally drilled for DiGiorgio Farms and carried in the DiGiorgio records as Well No. 10.

** Analysis taken when Well No. 4 was first reactivated after several years of non use. Waters entering well near static water level were found to be very high in dissolved minerals. These highly concentrated waters were sealed off by the Roscoe Moss Company during the summer of 1972. After several weeks of operating, salinity was reduced to acceptable levels noted in May 1973. Note steady improvement since 1972.



ENVIRONMENTAL ENGINEERING LABORATORY

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105/6E-29K1

Borrego Springs Water Co.
Box B
Borrego Springs, California

Date May 19, 1975
Date Collected _____
Date Received May 5, 1975

Sample Source: # 4
Conductivity 790 micromhos/cm @ 25°C
pH 7.76

Principal Constituents

Cations:				Anions:				
		mg/l	me/l			mg/l	mg/l	
Calcium	Ca	83	L	Aluminum	Al		Barium	Ba
Magnesium	Mg	13	L	Zinc	Zn		Cadmium	Cd
Sodium	Na	59	L	Hexavalent Chromium	Cr		Silver	Ag
Potassium	K	2.1	L	Total Chromium	Cr		Mercury	Hg
Ammonia	NH ₄			Arsenic	As		Gold	Au
% Sodium				Lead	Pb			
				Copper	Cu			
				Selenium	Se			
				Nickel	Ni			
				Cyanide	CN			
				Phenols				
				M B A S				
				Grease & Oil				
				Sulfides				
				Volatile Acids				
				Suspended Solids				
				Volatile Suspended Solids				
				Dissolved Solids				
				Volatile Dissolved Solids				
				Settleable Solids				
				BOD, 5 day 20°C				
				Oxygen Consumed				
				Coliform, MPN/100 ml				
				Plate Count/ml				
				Plankton Count/ml				
				Radioactivity Picocuries/ml				
Boron	B							
Silica	SiO ₂	36	H					
Iron	Fe	0	L					
Manganese	Mn	0	0					
Total Phosphate	PO ₄							
Ortho Phosphate	PO ₄	0.05						
Nitrite	N							
Nitrate	N	0.49	L					
Ammonia	N							
Total Organic Nitrogen	N							
Total Kjeldahl Nitrogen	N							
Total Alkalinity	CaCO ₃	121						
Total Hardness	CaCO ₃	263	L					
Dissolved Solids		508	L					
Turbidity, Units								
Remarks								

Robert A. Chamberlain



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10S/6E-29K1

Borrego Springs Water Co.
Box B
Borrego Springs, California

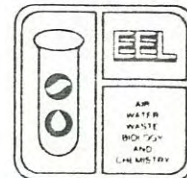
Date December 15, 1976
Date Collected _____
Date Received December 6, 1976

Sample Source: Well # 4
Conductivity _____ micromhos/cm @ 25°C
pH _____

Principal Constituents

Cations:		mg/l	me/l			mg/l		
Calcium	Ca			Aluminum	Al		Barium	Ba
Magnesium	Mg			Zinc	Zn		Cadmium	Cd
Sodium	Na			Hexavalent Chromium	Cr		Silver	Ag
Potassium	K			Total Chromium	Cr		Mercury	Hg
Ammonia	NH ₄			Arsenic	As		Gold	Au
% Sodium				Lead	Pb			
Anions				Copper	Cu			
Hydroxide	OH			Selenium	Se			
Carbonate	CO ₃			Nickel	Ni			
Bicarbonate	HCO ₃			Cyanide	CN			
Sulfate	SO ₄			Phenols				
Chloride	Cl			M B A S				
Nitrate	NO ₃	66		Grease & Oil				
Fluoride	F			Sulfides				
				Volatile Acids				
Boron	B			Suspended Solids				
Silica	SiO ₂			Volatile Suspended Solids				
Iron	Fe			Dissolved Solids				
Manganese	Mn			Volatile Dissolved Solids				
Total Phosphate	PO ₄			Settleable Solids				
Ortho Phosphate	PO ₄			BOD, 5 day 20°C				
Nitrite	N			Oxygen Consumed				
Nitrate	N	15		Coliform, MPN/100 ml				
Ammonia	N			Plate Count/ml				
Total Organic Nitrogen	N			Plankton Count/ml				
Total Kjeldahl Nitrogen	N			Radioactivity Picocuries/ml				
Total Alkalinity	CaCO ₃							
Total Hardness	CaCO ₃							
Dissolved Solids								
Turbidity, Units								
Remarks								

D. J. ...



November 16, 1978

Borrego Springs Water Co.
P.O. Box B
Borrego Springs, California 92004

3538 HANCOCK STREET
SAN DIEGO, CALIF. 92110
P. O. BOX 81789
SAN DIEGO, CALIF. 92138
PHONE: 298-6131

LABORATORY REPORT

Water samples received November 9, 1978

<u>Sample</u>	<u>Nitrate mg/l</u>		<u>Fluoride mg/l</u>
	<u>(N)</u>	<u>(NO₃)</u>	
Well # 2	0.27	0.80	3.5
Well # 3	0.67	3.0	2.0
Well # 4	12	53	

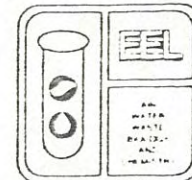
105/6E-29K1

This is correct
Conversion factor
is $4.427 \times N = NO_3$

Submitted by,

Robert L. Chambers

Robert L. Chambers
Director



October 30, 1978

Borrego Springs Water Co.
Box B
Borrego Springs, California

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P. O. BOX 81789
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PHONE: 298-6131

LABORATORY REPORT

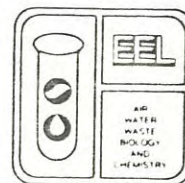
Water samples received October 24, 1978

<u>Sample</u>	<u>Fluoride mg/l</u>	<u>Nitrate (N) mg/l</u>
Well # 2	1.8	
Well 2, 3, & 4	2.4	
Well # 4 <i>705/6E-29K1</i>		13
Well # 3 & 4		0.38

Submitted by,

Robert L. Chambers

Robert L. Chambers
Director



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Borrego Springs Water Co.
Box B
Borrego Springs, California

LABORATORY REPORT

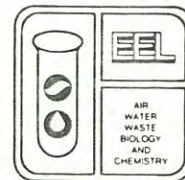
Water samples received on August 15, 1978

<u>Sample</u>	<u>Fluoride mg/l</u>	<u>Nitrate mg/l</u>	
		<u>(N)</u>	<u>(NO₃)</u>
<u>Well # 2</u>	4.4		
Well # 3 & 4 (Mix)		9.9	44
Well # 3 & 4 Granada		9.9	44
<u>Well # 4</u> 10S/6E-29K1		9.4	42

Submitted by,

Robert L. Chambers
Robert L. Chambers
Director

ENVIRONMENTAL
ENGINEERING
LABORATORY



February 4, 1976

Borrego Springs Water Co.
Box B
Borrego Springs, California

3538 HANCOCK STREET
SAN DIEGO, CALIF. 92110
P. O. BOX 81789
SAN DIEGO, CALIF. 92138
PHONE: 298-6131

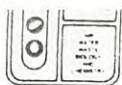
LABORATORY REPORT

Water samples received on January 26, 1976

<u>Sample</u>	<u>Color, Units</u>	<u>Odor, Number</u>	<u>Turbidity, Units</u>
A-1	None	1	0.23
B-2	None	1	0.12
C-3	None	1	0.33
Temperature:-	6/10/78 VMS		
Well # 4 - 76°	77° F	105/6E-29KI	
Well # 3 - 92°	93°		
Well # 2 - 84°	84°		

Submitted by,

Robert L. Chambers
Robert L. Chambers
Director



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10S/6E-29K1

Sample Source: Well # 4

Borrego Springs Water Co.
Box B
Borrego Springs, California

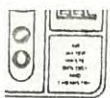
Date May 5, 1976
Date Collected _____
Date Received April 29, 1976

Conductivity _____ micromhos/cm @ 25°C
pH _____

Principal Constituents

Cations:		mg/l	me/l			mg/l			mg/l
Calcium	Ca			Aluminum	Al		Barium	Ba	
Magnesium	Mg			Zinc	Zn		Cadmium	Cd	
Sodium	Na			Hexavalent Chromium	Cr		Silver	Ag	
Potassium	K			Total Chromium	Cr		Mercury	Hg	
Ammonia	NH ₄			Arsenic	As		Gold	Au	
% Sodium				Lead	Pb				
				Copper	Cu				
				Selenium	Se				
				Nickel	Ni				
				Cyanide	CN				
				Phenols					
				M B A S					
				Grease & Oil					
				Sulfides					
				Volatile Acids					
				Suspended Solids					
				Volatile Suspended Solids					
				Dissolved Solids					
				Volatile Dissolved Solids					
				Settleable Solids					
				BOD, 5 day 20°C					
				Oxygen Consumed					
				Coliform, MPN/100 ml					
				Plate Count/ml					
				Plankton Count/ml					
				Radioactivity Picocuries/ml					
Boron	B								
Silica	SiO ₂								
Iron	Fe								
Manganese	Mn								
Total Phosphate	PO ₄								
Ortho Phosphate	PO ₄								
Nitrite	N								
Nitrate	N								
Ammonia	N	11							
Total Organic Nitrogen	N								
Total Kjeldahl Nitrogen	N								
Total Alkalinity	CaCO ₃								
Total Hardness	CaCO ₃								
Dissolved Solids									
Turbidity, Units									
Remarks									

Frank H. Chamber

**ENVIRONMENTAL ENGINEERING LABORATORY**3538 HANCOCK STREET, SAN DIEGO, CALIF. 92110 • PHONE: 298-6131
P. O. BOX 81789, SAN DIEGO, CALIF. 92138

105/6E-29141

Sample Source: Well # 4Borrego Springs Water Company
Box B
Borrego Springs, CaliforniaDate October 11, 1976
Date Collected _____
Date Received September 30, 1976Conductivity _____ micromhos/cm @ 25°C
pH _____

Principal Constituents

Cations:		mg/l	me/l	Anions:		mg/l	mg/l
Calcium	Ca			Aluminum	Al		
Magnesium	Mg			Zinc	Zn		
Sodium	Na			Hexavalent Chromium	Cr		
Potassium	K			Total Chromium	Cr		
Ammonia	NH ₄			Arsenic	As		
% Sodium				Lead	Pb		
				Copper	Cu		
				Seelenium	Se		
				Nickel	Ni		
				Cyanide	CN		
				Phenols			
				M B A S			
				Grease & Oil			
				Sulfides			
				Volatile Acids			
				Suspended Solids			
				Volatile Suspended Solids			
				Dissolved Solids			
				Volatile Dissolved Solids			
				Settleable Solids			
				BOD, 5 day 20°C			
				Oxygen Consumed			
				Coliform, MPN/100 ml			
				Plate Count/ml			
				Plankton Count/ml			
				Radioactivity Picouries/ml			
Boron	B						
Silica	SiO ₂						
Iron	Fe						
Manganese	Mn						
Total Phosphate	PO ₄						
Ortho Phosphate	PO ₄						
Nitrite	N						
Nitrate	N	49					
Ammonia	N						
Total Organic Nitrogen	N						
Total Kjeldahl Nitrogen	N						
Total Alkalinity	CaCO ₃						
Total Hardness	CaCO ₃						
Dissolved Solids							
Turbidity, Units							
Remarks							

Robert L. Chamber



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105/6E-29K1

Shell #4

Borrego Springs Water Co.
 Box B
 Borrego Springs, California

Date August 12, 1976
 Date Collected
 Date Received August 6, 1976

Sample Source: Water

Conductivity _____ micromhos/cm @ 25°C
 pH _____

Principal Constituents

Cations:		mg/l	me/l			mg/l			mg/l
Calcium	Ca			Aluminum	Al		Barium	Ba	
Magnesium	Mg			Zinc	Zn		Cadmium	Cd	
Sodium	Na			Hexavalent Chromium	Cr		Silver	Ag	
Potassium	K			Total Chromium	Cr		Mercury	Hg	
Ammonia	NH ₄			Arsenic	As		Gold	Au	
% Sodium				Lead	Pb				
Anions:				Copper	Cu				
Hydroxide	OH			Selenium	Se				
Carbonate	CO ₃			Nickel	Ni				
Bicarbonate	HCO ₃								
Sulfate	SO ₄			Cyanide	CN				
Chloride	Cl			Phenols					
Nitrate	NO ₃	62		M B A S					
Fluoride	F			Grease & Oil					
				Sulfides					
				Volatile Acids					
Boron	B			Suspended Solids					
Silica	SiO ₂			Volatile Suspended Solids					
Iron	Fe			Dissolved Solids					
Manganese	Mn			Volatile Dissolved Solids					
Total Phosphate	PO ₄			Settleable Solids					
Ortho Phosphate	PO ₄			BOD, 5 day 20°C					
Nitrite	N			Oxygen Consumed					
Nitrate	N	14		Coliform, MPN/100 ml					
Ammonia	N			Plate Count/ml					
Total Organic Nitrogen	N			Plankton Count/ml					
Total Kjeldahl Nitrogen	N			Radioactivity Picocuries/ml					
Total Alkalinity	CaCO ₃								
Total Hardness	CaCO ₃								
Dissolved Solids									
Turbidity, Units									
Remarks									

Robert L. Chambers