

# **EXHIBIT 1**

# Estimate of Water Consumption at Boron SRRA

## Background

Boron Safety Roadside Rest Area is located in Kern County on State Route 58 near postmile 139. The GPS coordinates are 117.71746 W, 35.00697 N. An estimate of the water usage for indoor and outdoor activities associated with Boron SRRA is presented in this report.



Figure 1  
Satellite image of Boron SRRA

## Indoor Water Use

The indoor water use can be estimated using a model developed using parameters obtained at SRRAs located around the state. Using traffic data published by Caltrans (see Figure 1 and Appendix A), assumed usage and fixture flow data (see Table 1), the estimated average flow rate is 5000 gal/d (total flow, flows for EB and WB estimated at 2700 and 2300, respectively (see Table 2). A summary of the modeled flow is compared to actual flow data for other SRRRA facilities on Fig. 2.

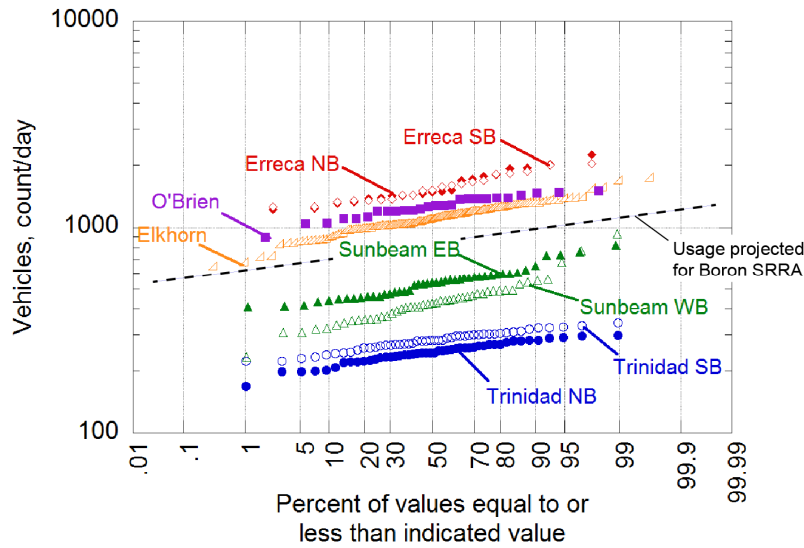


Figure 2  
Summary of traffic flow data for various SRRRA facilities

Table 1  
Observed distribution of SRRRA usage factors.

	All Days	Week Days	Weekends
<b>Restroom use (people)</b>			
Women's restroom use/vehicle	0.5	0.5	0.6
Men's restroom use/vehicle	0.9	0.9	1.1
SRRRA users/vehicle	1.4	1.3	1.7
<b>Water use for hand washing (gal)</b>			
Water use/woman's restroom user	0.077	0.103	0.085
Water use/men's restroom user	0.054	0.064	0.055
Water use/SRRRA user	0.074	0.078	0.066
<b>Water use for toilet flushing (gal)</b>			
Water use/woman's restroom user	2.7	2.9	2.9
Water use/men's restroom user	2.0	2.1	2.1
Water use/SRRRA user	2.4	2.4	2.4

Table 2  
Calibrated model of Boron SRRA water usage from 2009-2012

Peaking factor	2.3	(99% / 50%)		Yellow cells are input data				
Design year	1.0	(typically 1.3)		Green cells are output				
ADT EB (current)	790.0			White cells are informational				
ADT WB (current)	640.0			Blue cells are computations				
	<b>Average</b>				<b>Peak</b>			
	<b>EB</b>		<b>WB</b>		<b>EB</b>		<b>WB</b>	
Vehicles/d	790 <sup>a</sup>		640 <sup>a</sup>		1817		1472	
People/veh	1.4		1.4		1.7		1.7	
Total, per/d	1106		896		3088.9		2502.4	
Gender	M	F	M	F	M	F	M	F
Usage	0.64	0.36	0.64	0.36	0.64	0.36	0.64	0.36
# people/d	708	398	573	323	1977	1112	1602	901
<b>Number of fixture units (informational only)</b>								
# WC	4	8	4	8	4	8	4	8
# Urn	4	0	4	0	4	0	4	0
# Lav	3	3	3	3	3	3	3	3
<b>Distribution of fixture usage (used to compute flowrates)</b>								
WC use	0.2	1	0.2	1	0.2	1	0.2	1
Urn use	0.8	0	0.8	0	0.8	0	0.8	0
Lav use	1	1	1	1	1	1	1	1
<b>Fixture unit flowrate, gal/use</b>								
WC flow	3.76	2.58	3.76	2.58	3.76	2.58	3.76	2.58
Urn flow	1.54	0	1.54	0	1.54	0	1.54	0
Lav flow	0.054	0.077	0.054	0.077	0.054	0.077	0.054	0.077
<b>Special factor to account for occasional heavy use and additional restroom facilities</b>								
Use factor	1	1	1	1	1	1	1	1
<b>Flow for each type of fixture, gal/d</b>								
WC	532	1027	431	832	1487	2869	1204	2324
Urn	872	0	706	0	2436	0	1973	0
Lav	38	31	31	25	107	86	86	69
Baseline	250		250		250		250	
Unit	2.0	2.7	2.0	2.7	2.0	2.7	2.0	2.7
<b>Total flows, gal/d</b>								
Flowrates	1443	1058	1169	857	4029	2955	3264	2394
Utility water	2432		1970		6791		5502	
Potable water	319		306		442		406	
Total flow	2750		2276		7234		5908	
Flows combined	5026				13,141			

<sup>a</sup> from Caltrans Traffic Volumes data for AADT 2003

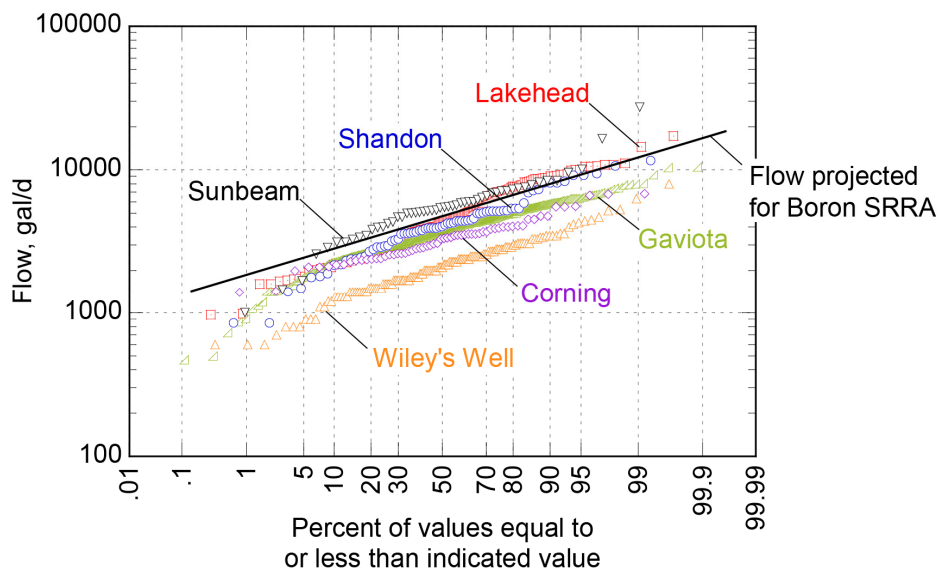


Figure 3  
 Summary of flow data for various SRRA facilities and modeled flow distribution for Boron SRRA based on traffic flow and water use factors

Table 3

Calibrated model of Boron SRRRA water usage from 2003-2009

Peaking factor (99% / 50%)	2.3	Yellow cells are input data							
Design year (historically 1.3)	1.0	Green cells are output							
ADT EB (current)	790	White cells are informational							
ADT WB (current)	640	Blue cells are computations							
	<b>Average</b>				<b>Peak</b>				
	<b>EB</b>		<b>WB</b>		<b>EB</b>		<b>WB</b>		
Vehicles/d	790		640		1817		1472		
People/veh	1.4		1.4		1.7		1.7		
Total, per/d	1106		896		3089		2502		
Gender	M	F	M	F	M	F	M	F	
Usage	0.64	0.36	0.64	0.36	0.64	0.36	0.64	0.36	
# people/d	708	398	573	323	1977	1112	1602	901	
<b>Number of fixture units (informational only)</b>									
# WC	2	4	2	4	2	4	2	3	
# Urn	1	0	1	0	1	0	1	0	
# Lav	2	2	2	2	2	2	2	2	
<b>Distribution of fixture usage (used to compute flowrates)</b>									
WC use	0.2	1	0.2	1	0.2	1	0.2	1	
Urn use	0.8	0	0.8	0	0.8	0	0.8	0	
Lav use	1	1	1	1	1	1	1	1	
<b>Fixture unit flowrate, gal/use</b>									
WC flow, gal/use	5	5	5	5	5	5	5	5	
Urn flow, gal/use	2.5	0	2.5	0	2.5	0	2.5	0	
Lav flow, gal/use	0.054	0.077	0.054	0.077	0.054	0.077	0.054	0.077	
<b>Special factor to account for occasional heavy use and additional restroom facilities</b>									
Use factor	1	1	1	1	1	1	1	1	
<b>Flow for each type of fixture, gal/d</b>									
WC, gal/d	708	1991	573	1613	1977	5560	1602	4504	
Urn, gal/d	1416	0	1147	0	3954	0	3203	0	
Lav, gal/d	38	31	31	25	107	86	86	69	
Baseline for cleaning, etc. gal/d	250		250		250		250		
Unit	3.1	5.1	3.1	5.1	3.1	5.1	3.1	5.1	
<b>Total flows, gal/d</b>									
Flowrates, gal/d	2162	2021	1751	1638	6037	5646	4891	4574	
Total utility use, gal/d	4114		3333		11491		9309		
Total potable use, gal/d	319		306		442		406		
Total flow each side, gal/d	4433		3639		11933		9715		
Total flow combined, gal/d	8072				21648				

Appendix A

CALTRANS TRAFFIC VOLUMES  
PRINT FILE FOR RAMP AADT

06-KER-058

DESCRIPTION	2002 AADT	2003 AADT	2004 AADT	2005 AADT	2006 AADT	2007 AADT	2008 AADT	2009 AADT	201 AI
CLAY MINE RD WB OFF	350	240	250	300	390	410	300		
WB ON FR WEST BORON	530	310	300	390	390	390	390		
EB OFF TO WEST BORON	500	360	350	410	410	410	410		
EB ON FR WEST BORON	20	30	30	40	40	40	40		
WB OFF TO WEST BORON	10	15	15	50	50	50	50		
EB OFF TO GEPHART RD	70	60	60	60	60	60	60		
GEPHART RD WB ON RAMP	80	50	45	60	60	60	60		
GEPHART RD WB OFF RAMP	30	35	35	50	50	50	50		
EB ON FROM GEPHART RD	30	40	40	50	50	50	50		
EB OFF TO BORON REST AREA	790	790	790	790	790	790	790		
WB ON FROM BORON REST	640	640	640	640	640	640	640		
EB ON FROM BORON REST	790	790	790	790	790	790	790		
WB OFF TO BORON REST AREA	640	640	640	640	640	640	640		
BORAX EB OFF	530	530	530	530	530	530	530		
BORAX EB ON	280	280	280	280	280	280	280		
BORAX RD WB OFF	310	310	310	310	310	310	310		
BORAX RD WB ON	380	380	380	380	380	380	380		
BORON AVE EB OFF	470	470	470	470	470	470	470		
BORON AVE EB ON	130	130	130	130	130	130	130		
BORON AVE WB ON	450	450	450	450	450	450	450		
BORON AVE WB OFF	390	390	390	390	390	390	390		