State of California—Health and Human Services Agency
California Department of Public Health

RON CHAPMAN, MD, MPH
Director & State Health Officer

EDMUND G. BROWN JR.
Governor

October 14, 2013
System No. 1000021

Ms. Betty Brown
Special District Administrator
FCSA #5/Wildwood Island
2220 Tulare Street, #600
Fresno, CA 93721

RE: GWUDI Evaluation

Dear Mr. Schmidt:

The Department has received and reviewed the GWUDI evaluation package submitted by FCSA # 5/Wildwood Island on August 22, 2013 in response to the GWUDI requirement established in January 2012 inspection report. The report had identified that the existing wells, Well 01 and Well 02, were in the close proximity to the Kings River tributaries and needed to determine if they are under influence of surface water. A set of water quality evaluation was required from the wells and Kings River tributaries, the status of which is presented below:

I. *Monitor Well 01 and Well 02 during the dry season and once during the rainy season for General Mineral and General Physical Constituents, and Inorganic Chemicals. Wet season sample shall be collected immediately following a rain event (within 24 to 48 hours).*

Status: The Water System conducted three sets of sampling from Well 01 and two sets of sampling from Well 02. Well 01 sampling was conducted in November 2012, April 2013 and June 2013. Well 02 sampling was conducted in November 2012 and June 2013. There were no distinct water quality variations in dry and winter season. See Appendix A for the results.

II. *Record temperature and turbidity measurements of both: the drinking water wells and the surface water on the same day on a bi-weekly basis for twelve consecutive months. A sampling schedule must be specified and adhered to.*

Status: Partially Completed. The water temperatures were recorded at both wells and Kings River tributaries. Similarly, the turbidities were measured from all of the required sources. Limited turbidity samples were taken from the tributaries. A total of nine (9) turbidity samples were measured from tributary # 1 (near Well 01) and a total of six (6) turbidity samples were measured from tributary # 2 (near Well 02) typically during

the months of May, June and July when water was flowing. The summary of the testing is presented in Table 1. The results are presented in Appendix A. Based on the available results for May and June; the water temperature of the tributaries is greater than that of the wells. Similarly, based on the available turbidity results for May, June and July, the turbidity of the tributaries is greater than that of the wells. Graphical trends of the available temperature and turbidity data are presented in Appendix B.

Table 1. Summary of testing results

Parameters	Well 01	Tributary#1	Well 02	Tributary#2
Water Temperature, °C	15.3 - 18.3	18.4 -18.6	15.8 - 17.4	18.4 - 22.3
Turbidity, NTU	ND - 0.74	0.28 - 2.0	ND - 0.28	0.27 - 1.7

III. *For twelve consecutive months, monitor Well 01, Well 02 and surface water body (when water is present) twice a month (bi-weekly) for total coliform and E. coli bacteria. Samples shall be analyzed by a State certified laboratory using an enumeration method approved for testing for coliforms in drinking water. Results must be reported in units of MPN/100 ml. The sample volume collected and the analytical method used must be reported with the results.*

Status: Completed. Well 01 and Well 02 occasionally tested positive for total coliforms. The sample collected from Well 01 on July 5, 2013 resulted in concentration of 1 MPN/100ml. Similarly, the samples collected from Well 02 on May 20, 2012, June 11, 2013, June 16, 2013 and July 5, 2013 resulted in coliform concentrations of 6.2, 35, 1 and 1 MPN/100ml, respectively. None of the samples tested positive for E.*coli*. The coliform samples collected from the Kings River tributaries resulted in concentrations ranging from 1600 to >2419.2 MPN/100ml. Similarly, the E.*coli* samples resulted in concentrations ranging from 12 to 490 MPN/100ml.

IV. *Monitor the water levels at Well 01, Well 02 and the surface water body monthly for twelve consecutive months.*

Status: Partially Completed. The Water System only monitored the water levels from the wells. The water level at the Kings River tributaries was not recorded due to lack of flowing water at the sample location. Based on the water levels recorded, Well 01 water depth varied from a minimum of 20 feet bgs in February 2013 to 38 feet bgs in September 2012. Similarly, Well 02 water depth varied from a minimum of 14 feet bgs from November 2012 through February 2013 to 32 feet bgs in June 2013.

V. *A Microscopic Particulate Analysis (MPA) of Well 01 and Well 02 must be performed once during the dry season and twice during the rainy season. A particulate analysis identifies microorganisms indigenous to surface water and whose presence in a ground water source would indicate surface water influence. MPA sampling shall be collected using the equipment outlined in the EPA's Consensus Method. The sample volume shall be between 500 and 1,000 gallons and should be collected over a 4 to 8 hour period.*

Wet season samples shall be collected immediately following a significant rain event (within 24 to 48 hours).

Status: Completed. The Water System collected a total of three (3) MPA samples from both wells. Well 01 samples were collected in August 2012, May 2013 and June 2013. Well 02 samples were collected in August 2012 and two (2) consecutive weeks of June 2013. The Water System has designated the samples taken in May and June to be wet season sample which were taken following a rainfall event. The Water System stated that they could not collect a sample following a significant rainfall event due to (i) absence of local MPA testing lab, (ii) coordination issues and failure to receive sample bottles in a timely manner from the lab in bay area.

Primary Bioindicators like Giarida, Coccidia, Diatoms, Algae, Insects/Larvae, Rotifiers and Plant Debris were tested in all of the samples. All of the primary bioindicators were 0/100 gallon in all of the samples form Well 01 and Well 02. This result implies that both the wells have relative surface water risk factor score of zero (0) associated with the primary bioindicators and hence the risk of surface water contamination is low (score 0-9).

Secondary Bioindicators like Amorphous Debris, Minerals, Plant Pollen, Nematodes, Crustacea, Amoeba, Ciliates/Flagellates and other organisms were tested in all of the samples. Only Amorphous Debris and Plant Pollen was detected. Amorphous Debris was detected in all of the samples at a concentration of TNTC/100 gallon. TNTC stands for too many to count meaning the results are greater than 200/100 gallon. Plant Pollen was detected at a concentration of 9/100 gallon in a single sample collected on August 15, 2012 from Well 02. There is no risk associated with secondary bioindicators.

Conclusion

The Water System did not complete all of the requirements specified for GWUDI monitoring and conducted limited monitoring from the Kings River tributaries. However, based on the results of the monitoring conducted, Well 01 and Well 02 is currently determined to be not under direct influence of surface water. The reasonings are presented below:

- ✓ Both wells resulted in a low risk score of "0" in the MPA testing. None of the primary bioindicators were present in the samples collected from Well 01 and Well 02.
- ✓ There was no distinct correlation of the total coliform concentrations detected in the wells and Kings River tributaries. The occasional detection of total coliform may be due to construction deficiency of the well. E.*coli was* not detected in any of the well samples.
- ✓ There was no distinct correlation of the turbidity concentrations detected in the wells and the Kings River tributaries.

Hence, the Water System is currently not required to provide surface water treatment at the existing wells. However, due to a history of total coliforms and lack of annular seal, the Water System is required to provide continuous chlorination at both wells

sufficient to provide 4-log virus removal. The preliminary calculations by the Department show that the Water System may not be able to achieve 4-log virus removal with the contact time provided by existing pressure tank(s). **By November 30, 2013**, the Water System should present to the Department how it will achieve the required chlorine contact time at both the wells. If you have any questions regarding this letter, please contact Sudarshan Poudyal or me at (559) 447-3300.

Sincerely,

Betsy Lichti, P.E.
Senior Sanitary Engineer, Fresno District
SOUTHERN CALIFORNIA BRANCH
DRINKING WATER FIELD OPERATIONS

BSL/SP

Appendix A: GWUDI Monitoring Data in Excel
Appendix B: Graphical trend of temperature and turbidity

CSA NO. 5 - WELL # 1							
Collection Date	Water Level (Sounding)	Temperature = °C	Category	Contaminant OR Bacteria	Results	Reporting Limits	Units
05/25/12	33' - 76'	15.8	REGULATED SECONDARY	TURBIDITY	**0.38**	0.10	NTU
05/25/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
05/25/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/11/12		15.7	REGULATED SECONDARY	TURBIDITY	**0.13**	0.10	NTU
06/11/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/11/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/13/12			REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
06/15/12			**PRE CL2**	COLIFORMS	<1.0	1.0	MPN/100ML
06/15/12	37' - 78'	15.7	**PRE CL2**	E. COLI	<1.0	1.0	MPN/100ML
06/15/12			**POST CL2**	COLIFORMS	<1.0	1.0	MPN/100ML
06/15/12			**POST CL2**	E. COLI	<1.0	1.0	MPN/100ML
06/27/12		15.5	REGULATED SECONDARY	TURBIDITY	**0.1**	0.10	NTU
06/27/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/27/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
07/12/12	37' - 77'	15.3	REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
07/12/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
07/12/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
07/18/12		15.1	REGULATED PRIMARY	COLIFORMS	ABSENT	1.0	MPN/100ML
07/18/12			REGULATED PRIMARY	E. COLI	ABSENT	1.0	MPN/100ML
07/25/12			REGULATED SECONDARY	TURBIDITY	**0.1**	0.10	NTU
07/25/12	77'	15.3	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
07/25/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
08/15/12			REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
08/15/12		15.6	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
08/15/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
08/21/12				**PARTICULATE TEST DONE**			
08/21/12			PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
08/29/12	37' - 83'	16.0	REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
08/29/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
08/29/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
09/12/12		16.0	REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
09/12/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
09/12/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
09/24/12			REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
09/24/12	38' - 80'	15.9	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
09/24/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
10/11/12		15.9	REGULATED SECONDARY	TURBIDITY	0.16	0.1	NTU
10/11/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
10/11/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
10/24/12	35'	16.1					
11/02/12			**GENERAL MINERAL-GENERAL PHYSICAL-INORGANIC CHEMICAL**				
11/02/12			REGULATED SECONDARY	TURBIDITY	**0.74**	0.10	NTU
11/08/12		16.1					
11/15/12			REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
11/15/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
11/15/12	22'	16.3	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
12/04/12			REGULATED SECONDARY	TURBIDITY	0.10	0.10	NTU
12/04/12		16.6	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
12/04/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
12/31/12	23'	16.9	REGULATED SECONDARY	TURBIDITY	**0.13**	0.10	NTU

12/31/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
12/31/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
01/14/13		17.1					
01/28/13	22'	17.4					
02/01/13			REGULATED SECONDARY	TURBIDITY	**0.25**	0.10	NTU
02/01/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
02/01/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
02/13/13	20'	17.8					
02/21/13			REGULATED SECONDARY	TURBIDITY	**0.16**	0.10	NTU
02/21/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
02/21/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
03/06/13	21'	17.8					
03/20/13			REGULATED SECONDARY	TURBIDITY	**0.11**	0.10	NTU
03/20/13			REGULATED PRIMARY	COLIFORMS	**1.0**	1.0	MPN/100ML
03/20/13		18.0	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
03/22/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
03/22/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
04/10/13		18.1					
04/17/13			**GENERAL MINERAL-GENERAL PHYSICAL-INORGANIC CHEMICAL**				
04/18/13			REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
04/18/13			REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
04/18/13	32' - 70'	18.3	**PRE CL2**	Chloride	**8.0**	2.0	mg/L
04/18/13			**PRE CL2**	Nitrate as NO3	**4.5**	2.0	mg/L
04/18/13			**POST CL2**	Total HAA5	0.0	1.0	µg/L
04/18/13			**POST CL2**	TTHM	**1.0**	0.50	µg/L
04/18/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
04/18/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
05/06/13				**PARTICULATE TEST DONE**			
05/06/13		18.3	PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
05/06/13			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
05/06/13			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
05/06/13			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
05/06/13			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
05/06/13			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
05/06/13			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
05/06/13			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
05/20/13			REGULATED SECONDARY	TURBIDITY	**0.11**	0.10	NTU
05/20/13	31' - 72'	18.4	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
05/20/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/03/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/03/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/04/13				**PARTICULATE TEST DONE**			
06/04/13			PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/04/13			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
06/04/13			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
06/04/13			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
06/04/13			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/04/13			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
06/04/13			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
06/04/13		18.3	SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
06/04/13			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
06/17/13	32' - 70'	18.3	REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
06/17/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/17/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML

06/18/13			**GENERAL MINERAL-GENERAL PHYSICAL-INORGANIC CHEMICAL**				
06/18/13			REGULATED SECONDARY	TURBIDITY	**0.13**	0.10	
07/05/13		18.3	REGULATED SECONDARY	TURBIDITY	**0.11**	0.10	NTU
07/05/13			REGULATED PRIMARY	COLIFORMS	1.0	1.0	MPN/100ML
07/05/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML

CSA NO. 5 - KINGS RIVER TRIBUTARY # 1

Collection Date	Temperature = °C	Category	Contaminant OR Bacteria	Results	Reporting Limit	Units	Notes
05/25/12	18.4	REGULATED SECONDARY	TURBIDITY	2	0.10	NTU	
05/25/12		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
05/25/12		REGULATED PRIMARY	E. COLI	490	1.0	MPN/100ML	
06/11/12	18.6	REGULATED SECONDARY	TURBIDITY	0.28	0.10	NTU	
06/11/12		REGULATED PRIMARY	COLIFORMS	1700	1.0	MPN/100ML	
06/11/12	18.8	REGULATED PRIMARY	E. COLI	42	1.0	MPN/100ML	
06/28/12		REGULATED SECONDARY	TURBIDITY	1	0.10	NTU	
06/28/12	19.0	REGULATED PRIMARY	COLIFORMS	2400	1.0	MPN/100ML	
06/28/12		REGULATED PRIMARY	E. COLI	25	1.0	MPN/100ML	
07/12/12		UNSAMPLEABLE					
07/18/12		UNSAMPLEABLE					
07/25/12		UNSAMPLEABLE					
08/15/12		UNSAMPLEABLE					
08/16/12		UNSAMPLEABLE					
08/21/12		UNSAMPLEABLE					
08/29/12		UNSAMPLEABLE					
0912/12		UNSAMPLEABLE					
09/24/12		UNSAMPLEABLE					
10/11/12		UNSAMPLEABLE					
11/16/12		UNSAMPLEABLE					
12/04/12		UNSAMPLEABLE					
12/31/12		UNSAMPLEABLE					
02/01/13		UNSAMPLEABLE					
02/21/13		UNSAMPLEABLE					
03/20/13		UNSAMPLEABLE					
03/22/13		UNSAMPLEABLE					
04/10/13		UNSAMPLEABLE					
04/17/13	19.2						
05/02/13	19.2						
05/20/13		REGULATED SECONDARY	TURBIDITY	0.81	0.10	NTU	
05/20/13		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
05/20/13		REGULATED PRIMARY	E. COLI	14	1.0	MPN/100ML	
05/20/13		REGULATED SECONDARY	TURBIDITY	0.47	0.10	NTU	
05/20/13		REGULATED PRIMARY	COLIFORMS	1700	1.0	MPN/100ML	
05/20/13		REGULATED PRIMARY	E. COLI	12	1.0	MPN/100ML	
05/20/13		REGULATED SECONDARY	TURBIDITY	1.1	0.10	NTU	
05/20/13		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
05/20/13		REGULATED PRIMARY	E. COLI	100	1.0	MPN/100ML	
05/20/13		REGULATED SECONDARY	TURBIDITY	0.81	0.10	NTU	
05/20/13		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
05/20/13	20.0	REGULATED PRIMARY	E. COLI	14	1.0	MPN/100ML	
06/03/13		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
06/03/13		REGULATED PRIMARY	E. COLI	250	1.0	MPN/100ML	
06/17/13		REGULATED SECONDARY	TURBIDITY	0.47	0.10	NTU	
06/17/13		REGULATED PRIMARY	COLIFORMS	1700	1.0	MPN/100ML	
06/17/13	22.3	REGULATED PRIMARY	E. COLI	12	1.0	MPN/100ML	
06/18/13		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
06/18/13		REGULATED PRIMARY	E. COLI	250	1.0	MPN/100ML	
07/05/13		REGULATED SECONDARY	TURBIDITY	1	0.10	NTU	
07/05/13		REGULATED PRIMARY	COLIFORMS	>2419.2	1.0	MPN/100ML	
07/05/13		REGULATED PRIMARY	E. COLI	120	1.0	MPN/100ML	

CSA NO. 5 - WELL # 2							
Collection D	Water Level (Sounding)	Temperature = °C	Category	Contaminant OR Bacteria	Results	Reporting Limits	Units
05/25/12	26' - 63'	16.0	REGULATED SECONDARY	TURBIDITY	**0.14**	0.1	NTU
05/25/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
05/25/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/11/12			REGULATED PRIMARY	COLIFORMS	**35**	1.0	MPN/100ML
06/11/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/13/12			REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
06/27/12			REGULATED SECONDARY	TURBIDITY	**0.13**	0.10	NTU
06/27/12	26' - 62'	15.7	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/27/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
07/12/12			REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
07/12/12		15.7	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
07/12/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
07/18/12			REGULATED PRIMARY	COLIFORMS	ABSENT	1.0	MPN/100ML
07/18/12		15.1	REGULATED PRIMARY	E. COLI	ABSENT	1.0	MPN/100ML
07/25/12			REGULATED SECONDARY	TURBIDITY	**0.10**	0.1	NTU
07/25/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
07/25/12	28' - 61'	15.1	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
08/15/12			REGULATED SECONDARY	TURBIDITY	**0.11**	0.1	NTU
08/15/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
08/15/12		13.7	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
08/15/12				**PARTICULATE TEST DONE**			
08/15/12			PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
08/15/12			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
08/15/12			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
08/15/12			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
08/15/12			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
08/15/12			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
08/15/12			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Plant Pollen	9/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
08/15/12			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
08/21/12			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
08/21/12			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
08/29/12			REGULATED SECONDARY	TURBIDITY	**0.11**	0.1	NTU
08/29/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
08/29/12	20' - 50'	16.3	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
09/12/12			REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
09/12/12		16.6	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
09/12/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
09/24/12	16' - 53'	15.8	REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
09/24/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
09/24/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
10/11/12		15.8	REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
10/11/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
10/11/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
11/02/12		15.9	REGULATED SECONDARY	TURBIDITY	ND	0.10	NTU
11/15/12			REGULATED SECONDARY	TURBIDITY	ND	0.1	NTU
11/15/12	14'	16.0	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
11/15/12			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
12/04/12			REGULATED SECONDARY	TURBIDITY	**0.16**	0.1	NTU
12/04/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
12/04/12		16.0	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
12/31/12			REGULATED SECONDARY	TURBIDITY	**0.17**	1.0	NTU
12/31/12			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
12/31/12	14'	16.3	REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML

01/14/13		16.8					
01/28/13	14'	16.9					
02/01/13			REGULATED SECONDARY	TURBIDITY	**0.28**	1.0	NTU
02/01/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
02/01/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
02/13/13	14'	17.0					
02/21/13			REGULATED SECONDARY	TURBIDITY	**0.23**	0.1	NTU
02/21/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
02/21/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
03/20/13			OFF LINE				ORDERED
03/22/13			OFF LINE				WAITING
04/10/13			OFF LINE				WAITING
04/17/13			OFF LINE				WAITING
04/17/13			OFF LINE				WAITING
05/17/13	**FLUSHING**		**AFTER NEW PUMP INSTALL**	COLIFORMS	0/100 gal	1.0	MPN/100ML
05/17/13	**FLUSHING**	17.6	**AFTER NEW PUMP INSTALL**	E. COLI	0/100 gal	1.0	MPN/100ML
05/20/13	**FLUSHING**		REGULATED SECONDARY	TURBIDITY	**0.16**	0.1	NTU
05/20/13	**FLUSHING**		REGULATED PRIMARY	COLIFORMS	**6.2**	1.0	MPN/100ML
05/20/13	**FLUSHING**		REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/03/13	**FLUSHING**	17.3	REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/03/13	**FLUSHING**		REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
06/04/13	**FLUSHING**		SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
06/10/13				**PARTICULATE TEST DONE**			
06/10/13	32' - 70'	17.4	PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/10/13			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
06/10/13			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
06/10/13			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
06/10/13			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/10/13			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
06/10/13			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
06/10/13			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
06/16/13	21' - 59'	17.5	REGULATED PRIMARY	COLIFORMS	1.0	1.0	MPN/100ML
06/16/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
06/17/13			REGULATED SECONDARY	TURBIDITY	**0.18**	0.1	NTU
06/17/13			GENERAL MINERAL-GENERAL PHYSICAL-INORGANIC CHEMICAL				
06/18/13			**PRE CL2**	COLIFORMS	<1.0	1.0	MPN/100ML
06/18/13			**PRE CL2**	E. COLI	<1.0	1.0	MPN/100ML
06/18/13		16.0	**POST CL2**	COLIFORMS	<1.0	1.0	MPN/100ML
06/18/13			**POST CL2**	E. COLI	<1.0	1.0	MPN/100ML
06/18/13				**PARTICULATE TEST DONE**			
06/18/13			PRIMARY BIO-INDICATORS	Giardia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/18/13			PRIMARY BIO-INDICATORS	Diatoms	0/100 gal	0/100 gal	
06/18/13			PRIMARY BIO-INDICATORS	Insect/Larve	0/100 gal	0/100 gal	
06/18/13			PRIMARY BIO-INDICATORS	Plant Debris	0/100 gal	0/100 gal	
06/18/13			PRIMARY BIO-INDICATORS	Coccidia	0 in 378 L/100 gal	0 in 378 L/100 gal	
06/18/13			PRIMARY BIO-INDICATORS	Other Algae	0/100 gal	0/100 gal	
06/18/13			PRIMARY BIO-INDICATORS	Rotifers	0/100 gal	0/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Amorphours Debris	TNTC/100 gal	TNTC/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Plant Pollen	0/100 gal	0/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Crustacea	0/100 gal	0/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Cilliates/Flagallates	0/100 gal	0/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Minerals	0/100 gal	0/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Nematodes	0/100 gal	0/100 gal	

06/18/13			SECONDARY BIO-INDICATORS	Amobea	0/100 gal	0/100 gal	
06/18/13			SECONDARY BIO-INDICATORS	Other Organisms	0/100 gal	0/100 gal	
06/19/13			REGULATED PRIMARY	COLIFORMS	<1.0	1.0	MPN/100ML
06/19/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML
07/05/13	20' - 62'	17.4	REGULATED SECONDARY	TURBIDITY	**0.18**	0.1	NTU
07/05/13			REGULATED PRIMARY	COLIFORMS	1.0	1.0	MPN/100ML
07/05/13			REGULATED PRIMARY	E. COLI	<1.0	1.0	MPN/100ML

CSA NO. 5 - KINGS RIVER TRIBUTARY # 2

Collection Date	Temperature = °C	Category	Contaminant OR Bacteria	Results	Reporting Limits	Units	Notes
05/25/12	18.4	REGULATED SECONDARY	TURBIDITY	**1.7**	0.10	NTU	
05/25/12		REGULATED PRIMARY	COLIFORMS	**>2419.2**	1.0	MPN/100ML	
05/25/12		REGULATED PRIMARY	E. COLI	**140**	1.0	MPN/100ML	
06/11/12	18.6	REGULATED SECONDARY	TURBIDITY	**0.27**	0.10	NTU	
06/11/12		REGULATED PRIMARY	COLIFORMS	**>2419.2**	1.0	MPN/100ML	
06/11/12		REGULATED PRIMARY	E. COLI	**23**	1.0	MPN/100ML	
06/27/13	18.8						
06/28/12		REGULATED SECONDARY	TURBIDITY	**0.6**	0.10	NTU	
06/28/12	19.0	REGULATED PRIMARY	COLIFORMS	**>2419.2**	1.0	MPN/100ML	
06/28/12		REGULATED PRIMARY	E. COLI	**26**	1.0	MPN/100ML	
07/12/12		UNSAMPLEABLE					
07/18/12		UNSAMPLEABLE					
07/25/12		UNSAMPLEABLE					
08/15/12		UNSAMPLEABLE					
08/16/12		UNSAMPLEABLE					
08/21/12		UNSAMPLEABLE					
08/29/12		UNSAMPLEABLE					
0912/12		UNSAMPLEABLE					
09/24/12		UNSAMPLEABLE					
10/11/12		UNSAMPLEABLE					
11/16/12		UNSAMPLEABLE					
12/04/12		UNSAMPLEABLE					
12/31/12		UNSAMPLEABLE					
02/01/13		UNSAMPLEABLE					
02/21/13		UNSAMPLEABLE					
03/20/13		UNSAMPLEABLE					
03/22/13		UNSAMPLEABLE					
04/10/13		UNSAMPLEABLE					
04/17/13		UNSAMPLEABLE					
05/02/13		UNSAMPLEABLE					
05/06/13		UNSAMPLEABLE					
04/17/13	19.2						
05/02/13	19.5						
05/20/13	19.2	REGULATED SECONDARY	TURBIDITY	**0.67**	0.10	NTU	
05/20/13	20.0	REGULATED PRIMARY	COLIFORMS	**>2419.2**	1.0	MPN/100ML	
05/20/13		REGULATED PRIMARY	E. COLI	**16**	1.0	MPN/100ML	
06/17/13		REGULATED SECONDARY	TURBIDITY	**0.43**	0.10	NTU	
06/17/13		REGULATED PRIMARY	COLIFORMS	**1600**	1.0	MPN/100ML	
06/17/13	22.3	REGULATED PRIMARY	E. COLI	**11**	1.0	MPN/100ML	
06/18/13		REGULATED PRIMARY	COLIFORMS	**>2419.2**	1.0	MPN/100ML	
06/18/13		REGULATED PRIMARY	E. COLI	**280**	1.0	MPN/100ML	
07/05/13		REGULATED SECONDARY	TURBIDITY	**1**	0.10	NTU	
07/05/13		REGULATED PRIMARY	COLIFORMS	**>2419.2**	1.0	MPN/100ML	
07/05/13		REGULATED PRIMARY	E. COLI	**120**	1.0	MPN/100ML	

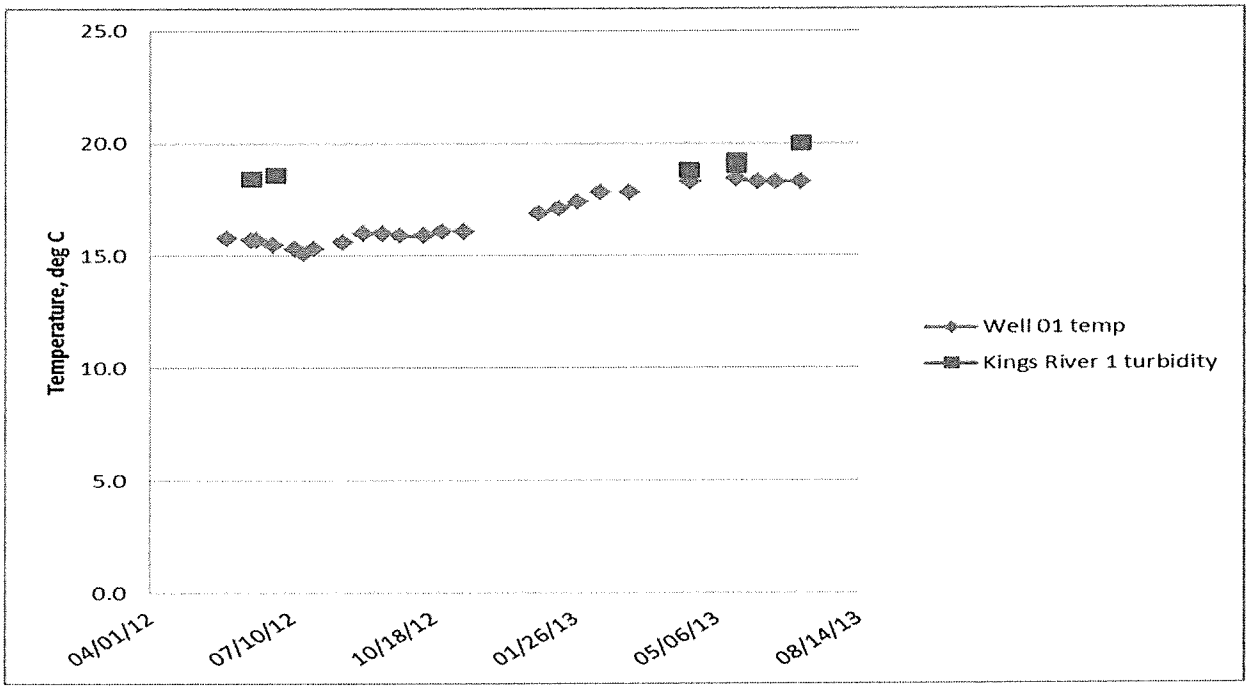

Figure 1. Temperature Comparison at Well 01 and Kings River Tributary # 1

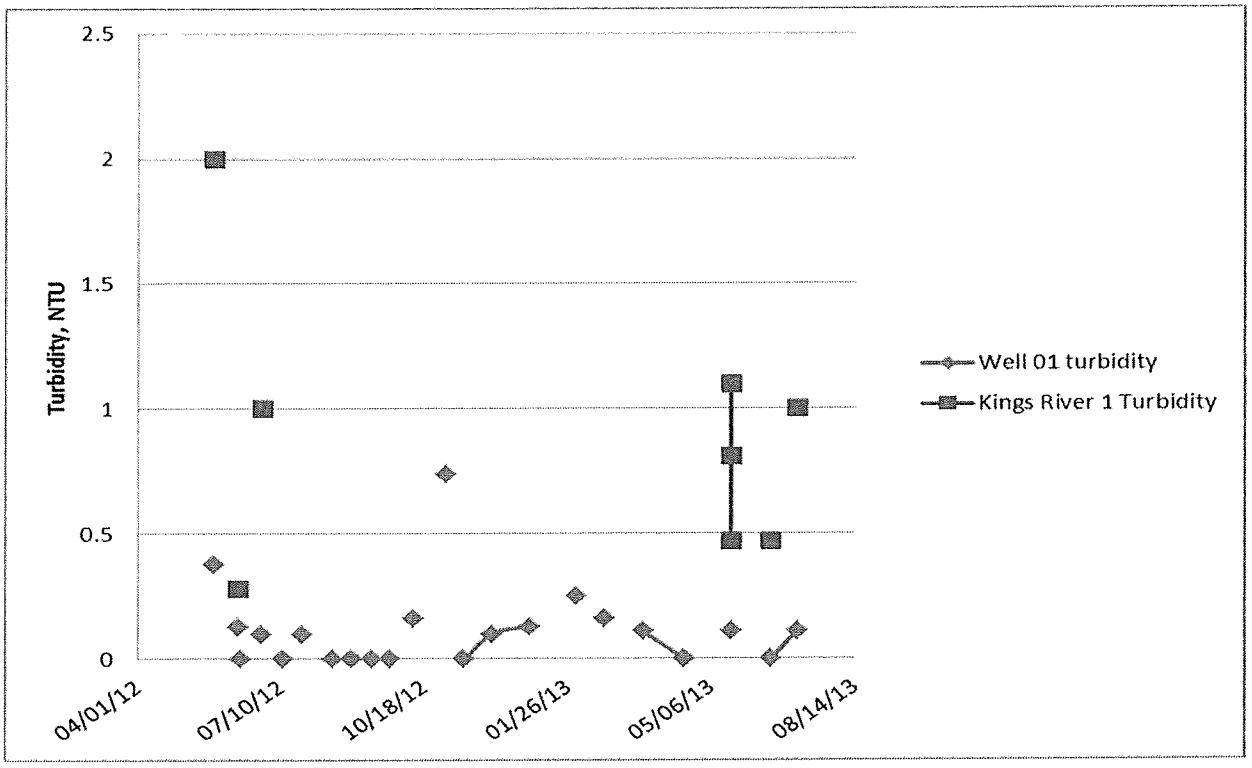

Figure 2. Turbidity Comparison at Well 01 and Kings River Tributary # 1

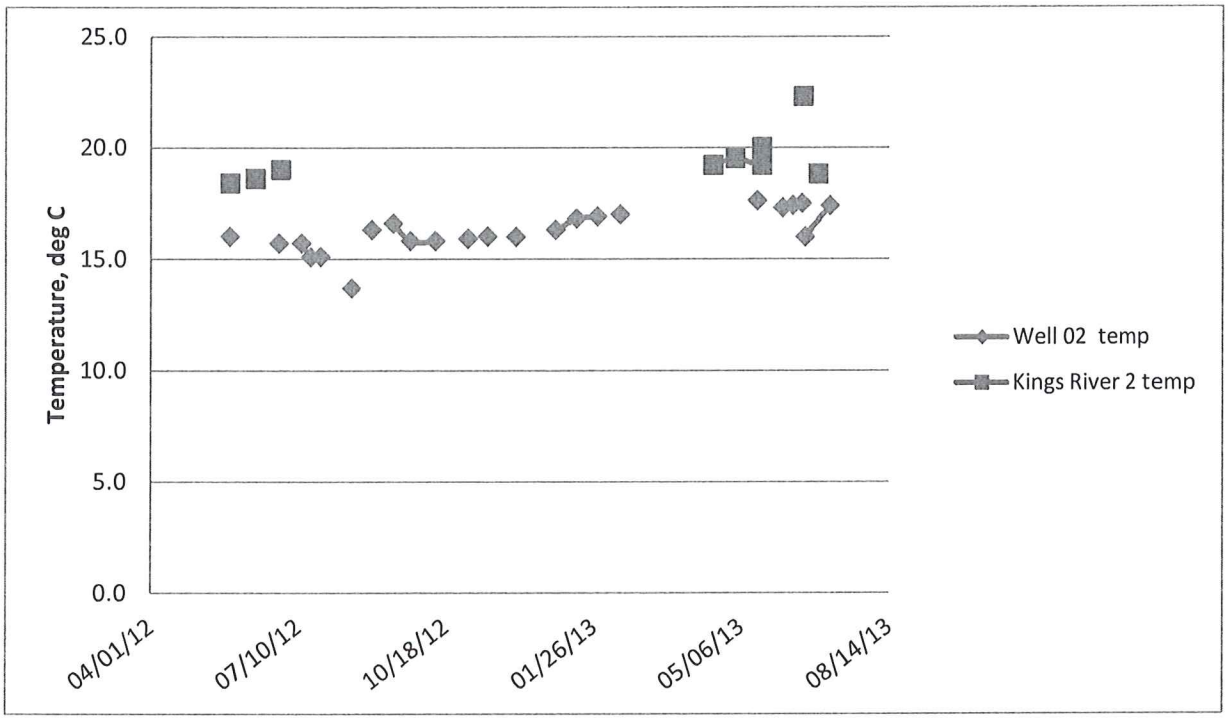

Figure 3. Temperature Comparison at Well 02 and Kings River Tributary # 2

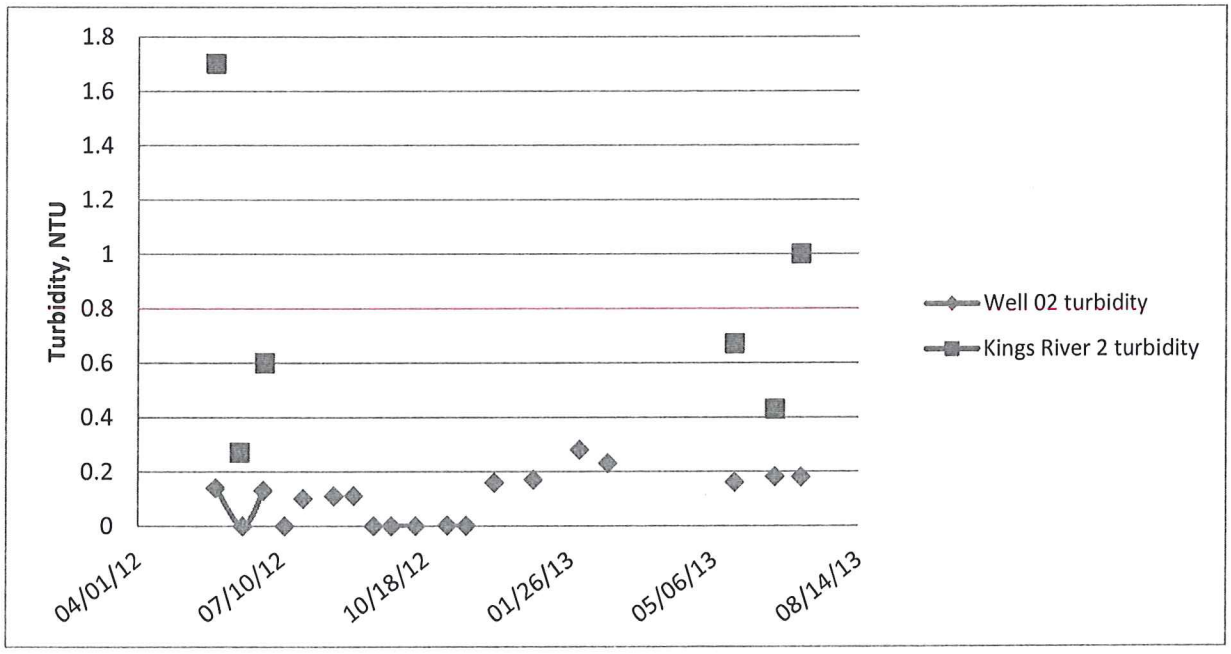

Figure 4. Turbidity Comparison at Well 02 and Kings River Tributary # 2