

**From:** Dana Dean  
**To:** Galecki, Gregg  
**Date:** 5/22/2006 2:55:03 PM  
**Subject:** Resend: 2nd Quarter, 2005 Water Questions

Gregg,

Did you get the attached e-mail I sent on May 10? I haven't heard back from you on it yet. Also, could you double check the dissolved sodium at F-10 on 6/26/05 to make sure it is 24 mg/L?

Thanks,  
Dana

**CC:** Wayne Hedberg

**From:** Dana Dean  
**To:** Galecki, Gregg  
**Date:** 5/10/2006 11:15:07 AM  
**Subject:** 2nd Quarter, 2005 Water Questions

Gregg,

I guess I will do this one quarter at a time, as I go along, so that it doesn't get jumbled, hopefully once I get caught up I will be able to do these as the data comes in, and not so far behind.

I had some questions on your second quarter water monitoring.

First of all, I realize that last year was a wetter year than we have had recently, but some of the reported flows were WAY above the average reported. Could you just double-check your field notes against the entered numbers for the following samples? They were above the average value by more than 5 standard deviations.

CS-16 2700 gpm  
CS-18 12835 gpm  
S34-12 69.2 gpm

Also, every quarter I do routine reliability checks on all samples with lab data, and come up with a list of things that are outside of "normal" ranges. I put them into my water quality memos, which I thought were being forwarded to the operators, but now I have been told they are not. So I am including those, and the paragraph I think is important from my memo, as an attachment. Right now these are really just fyi, but it would be helpful if you could look at them and explain any of them.

Thanks,  
Dana

Several routine Reliability Checks were outside of standard values. They were:

Site	Reliability Check	Value Should Be...	Value is...
CS-1	K/(Na + K)	< 20%	22%
CS-3	Na/(Na + Cl)	> 50%	22%
CS-4	Na/(Na + Cl)	> 50%	48%
CS-6	Mg/(Ca + Mg)	< 40 %	49%
CS-7	K/(Na + K)	< 20%	25%
CS-10	K/(Na + K)	< 20%	21%
CS-11	Na/(Na + Cl)	> 50%	43%
CS-12	TDS/Conductivity	>0.55 & <0.75	0.88
CS-12	Mg/(Ca + Mg)	< 40 %	53%
CS-12	Ca/ (Ca + SO4)	> 50 %	32%
CS-14	TDS/Conductivity	>0.55 & <0.75	0.76
CS-14	Mg/(Ca + Mg)	< 40 %	48%
CS-14	Ca/ (Ca + SO4)	> 50 %	46%
CS-16	K/(Na + K)	< 20%	25%
CS-17	K/(Na + K)	< 20%	23%
CS-18	TDS/Conductivity	>0.55 & <0.75	0.46
CS-19	TDS/Conductivity	>0.55 & <0.75	0.75
CS-20	K/(Na + K)	< 20%	23%
CS-21	TDS/Conductivity	>0.55 & <0.75	0.76
MD-1	TDS/Conductivity	>0.55 & <0.75	0.80
MD-1	Mg/(Ca + Mg)	< 40 %	50%
MD-1	Ca/ (Ca + SO4)	> 50 %	43%
UPL-10	Na/(Na + Cl)	> 50%	44%
VC-6	Mg/(Ca + Mg)	< 40 %	47%
VC-9	Mg/(Ca + Mg)	< 40 %	49%
S10-1	TDS/Conductivity	>0.55 & <0.75	0.87
S10-1	K/(Na + K)	< 20%	21%
S10-1	Na/(Na + Cl)	> 50%	32%
S13-7	Na/(Na + Cl)	> 50%	45%
S14-4	K/(Na + K)	< 20%	21%
S14-4	Na/(Na + Cl)	> 50%	27%
S15-3	TDS/Conductivity	>0.55 & <0.75	0.52
S15-3	Na/(Na + Cl)	> 50%	47%
S22-5	Na/(Na + Cl)	> 50%	32%
S23-4	K/(Na + K)	< 20%	22%
S24-1	Mg/(Ca + Mg)	< 40 %	43%
S24-12	K/(Na + K)	< 20%	26%
S26-13	K/(Na + K)	< 20%	47%
S34-12	TDS/Conductivity	>0.55 & <0.75	0.50
S34-12	K/(Na + K)	< 20%	22%
S35-8	TDS/Conductivity	>0.55 & <0.75	0.79
S35-8	K/(Na + K)	< 20%	22%
S36-12	TDS/Conductivity	>0.55 & <0.75	0.78

3-290	TDS/Conductivity	>0.55 & <0.75	0.97
WQ1-39	TDS/Conductivity	>0.55 & <0.75	1.05
WQ1-39	K/(Na + K)	< 20%	20%
WQ3-26	TDS/Conductivity	>0.55 & <0.75	0.98
WQ3-26	K/(Na + K)	< 20%	29%
WQ3-41	TDS/Conductivity	>0.55 & <0.75	0.76
WQ3-43	TDS/Conductivity	>0.55 & <0.75	0.79
WQ4-12	TDS/Conductivity	>0.55 & <0.75	0.77
92-91-03	TDS/Conductivity	>0.55 & <0.75	0.76
UT0023540-001 4/8	TDS/Conductivity	>0.55 & <0.75	0.76
UT0023540-001 4/19	TDS/Conductivity	>0.55 & <0.75	0.76
UT0023540-001 5/4	TDS/Conductivity	>0.55 & <0.75	0.77
UT0023540-001 5/18	TDS/Conductivity	>0.55 & <0.75	0.76
UT0023540-001 6/14	TDS/Conductivity	>0.55 & <0.75	0.82

These inconsistencies do not necessarily mean that a sample is wrong, but it does indicate that something is unusual. An analysis and explanation of the inconsistencies by the Permittee would help to increase the Division's confidence in the samples. The Permittee should work with the lab to make sure that samples pass all quality checks so that the reliability of the samples does not come into question. The Permittee can learn more about these reliability checks and some of the geological and other factors that could influence them by reading Chapter 4 of *Water Quality Data: Analysis and Interpretation* by Arthur W. Hounslow.