



CCPaSEC Quality Control

March 2012

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Quality Assurance



A successful quality program elevates the volunteers' work & recognition and it instills confidence in those who would use our data.

For our data to be meaningful to others it should be both accurate and verifiable. The Quality program's purpose is to verify the procedures we use for collecting and recording data.

Our quality program seeks to assure that our data collection methods are consistent with good practice and our equipment is in good working order.

Quality Assurance Plan

to promote:



Understanding - review the various tests with the team members, so people develop knowledge of the process and the analytical capabilities. This way teams achieve the same data quality objectives.

Competence - assure teams properly follow the monitoring guidelines in order to achieve accurate and consistent results.

Documentation - assure data is recorded and that the records are accurate and are available to the public.



A look at Results

The analysis is of our duplicate field measurements taken from the CCPaSEC database.

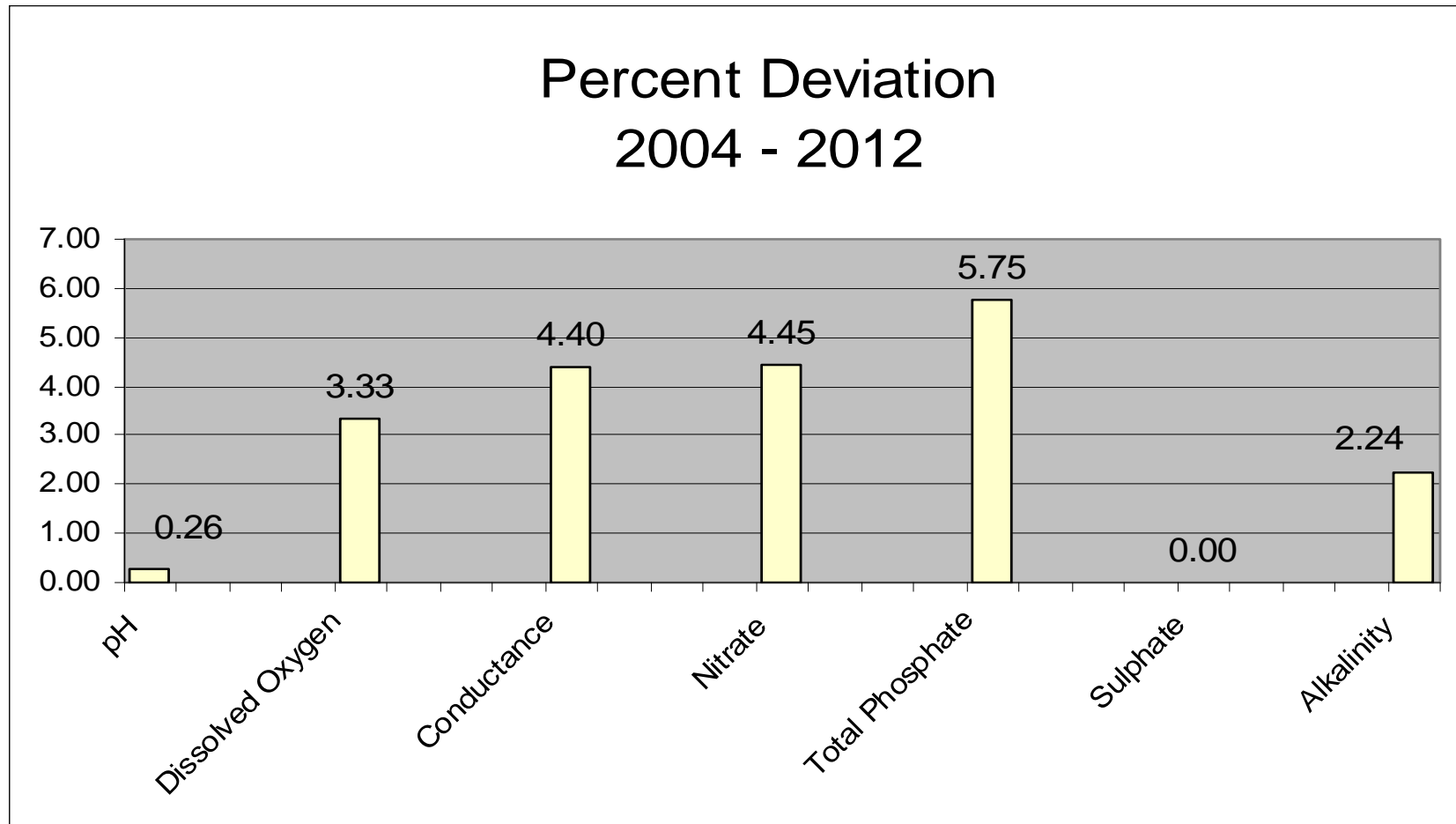
Purpose: To determine the how well we are performing the individual tests and how we are adhering to the QC doctrine

Acceptable Levels



- Our test equipment has limited accuracy
- We assume that deviation values less than 10% are acceptable
- Recommended range for Relative Percent Difference (RPD) is +/- 20%

Quality Control 2002 – 2011

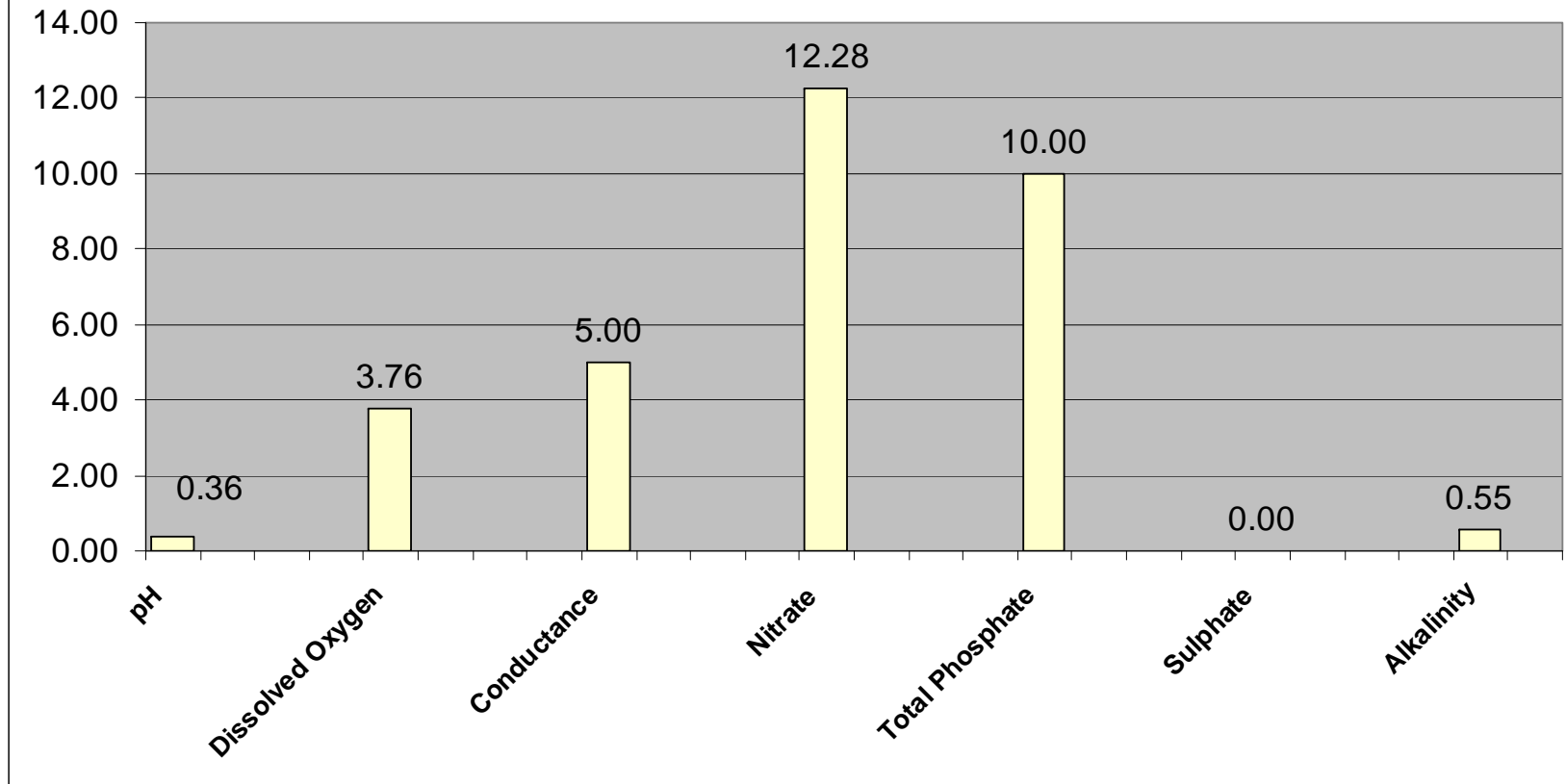


Goal: Less than 10%

RPD 2002 - 2011

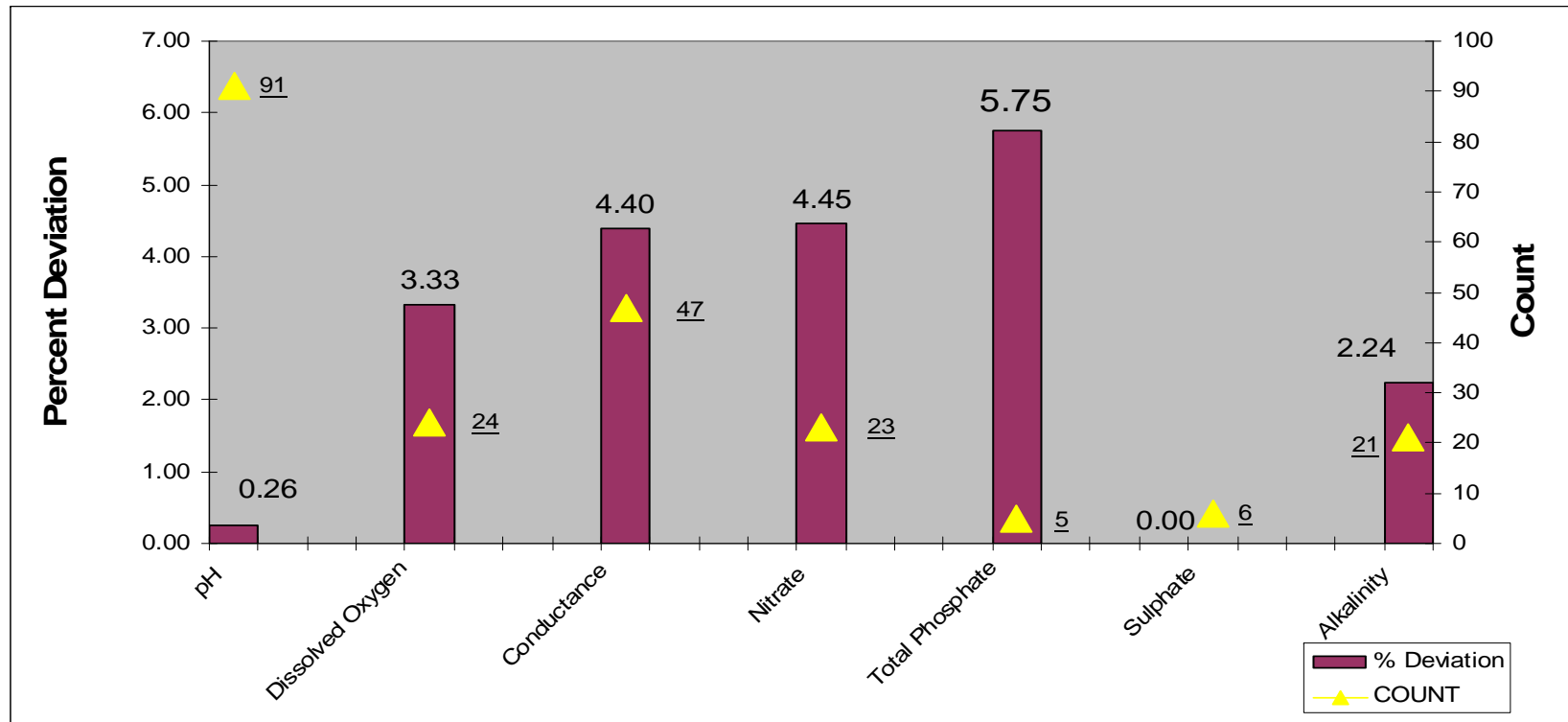
Relative Percent Difference

$$RPD = \frac{X_s - X_d}{(X_s + X_d)/2} \times 100$$



EASI Quality Objective for RPD = +/- 20%

Number of Duplicate Trials 2002 – 2011

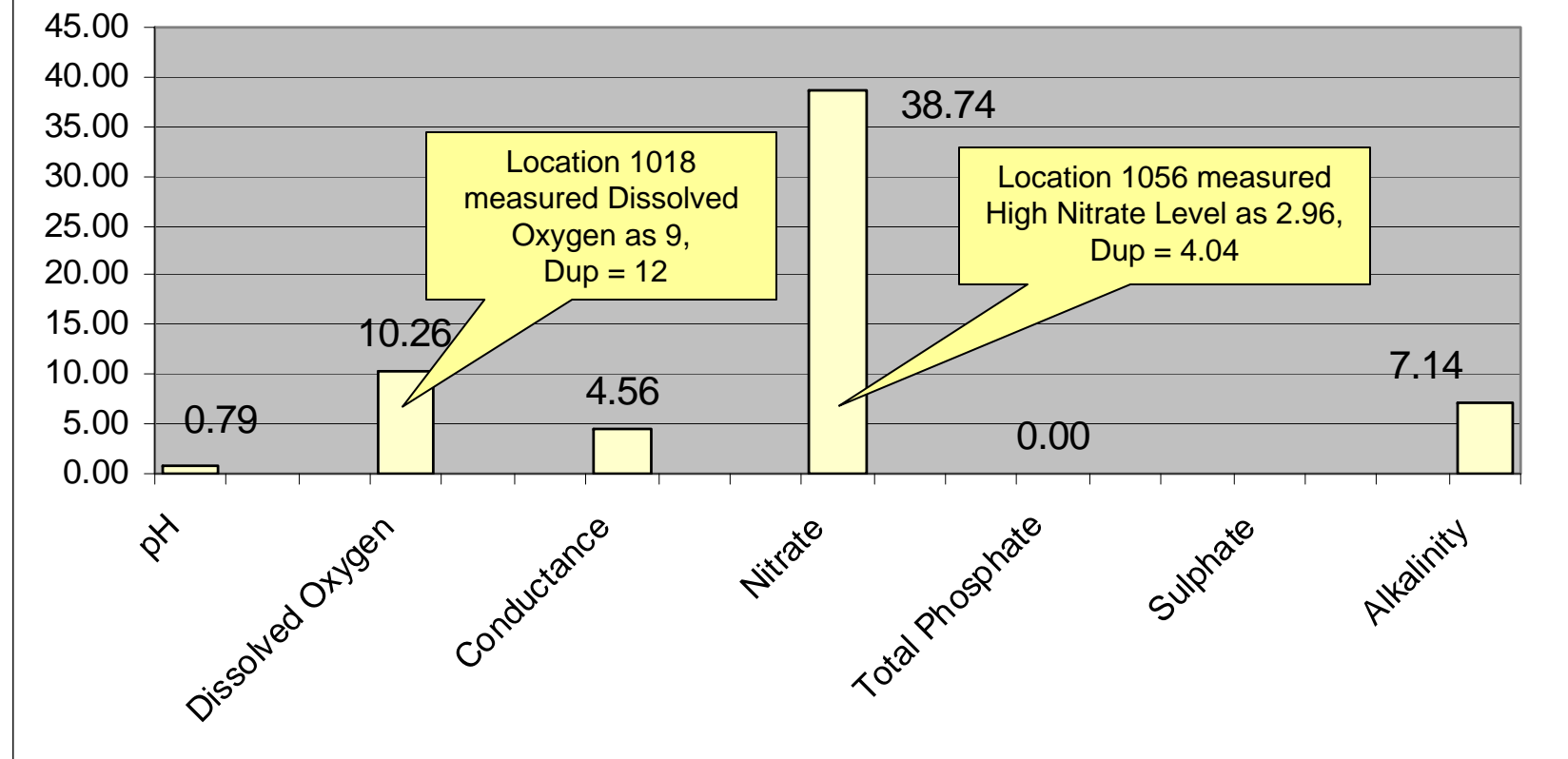




2011



Percent Deviation 2011

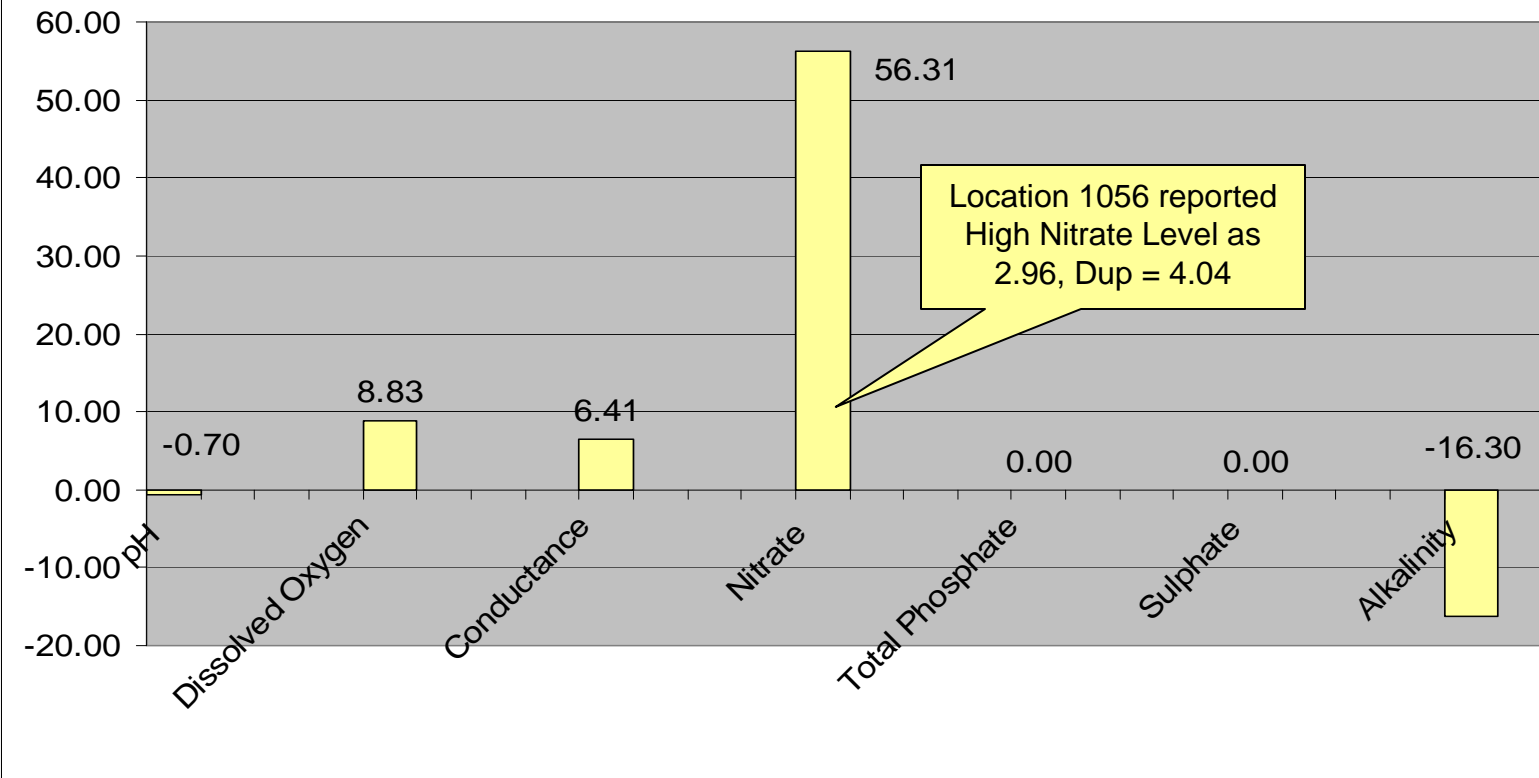


Goal: Less than 10%

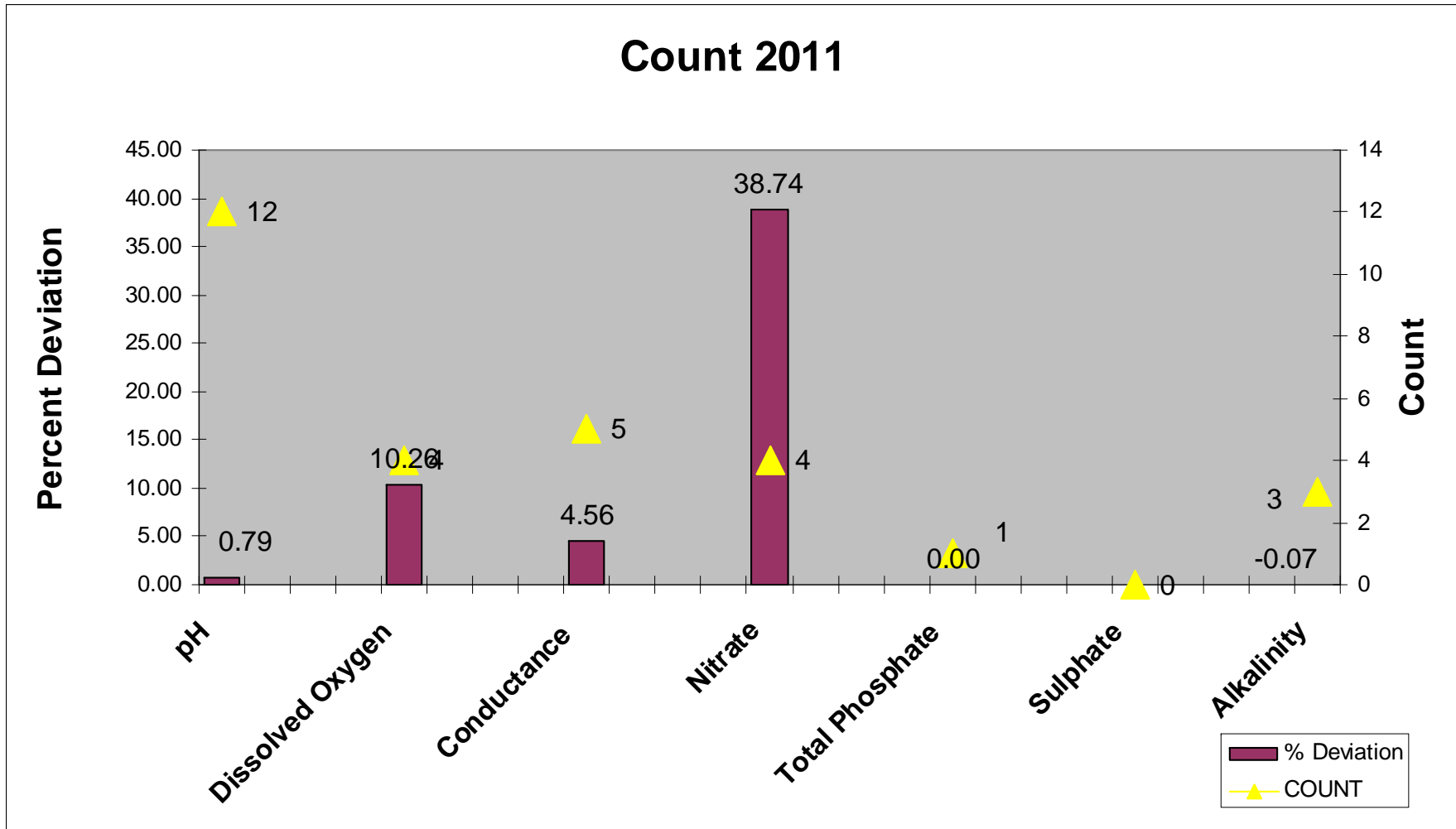


RPD - 2011

Relative Percent Difference



Goal: Less than +/-20%



Goal: All teams twice a year

2011 data

pH Delta	Dissolved Oxygen		DO Delta	Conductance		Con Delta	Nitrate		Nitrate Delta
		Duplicate			Duplicate			Duplicate	
0	12	13	-1	135	149	-14	0.352	0.484	-0.132
-0.93			null			null			null
-0.35			null			null			null
-0.6	9	8	1	289	271	18	2.96	4.04	-1.08
-1.4			null			null			null
0.8			null			null			null
0.8			null			null			null
0	9	12	-3	127	127	0	0.04	0.39	-0.35
1.2			null			null			null
1.02			null			null			null
-0.4			null	476	486	-10			null
0.6	9	10	-1	157	205	-48	0.68	0.68	0
	4	9.75		5	236.80		4	1.01	

Quality Checks



Goal 1: do duplicate testing of all parameters at least once a year and enter the results into our database

Goal 2: perform an accuracy evaluation of our test meters at the next Quality Control Session in Oct 2012 to determine the mean value of our teams tests of a known standard

The Quality objective is for a recovery value between 90 and 110 percent

$$\text{Percent Recovery} = \frac{\text{Mean}}{\text{True Value}^*} \times 100$$

* the value of the known standard

When we check the calibration of pH & Conductance before each session and enter the results into our database it will help us determine the accuracy of our meters

Partial View of our data base

pH	pH Field Duplicate	pH Calibration Standard	Dissolved Oxygen	Dissolved Oxygen Field Duplicate	Dissolved Oxygen Titrator	Specific Conductance	Specific Conductance Field Duplicate	Specific Conductance Calibration Standard
Range: 0 - 14	Range: 0 - 14		Range: 0.2 - 20 in mg/L	Range: 0.2 - 20 in mg/L		Range: 100 - 19900 in micro S/cm	Range: 100 - 19900 in micro S/cm	
7.3			14			255		
7.2			14			235		
7.2			14			259		
7.5	7.4		12			306	327	
7.3			12			334		
7.5			13			288	306	
6.7	6.7	7	12			218		

Conclusion



All and All we did a good job at performing the measurements

Goal: improve the frequency of our duplicate field testing by each team to at least once a year.

Goal: improve the completeness of our data.

What you can do:



1. Follow the procedures in our field manual.
2. Verify that the chemical reagents we use are within shelf life each time you use them.
3. Assure that your test equipment is clean.
4. Perform periodic calibration of your test equipment using supplied standard solutions.
5. Verify that your data has been accurately transcribed into our database.
6. Always Include a note if you had to depart from the normal process or observed an anomaly that may affect the results.
7. Report any equipment problems to our supply chairman.

We encourage suggestions from the field teams and individuals to improve our quality plan.