Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUL 26 2004

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RECEIVED Hazardous Waste Bureau

Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
Hazardous Waste Bureau
New Mexico Environment Department
2905 E. Rodeo Park Dr. Bldg. 1
Santa Fe, New Mexico 87505-6303

Subject: WIPP Detection Monitoring Program, Baseline Groundwater Chemistry Information Request

Dear Mr. Zappe:

The Permittees are providing information requested in your letter of July 2, 2004 to allow your staff to evaluate the statistical treatment of WIPP baseline ground water chemistry data. The enclosed CD contains spreadsheets of the water quality analysis for each WQSP well, Round 1 through Round 17, with both primary and duplicate data for all constituents tested. In addition:

- Enclosure A describes the statistical tests and parameters used to evaluate the water quality data to establish the baseline. Basic statistics and tests for distribution type were performed using the software package STATISTICA (Statsoft, Inc. Tulsa, Oklahoma, 1994).

- Enclosure B itemizes and explains why fourteen analytical results were excluded from the background data set.

We certify under penalty of law that this document and all enclosures were prepared under our direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

If you have any questions regarding this transmittal, please contact Mr. Jody Plum at (505) 234-7462.

Sincerely,

R. Paul Detwiler, Acting Manager
Carlsbad Field Office

S. D. Warren, General Manager
Washington TRU Solutions LLC

Enclosures

CBFO:OEC:HLP:JGW:04-1705:UFC:5480

040753

cc: (with enclosures)
C. Walker, Trinity Engineering
J. Bearzi, NMED
J. Kieling, NMED
CBFO M&RC

cc: (without enclosures)
S. Martin, NMED
G. Basabilvazo, CBFO
S. Casey, CBFO
D. Mercer, CBFO
J. Plum, CBFO
C. Zvonar, CBFO

Enclosure A
Description of Statistical Parameters and Tests

This section contains a concise description of the statistical tests and parameters employed in the characterization of background distributions. These tests and parameters include the following:

- Arithmetic mean
- Median
- Standard deviation
- Shapiro-Wilk Normality Test
- Upper Tolerance Limit
- 95th percentile

Arithmetic Mean

The arithmetic mean defines the central tendency of a normal distribution. The equation for calculating the arithmetic mean ($\overline{X}$) of a sample data set is expressed as (Devore, 1982):

$$\overline{X} = \frac{\sum_{i=1}^{N} X_i}{N}$$

where:

$\overline{X}$ = Sample arithmetic mean
N = Number of values in sample
X_i = Value of the ith observation.

Median

The true median of an underlying distribution is that value above and below which half the distribution lies. The equation calculating the median (X) of a sample data set is expressed as (Gilbert, 1987):

$$X = \chi_{[(n+1)/2]} \quad if\ n\ is\ odd$$

$$X = \frac{1}{2}(\chi_{[n/2]} + \chi_{[(n+2)/2]}) \quad if\ n\ is\ even$$

where:

X = Median
χ = Value associated with the sample
N = Sample number in the order statistic.

Standard Deviation

The standard deviation is the square root of the arithmetic mean of the squared deviations from the sample mean. The standard deviation is a measure of the dispersion of a data set. The equation for calculating the standard deviation (S) of a sample data set is expressed as (Devore, 1982):

$$S = \left[\frac{\sum_{i=1}^{N} (X_i - \overline{X})^2}{(N-1)} \right]^{\frac{1}{2}}$$

where:

S = Sample standard deviation

$\overline{X}$ = Sample arithmetic mean

N = Number of values in sample

X_i = Value of the ith observation.

Shapiro-Wilk Normality Test

The Shapiro-Wilk test is considered one of the best tests of normality available (Miller, 1986; Madansky, 1988) and is recommended by the EPA for normality testing (EPA, 1992). The Shapiro-Wilk Normality Test is based on the premise that if a data set is normally distributed, the ordered values should be highly correlated with corresponding quantiles taken from a normal distribution (Shapiro and Wilk, 1965). The Shapiro-Wilk test gives substantial weight to elements of non-normality in the tails of a distribution, where the robustness of statistical tests based on the normality assumption is most severely affected.

The Shapiro-Wilk test statistic (W) tends to be large when a probability plot of the data set indicates a nearly straight line. Only when the plotted data show significant bends or curves is the test statistic small. The Shapiro-Wilk Normality Test is only appropriate for small sample sizes ($\leq$ 50 values), but can be modified for larger data sets. When the sample size is larger than 50, a slight modification of the procedure (Shapiro-Francia Test [Shapiro and Francia, 1972]) is used instead. The maximum number of samples in the baseline data set is 20, so the Shapiro-Wilk test was used. The following formula is used to calculate the test statistic W (EPA, 1992):

$$W = \left[\frac{b}{S\sqrt{n-1}} \right]^2$$

where the numerator is computed as:

$$b = \sum_{i=1}^{k} a_{n-i+1} \left(X_{(n-i+1)} - X_{(i)} \right) = \sum_{i=1}^{k} b_i$$

and where:

S = standard deviation
n = number of data points
j = $(n-i+1)$.

In the numerator, $X_{(j)}$ represents the jth smallest ordered value in the sample, and coefficients a_j depend on the sample size n. A table of these coefficients is available for any sample size ranging between 3 to 50 values (EPA, 1992). The value of k can be found as the greatest integer less than or equal to n/2.

The hypothesis of data normality should be rejected if the Shapiro-Wilk statistic is too low when compared to the appropriate critical values (EPA, 1992). If the W statistic is larger than the tabulated critical values, then it is assumed that the data are approximately normally distributed for the purposes of further statistical analysis. The Shapiro-Wilk test was performed using the *Statistica* software package (Statsoft, 1994).

95th Upper Tolerance Limit

A 95th upper tolerance limit (UTL) was only calculated if the data set was normal or lognormal. The 95th UTL is defined as:

$$95^{th}\ UTL = \overline{X} + K \cdot S$$

where:

UTL	=	Upper tolerance limit
$\overline{X}$	=	Sample arithmetic mean
S	=	Sample standard deviation
K	=	One-sided normal tolerance factor.

The 95th UTL establishes a concentration range that is constructed to contain a specified proportion of the population with a specified confidence. The proportion of the population included is referred to as the coverage, and the probability with which the tolerance interval includes the proportion is referred to as the tolerance coefficient. The one-sided normal tolerance factor (K) in the above equation is a function of the desired percent coverage, the desired tolerance coefficient, and the number of samples (n). The EPA-recommended coverage value of 95 percent and tolerance coefficient value of 95 percent (EPA, 1989) was used to calculate the 95th UTLs. Values for K are commonly determined from tables such as those provided by EPA, 1989. Using the EPA-recommended coverage and tolerance coefficient values, K equals 2.911 for n=10, and K equals 2.396 for n=20. Specific K values were calculated for each data set as a function of n.

For lognormal data sets, the calculations were performed on the log-transformed data, and the antilog of the 95th UTL calculated using the above procedure is the screening value.

95th Percentile

A 95th percentile was calculated for data sets that did not have normal or lognormal distributions, as well as any distribution with more than 15 percent nondetects. A 95th percentile of a distribution of values is a number such that 95 percent of the values of the distribution fall below that number. It is calculated in a similar manner as the median, which is equal to the 50th percentile.

References

Devore, J. L., 1982, *Probability and Statistics for Engineering and the Sciences*, Brooks/Cole Publishing Company, Monterey, California.

EPA, 1989, "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance," *EPA/530-SW-89-026*, U.S. Environmental Protection Agency, Office Of Solid Waste, Waste Management Division, Washington, D.C.

EPA, 1992, "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance," draft, Environmental Statistics and Information Division, Office of Policy, Planning, and Evaluation, U.S. Environmental Protection Agency, Washington, D.C.

Gilbert, R. O., 1987, *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold Company, New York, New York.

Madansky, A., 1988, *Prescription for Working Statisticians*, Springer-Verlag, New York, New York.

Miller, R. G., Jr., 1986, *Beyond ANOVA Basics of Applied Statistics*, John Wiley & Sons, New York, New York.

Shapiro, S. S., and Francia, R. S., 1972, "An Approximate Analysis of Variance Test for Normality." *Journal of American Statistical Association*, Vol. 67(337), pp. 215-216.

Shapiro, S. S., and Wilk, M. B., 1965, "An Analysis of Variance Test for Normality (Complete Samples)," *Biometrika*, Vol. 52, pp. 591-611.

StatSoft, Inc., 1994, "Volume I: General Conventions and Statistics I, Manual for STATISTICA Program," Statsoft, Inc. Tulsa, Oklahoma.

Enclosure B
Data Points Excluded From the Baseline

As stated in Section 3.0 of the WIPP Baseline Ground Water Update Report, fourteen data points were excluded from the water analyses data set for statistical computation of the baseline. They consist of the following analytes, rounds, and wells, grouped according to five general explanations as shown below.

Well Number	Chemical Parameter	Sampling Round
Blank sample analyzed as the duplicate or results from a blank sample reported as the duplicate, Round 8, well WQSP-1:		
WQSP-1	**Calcium (Duplicate)**	**Round 8**
WQSP-1	**Magnesium (Duplicate)**	**Round 8**
WQSP-1	**Potassium (Duplicate)**	**Round 8**
WQSP-1	**Sodium (Duplicate)**	**Round 8**
Blank sample analyzed as the duplicate or results from a blank sample reported as the duplicate, Round 8, well WQSP-2:		
WQSP-2	**Magnesium (Duplicate)**	**Round 8**
WQSP-2	**Potassium (Duplicate)**	**Round 8**
WQSP-2	**Sodium (Duplicate)**	**Round 8**
Original TDS analysis in error, Round 10, well WQSP-1:		
WQSP-1	**TDS (Original Analysis)**	**Round 10**
Artifacts from the well drilling process or laboratory contamination, Round 1, wells WQSP-6 and WQSP-6A:		
WQSP-6	**Chloride (Sample)**	**Round 1**
WQSP-6	**Chloride (Duplicate)**	**Round 1**
WQSP-6A	**TDS (Sample)**	**Round 1**
WQSP-6A	**TDS (Duplicate)**	**Round 1**
Incorrect dilution factor, Round 3, well WQSP-6A:		
WQSP-6A	**Chloride (Sample)**	**Round 3**
WQSP-6A	**Chloride (Duplicate)**	**Round 3**

Attached are time-trend charts containing spreadsheets listing analytical values, including those considered suspect, for the analyses listed above. These charts and spreadsheets clearly show how the excluded data points relate to the entire population of analytical results and demonstrate why they were considered suspect and thus eliminated. The reasons for exclusion of each of the individual data points listed in the Baseline Update Report are discussed below.

Blank Sample Analyzed as the Duplicate or Results From a Blank Sample Reported as the Duplicate, Round 8, Well WQSP-1

For well WQSP-1, Round 8, the duplicate sample analytical results for the major cations calcium, magnesium, potassium, and sodium were all reported as non-detect while the primary sample for each analyte was reported at a significant concentration that was reflective of the expected population. It appears that the analytical laboratory either analyzed a blank sample as the duplicate or reported the results from a blank sample analyses as the duplicate. It is obvious that a reported non-detect concentration for the duplicate of a sample with, for example, a concentration for sodium reported at 19,700 mg/l for the main sample, is not accurate (see attached graphs / spreadsheets). On that basis, the other three major cation duplicate results for Round 8 were not used.

Blank Sample Analyzed as the Duplicate or Results From a Blank Sample Reported as the Duplicate, Round 8, Well WQSP-2

For well WQSP-2, Round 8, the same mistake was apparently made. The duplicate results for three of the major cations, magnesium, potassium, and sodium were reported as non-detect, while the primary sample had significant concentrations.

Original TDS Analysis in Error, Round 10, Well WQSP-1

For well WQSP-1, Round 10, the original analysis for TDS showed concentrations for both the primary and duplicate sample that were over four times the reported concentration from all previous samples. All previous samples had concentrations reported within a well-defined range. The Round 10 sample was reanalyzed (see attached spreadsheet) and the reported results for that same sample were at the expected concentrations. The reanalysis for Round 10 TDS confirmed that the original analysis was in error, possibly due to a dilution or other laboratory error. The original analytical results were excluded from the background analysis.

Artifacts from the Well Drilling Process or Laboratory Contamination, Round 1, Wells WQSP-6 and WQSP-6A

For well WQSP-6, Round 1, chloride, the reported analytical results were approximately three times the reported concentration from all subsequent analyses (see attached graph). The first sample collected from WQSP-6 may have either been impacted by artifacts from the well drilling process and the chloride concentration in that sample were not reflective of natural water quality at that well, or the laboratory may have contaminated the sample during analysis.

For well WQSP-6A, Round 1, TDS, the reported analytical results were likewise over three times the reported concentrations from all subsequent analyses (see attached graph). The Round 1 results are not reflective of the TDS concentration at well WQSP-6A and were excluded from background analysis.

Note: Table 14 of the Baseline Update Report originally did report the Round 1 TDS concentration for well WQSP-6A (11,000 mg/l) in error. An updated Table 14 was later submitted to the NMED correcting this error and showing the TDS maximum for this well as 4,600 mg/l. A copy of the corrected table is also attached.

Incorrect Dilution Factor, Round 3, Well WQSP-6A

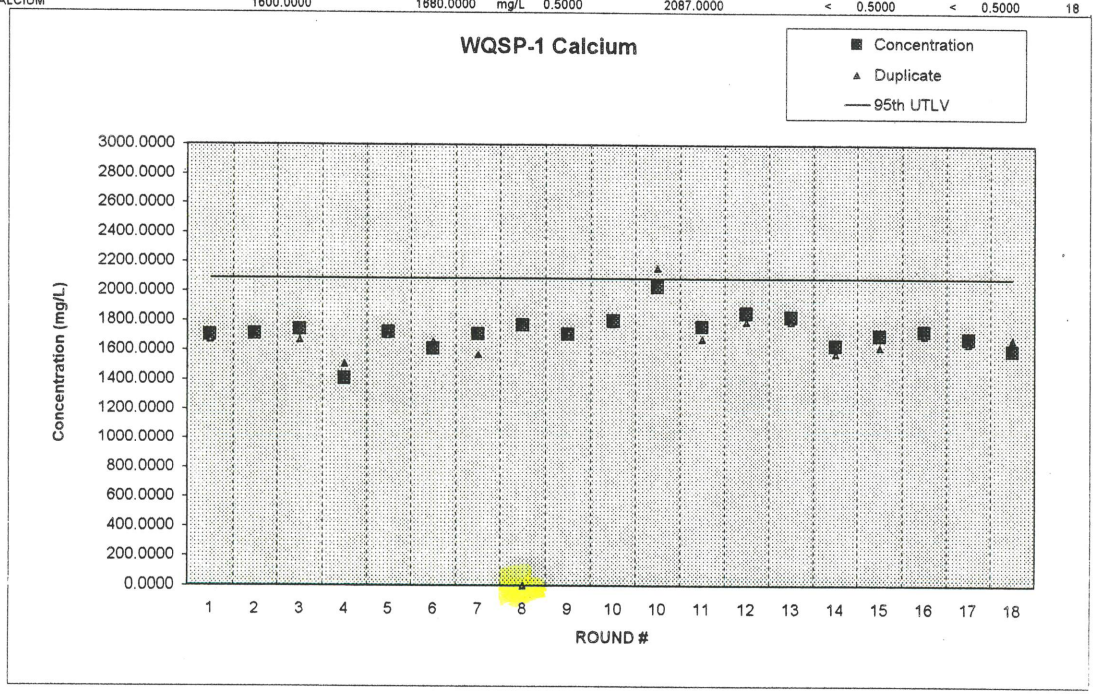
For well WQSP-6A, Round 3, chloride, the reported concentrations for primary sample and duplicate were 10 times that reported from nearly all other analyses except the Round 1 result. The 10 times difference appears to be the result of applying a wrong dilution factor to the final calculated sample concentration. WIPP waters from the Culebra have high salinity and chloride concentrations. The water from WQSP-6A is from the Dewey Lake Formation, a much fresher, low TDS water. The laboratory may have assumed that the sample was diluted ten times before analysis as was customary for the other well water they analyzed.

Other Clarifications

Table 1 in the Baseline Update Report contains two errors, redlined on a copy attached. The net effect of these changes would make the Table consistent with the information in this attachment.

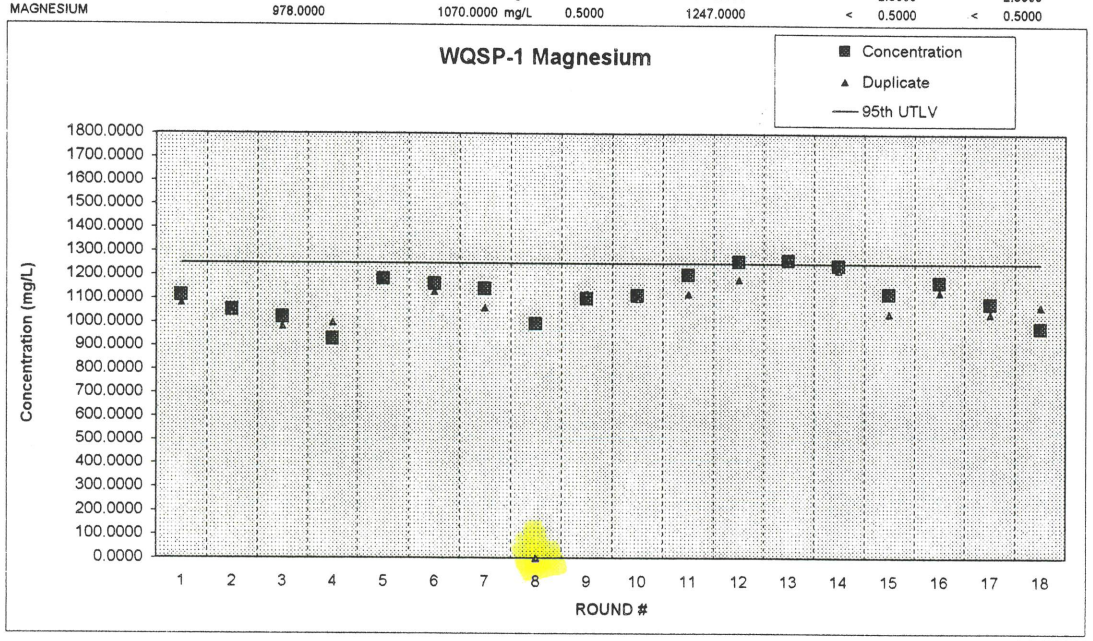
WQSP-1 Calcium

CAS #	PARAMETER	Concentration		VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV		ACID BLANK (AVERAGE)		WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7440-70-2	CALCIUM	1700.0000		1670.0000	mg/L	2.0000	2087.0000			<	0.2000	1	08/28/95	08/17/95
7440-70-2	CALCIUM	1710.0000		1690.0000	mg/L	2.0000	2087.0000	<	0.2000	<	0.2000	2	05/07/96	04/11/96
7440-70-2	CALCIUM	1740.0000		1670.0000	mg/L	2.0000	2087.0000	<	0.2000	<	0.2000	3	07/30/96	07/25/96
7440-70-2	CALCIUM	1410.0000		1510.0000	mg/L	2.0000	2087.0000	<	0.2000	<	0.2000	4	05/02/97	04/24/97
7440-70-2	CALCIUM	1720.0000		1700.0000	mg/L	2.0000	2087.0000	<	0.2000	<	0.2000	5	08/15/97	07/24/97
7440-70-2	CALCIUM	1610.0000		1660.0000	mg/L	2.0000	2087.0000			<	0.2000	6	03/19/98	03/05/98
7440-70-2	CALCIUM	1710.0000		1570.0000	mg/L	0.5000	2087.0000			<	0.5000	7	08/17/98	07/15/98
7440-70-2	CALCIUM	1770.0000	<	0.5000	mg/L	0.5000	2087.0000			<	0.5000	8	03/15/99	03/03/99
7440-70-2	CALCIUM	1710.0000		1726.0000	mg/L	0.5000	2087.0000			<	0.5000	9	09/16/99	09/01/99
7440-70-2	CALCIUM	1800.0000		1780.0000	mg/L	5.0000	2087.0000				0.1030	10	03/06/00	03/02/00
7440-70-2	CALCIUM	2030.0000		2160.0000	mg/L	5.0000	2087.0000					10	06/19/00	06/19/00
7440-70-2	CALCIUM	1760.0000		1680.0000	mg/L	2.0000	2087.0000			<	1.0000	11	10/11/00	09/07/00
7440-70-2	CALCIUM	1854.0000		1794.0000	mg/L	0.5000	2087.0000			<	0.5000	12	05/10/01	03/01/01
7440-70-2	CALCIUM	1828.0000		1795.0000	mg/L	0.2000	2087.0000			<	0.2000	13	10/02/01	09/06/01
7440-70-2	CALCIUM	1630.0000		1580.0000	mg/L	0.2000	2087.0000			<	0.5500	14	03/18/02	03/06/02
7440-70-2	CALCIUM	1700.0000		1620.0000	mg/L	0.5000	2087.0000	<	5.0000	<	5.0000	15	10/02/02	09/05/02
7440-70-2	CALCIUM	1730.0000		1700.0000	mg/L	0.5000	2087.0000	<	0.5000	<	0.5000	16	03/31/03	03/05/03
7440-70-2	CALCIUM	1680.0000		1650.0000	mg/L	0.5000	2087.0000	<	2.5000	<	2.5000	17	09/10/03	09/04/03
7440-70-2	CALCIUM	1600.0000		1680.0000	mg/L	0.5000	2087.0000	<	0.5000	<	0.5000	18	03/07/04	03/03/04



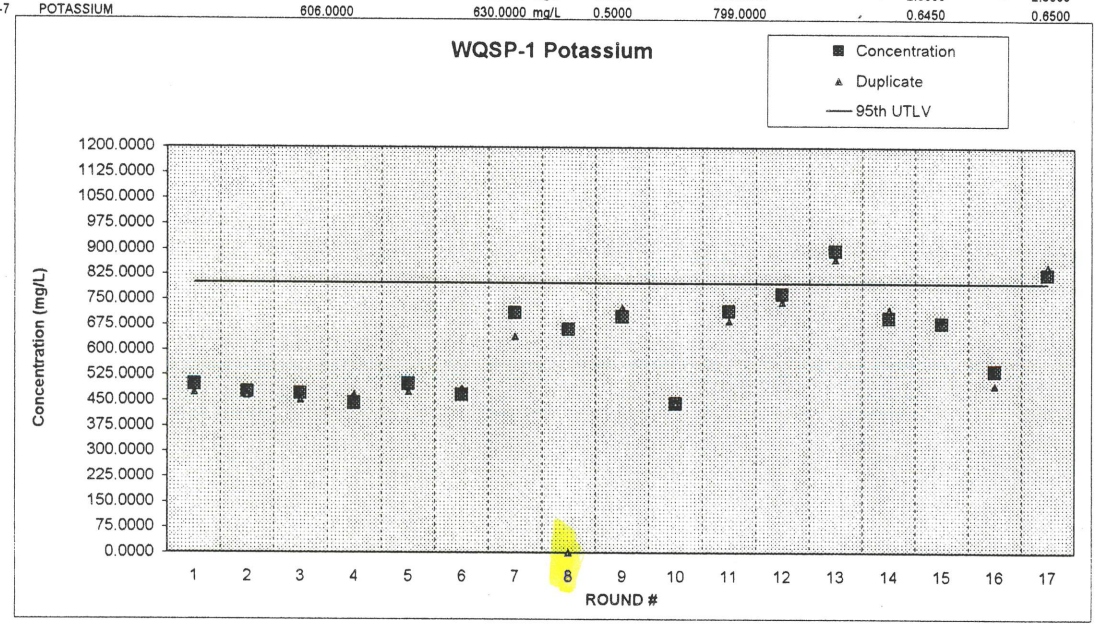
WQSP-1 Magnesium

CAS #	PARAMETER	Concentration		VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV		ACID BLANK (AVERAGE)		WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7439-95-4	MAGNESIUM	1110.0000		1080.0000	mg/L	1.0000	1247.0000			<	0.1000	1	08/28/95	08/17/95
7439-95-4	MAGNESIUM	1050.0000		1040.0000	mg/L	0.5000	1247.0000	<	0.0500	<	0.0500	2	05/07/96	04/11/96
7439-95-4	MAGNESIUM	1020.0000		982.0000	mg/L	0.5000	1247.0000	<	0.0500	<	0.0500	3	07/30/96	07/25/96
7439-95-4	MAGNESIUM	928.0000		1000.0000	mg/L	1.0000	1247.0000	<	0.1000	<	0.1000	4	05/02/97	04/24/97
7439-95-4	MAGNESIUM	1180.0000		1170.0000	mg/L	0.5000	1247.0000	<	0.0500	<	0.0500	5	08/15/97	07/24/97
7439-95-4	MAGNESIUM	1160.0000		1130.0000	mg/L	0.5000	1247.0000			<	0.0500	6	03/19/98	03/05/98
7439-95-4	MAGNESIUM	1140.0000		1060.0000	mg/L	0.5000	1247.0000			<	0.5000	7	08/17/98	07/15/98
7439-95-4	MAGNESIUM	993.0000	<	1.0000	mg/L	0.5000	1247.0000			<	0.5000	8	03/15/99	03/03/99
7439-95-4	MAGNESIUM	1100.0000		1120.0000	mg/L	0.5000	1247.0000			<	0.5000	9	09/16/99	09/01/99
7439-95-4	MAGNESIUM	1112.0000		1100.0000	mg/L	5.0000	1247.0000			<	5.0000	10	03/06/00	03/02/00
7439-95-4	MAGNESIUM	1200.0000		1120.0000	mg/L	2.0000	1247.0000				0.0200	11	10/11/00	09/07/00
7439-95-4	MAGNESIUM	1255.0000		1180.0000	mg/L	0.5000	1247.0000			<	0.5000	12	05/10/01	03/01/01
7439-95-4	MAGNESIUM	1262.0000		1270.0000	mg/L	0.2000	1247.0000			<	0.2000	13	10/02/01	09/06/01
7439-95-4	MAGNESIUM	1240.0000		1220.0000	mg/L	0.2000	1247.0000			<	0.5500	14	03/18/02	03/06/02
7439-95-4	MAGNESIUM	1120.0000		1040.0000	mg/L	0.5000	1247.0000	<	5.0000	<	5.0000	15	10/02/02	09/05/02
7439-95-4	MAGNESIUM	1170.0000		1130.0000	mg/L	0.5000	1247.0000	<	0.5000	<	0.5000	16	04/04/03	03/05/03
7439-95-4	MAGNESIUM	1080.0000		1040.0000	mg/L	0.5000	1247.0000	<	2.5000	<	2.5000	17	09/10/03	09/04/03
7439-95-4	MAGNESIUM	978.0000		1070.0000	mg/L	0.5000	1247.0000	<	0.5000	<	0.5000	18	03/07/04	03/03/04



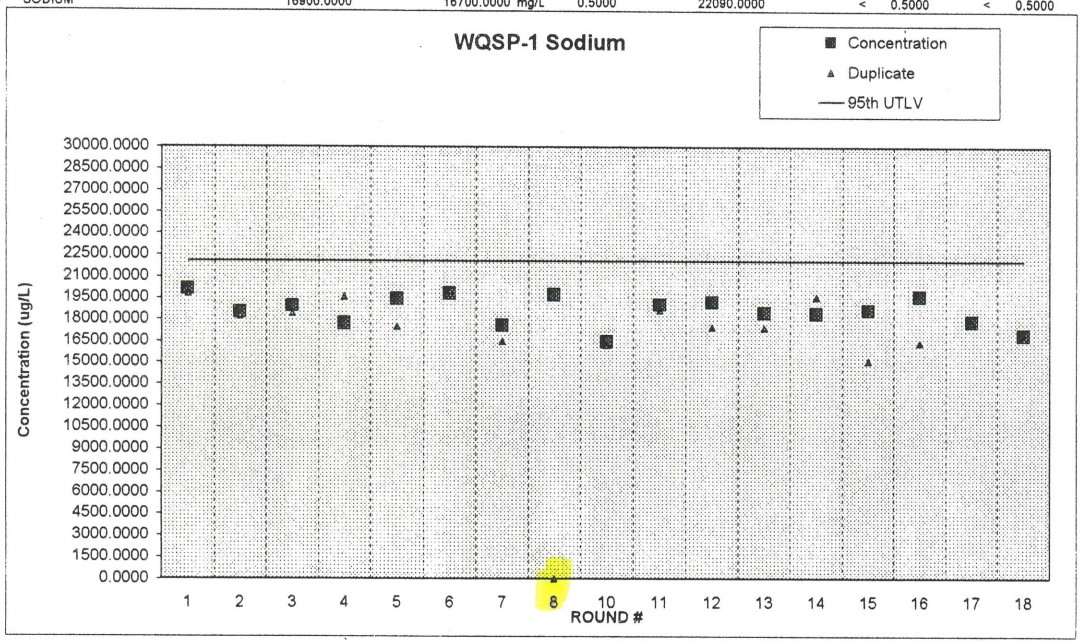
WQSP-1 Potassium

CAS #	PARAMETER	Concentration	VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7440-09-7	POTASSIUM	497.0000	474.0000	mg/L	0.2000	799.0000		< 0.2000	1	08/28/95	08/17/95
7440-09-7	POTASSIUM	476.0000	465.0000	mg/L	10.0000	799.0000	< 0.2000	< 0.2000	2	04/25/96	04/11/96
7440-09-7	POTASSIUM	471.0000	451.0000	mg/L	2.0000	799.0000	< 0.2000	< 0.2000	3	07/30/96	07/25/96
7440-09-7	POTASSIUM	443.0000	468.0000	mg/L	2.0000	799.0000	< 0.2000	< 0.2000	4	05/01/97	04/24/97
7440-09-7	POTASSIUM	499.0000	476.0000	mg/L	2.0000	799.0000	< 0.2000	< 0.2000	5	07/29/97	07/24/97
7440-09-7	POTASSIUM	467.0000	487.0000	mg/L	2.0000	799.0000		< 0.2000	6	03/19/98	03/05/98
7440-09-7	POTASSIUM	710.0000	640.0000	mg/L	0.5000	799.0000		< 0.5000	7	08/17/98	07/15/98
7440-09-7	POTASSIUM	661.0000	< 1.0000	mg/L	1.0000	799.0000		< 1.0000	8	03/15/99	03/03/99
7440-09-7	POTASSIUM	700.0000	728.0000	mg/L	0.5000	799.0000		< 0.5000	9	09/16/99	09/01/99
7440-09-7	POTASSIUM	442.0000	441.0000	mg/L	5.0000	799.0000		0.0210	10	03/06/00	03/02/00
7440-09-7	POTASSIUM	717.0000	687.0000	mg/L	2.0000	799.0000		0.2500	11	10/11/00	09/07/00
7440-09-7	POTASSIUM	767.0000	745.0000	mg/L	0.5000	799.0000		0.5300	12	05/10/01	03/01/01
7440-09-7	POTASSIUM	896.0000	871.0000	mg/L	0.2000	799.0000		< 0.3000	13	10/02/01	09/06/01
7440-09-7	POTASSIUM	695.0000	721.0000	mg/L	0.2000	799.0000		< 0.5500	14	04/24/02	03/06/02
7440-09-7	POTASSIUM	681.0000	691.0000	mg/L	0.5000	799.0000	< 5.0000	< 5.0000	15	10/02/02	09/05/02
7440-09-7	POTASSIUM	539.0000	497.0000	mg/L	0.5000	799.0000	< 0.5000	< 0.5000	16	03/31/03	03/05/03
7440-09-7	POTASSIUM	825.0000	850.0000	mg/L	0.5000	799.0000	< 2.5000	< 2.5000	17	09/10/03	09/04/03
7440-09-7	POTASSIUM	606.0000	630.0000	mg/L	0.5000	799.0000	0.6450	0.6500	18	03/07/04	03/03/04



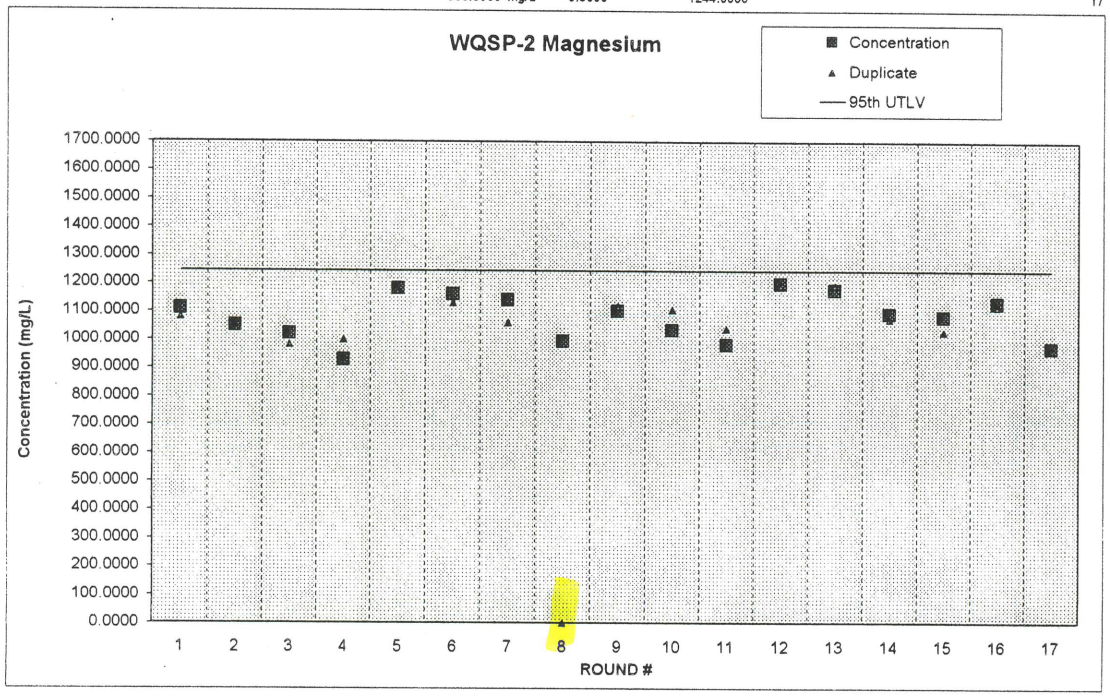
WQSP-1 Sodium

CAS #	PARAMETER	Concentration		VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV		ACID BLANK (AVERAGE)		WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7440-23-5	SODIUM	20100.0000		19800.0000	mg/L	5.0000	22090.0000			<	0.5000	1	08/28/95	08/17/95
7440-23-5	SODIUM	18500.0000		18200.0000	mg/L	25.0000	22090.0000	<	0.5000	<	0.5000	2	04/25/96	04/11/96
7440-23-5	SODIUM	18900.0000		18400.0000	mg/L	25.0000	22090.0000	<	0.5000	<	0.5000	3	07/30/96	07/25/96
7440-23-5	SODIUM	17700.0000		19600.0000	mg/L	10.0000	22090.0000	<	0.5000	<	0.2000	4	05/01/97	04/24/97
7440-23-5	SODIUM	19400.0000		17500.0000	mg/L	10.0000	22090.0000	<	0.2000	<	0.2000	5	07/29/97	07/24/97
7440-23-5	SODIUM	19800.0000		20000.0000	mg/L	4.0000	22090.0000			<	0.2000	6	03/19/98	03/05/98
7440-23-5	SODIUM	17550.0000		16500.0000	mg/L	0.5000	22090.0000			<	0.5000	7	08/17/98	07/15/98
7440-23-5	SODIUM	19700.0000	<	1.0000	mg/L	1.0000	22090.0000			<	1.0000	8	03/15/99	03/03/99
7440-23-5	SODIUM	16446.0000		16234.0000	mg/L	5.0000	22090.0000			<	5.0000	10	03/06/00	03/02/00
7440-23-5	SODIUM	19000.0000		18600.0000	mg/L	2.0000	22090.0000				0.5400	11	10/11/00	09/07/00
7440-23-5	SODIUM	19170.0000		17460.0000	mg/L	0.5000	22090.0000				0.7300	12	05/10/01	03/01/01
7440-23-5	SODIUM	18450.0000		17430.0000	mg/L	0.2000	22090.0000				0.3590	13	10/03/01	09/06/01
7440-23-5	SODIUM	18400.0000		19600.0000	mg/L	0.2000	22090.0000			<	0.5500	14	03/18/02	03/06/02
7440-23-5	SODIUM	18600.0000		15100.0000	mg/L	0.5000	22090.0000		9.7600		14.6000	15	10/02/02	09/05/02
7440-23-5	SODIUM	19600.0000		16400.0000	mg/L	0.5000	22090.0000	<	0.5000	<	0.5000	16	04/07/03	03/05/03
7440-23-5	SODIUM	17800.0000		17800.0000	mg/L	0.5000	22090.0000		21.3000	<	2.5000	17	09/10/03	09/04/03
7440-23-5	SODIUM	16900.0000		16700.0000	mg/L	0.5000	22090.0000	<	0.5000	<	0.5000	18	03/07/04	03/03/04



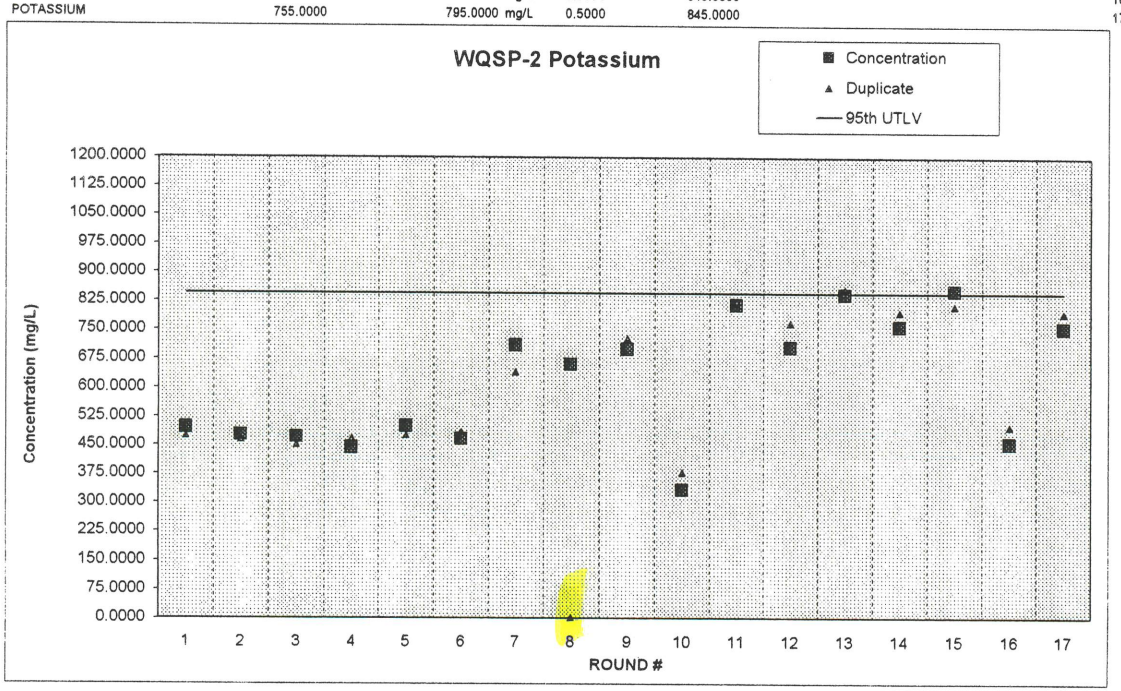
WQSP-2 Magnesium

CAS #	PARAMETER	Concentration	VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7439-95-4	MAGNESIUM	1110.0000	1080.0000	mg/L	1.0000	1244.0000		< 0.1000	1	08/28/95	08/17/95
7439-95-4	MAGNESIUM	1050.0000	1040.0000	mg/L	0.5000	1244.0000	< 0.0500	< 0.0500	2	05/07/96	04/11/96
7439-95-4	MAGNESIUM	1020.0000	982.0000	mg/L	0.5000	1244.0000	< 0.0500	< 0.0500	3	07/30/96	07/25/96
7439-95-4	MAGNESIUM	928.0000	1000.0000	mg/L	1.0000	1244.0000	< 0.1000	< 0.1000	4	05/02/97	04/24/97
7439-95-4	MAGNESIUM	1180.0000	1170.0000	mg/L	0.5000	1244.0000	< 0.0500	< 0.0500	5	08/15/97	07/24/97
7439-95-4	MAGNESIUM	1160.0000	1130.0000	mg/L	0.5000	1244.0000		< 0.0500	6	03/19/98	03/05/98
7439-95-4	MAGNESIUM	1140.0000	1060.0000	mg/L	0.5000	1244.0000		< 0.5000	7	08/17/98	07/15/98
7439-95-4	MAGNESIUM	993.0000	< 1.0000	mg/L	0.5000	1244.0000		< 0.5000	8	03/15/99	03/03/99
7439-95-4	MAGNESIUM	1100.0000	1120.0000	mg/L	0.5000	1244.0000		< 0.5000	9	09/16/99	09/01/99
7439-95-4	MAGNESIUM	1033.0000	1107.0000	mg/L	5.0000	1244.0000			10	03/16/00	03/15/00
7439-95-4	MAGNESIUM	982.0000	1040.0000	mg/L	1.0000	1244.0000		< 1.0000	11	10/26/00	09/20/00
7439-95-4	MAGNESIUM	1199.0000	1188.0000	mg/L	0.5000	1244.0000		< 0.5000	12	05/10/01	03/14/01
7439-95-4	MAGNESIUM	1175.0000	1193.0000	mg/L	0.2000	1244.0000			13	11/09/01	09/19/01
7439-95-4	MAGNESIUM	1093.0000	1074.0000	mg/L	0.5000	1244.0000		< 0.5000	14	03/25/02	03/20/02
7439-95-4	MAGNESIUM	1080.0000	1030.0000	mg/L	0.5000	1244.0000			15	10/01/02	09/18/02
7439-95-4	MAGNESIUM	1130.0000	1120.0000	mg/L	0.5000	1244.0000			16	04/28/03	03/19/03
7439-95-4	MAGNESIUM	970.0000	965.0000	mg/L	0.5000	1244.0000			17	09/26/03	09/17/03



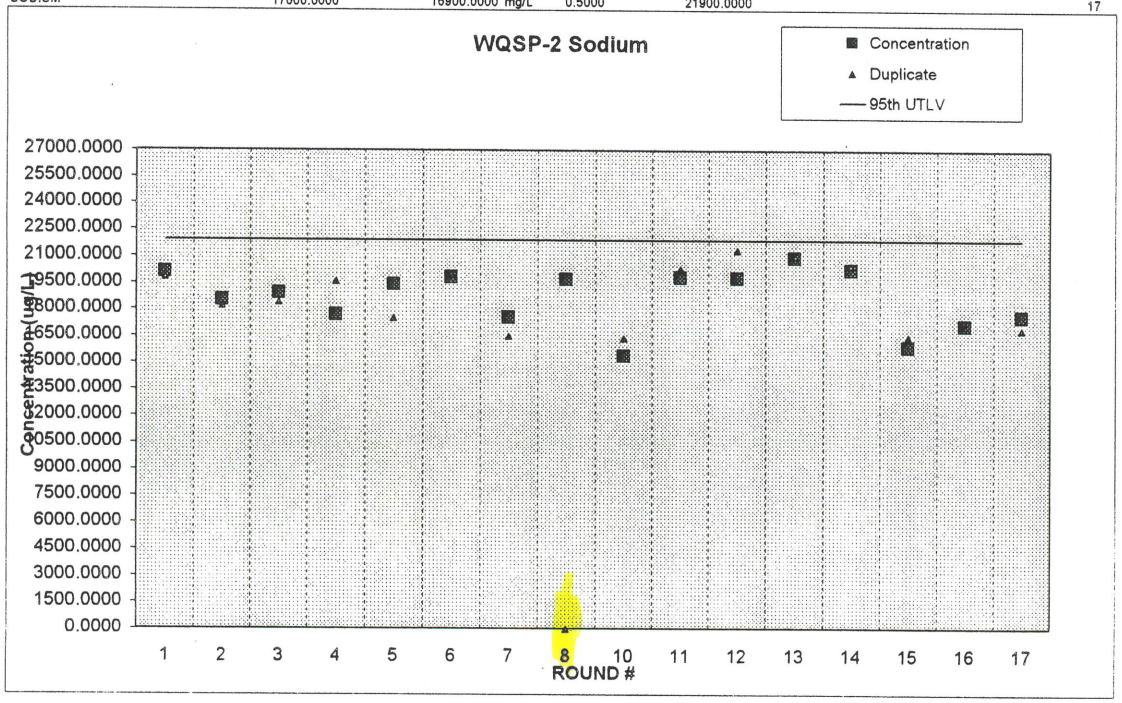
WQSP-2 Potassium

CAS #	PARAMETER	Concentration		VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV		ACID BLANK (AVERAGE)		WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7440-09-7	POTASSIUM	497.0000		474.0000	mg/L	0.2000	845.0000			<	0.2000	1	08/28/95	08/17/95
7440-09-7	POTASSIUM	476.0000		465.0000	mg/L	10.0000	845.0000	<	0.2000	<	0.2000	2	04/25/96	04/11/96
7440-09-7	POTASSIUM	471.0000		451.0000	mg/L	2.0000	845.0000	<	0.2000	<	0.2000	3	07/30/96	07/25/96
7440-09-7	POTASSIUM	443.0000		468.0000	mg/L	2.0000	845.0000	<	0.2000	<	0.2000	4	05/01/97	04/24/97
7440-09-7	POTASSIUM	499.0000		476.0000	mg/L	2.0000	845.0000	<	0.2000	<	0.2000	5	07/29/97	07/24/97
7440-09-7	POTASSIUM	467.0000		487.0000	mg/L	2.0000	845.0000			<	0.2000	6	03/19/98	03/05/98
7440-09-7	POTASSIUM	710.0000		840.0000	mg/L	0.5000	845.0000			<	0.5000	7	08/17/98	07/15/98
7440-09-7	POTASSIUM	661.0000	<	1.0000	mg/L	0.5000	845.0000			<	0.5000	8	03/15/99	03/03/99
7440-09-7	POTASSIUM	700.0000		728.0000	mg/L	0.5000	845.0000			<	0.5000	9	09/16/99	09/01/99
7440-09-7	POTASSIUM	333.0000		380.0000	mg/L	0.0400	845.0000					10	03/16/00	03/15/00
7440-09-7	POTASSIUM	815.0000		823.0000	mg/L	1.0000	845.0000				10.1000	11	10/26/00	09/20/00
7440-09-7	POTASSIUM	706.0000		768.0000	mg/L	0.5000	845.0000			<	0.5000	12	05/10/01	03/14/01
7440-09-7	POTASSIUM	841.0000		856.0000	mg/L	0.2000	845.0000					13	11/09/01	09/19/01
7440-09-7	POTASSIUM	759.0000		797.0000	mg/L	0.5000	845.0000			<	0.5000	14	03/25/02	03/20/02
7440-09-7	POTASSIUM	852.0000		813.0000	mg/L	0.5000	845.0000					15	10/01/02	09/18/02
7440-09-7	POTASSIUM	455.0000		501.0000	mg/L	0.5000	845.0000					16	04/28/03	03/19/03
7440-09-7	POTASSIUM	755.0000		795.0000	mg/L	0.5000	845.0000					17	09/26/03	09/17/03



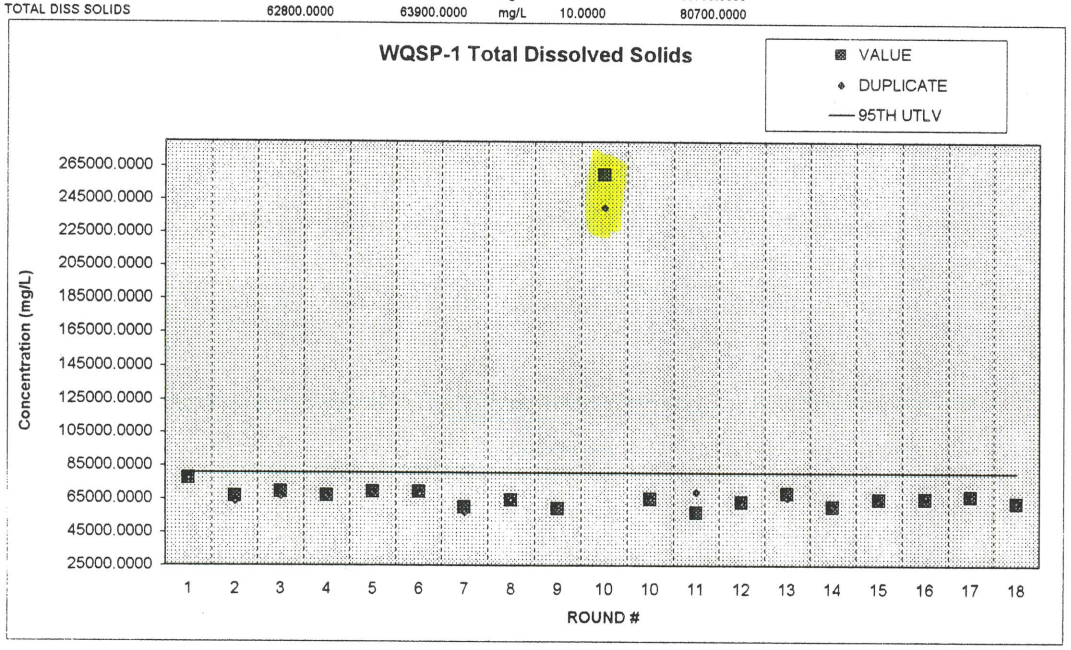
WQSP-2 Sodium

CAS #	PARAMETER	Concentration	VALUE Duplicate	UNITS	MINIMUM DETECTION LIMIT	95th UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7440-23-5	SODIUM	20100.0000	19800.0000	mg/L	5.0000	21900.0000		< 0.5000	1	08/28/95	08/17/95
7440-23-5	SODIUM	18500.0000	18200.0000	mg/L	25.0000	21900.0000	< 0.5000	< 0.5000	2	04/25/96	04/11/96
7440-23-5	SODIUM	18900.0000	18400.0000	mg/L	25.0000	21900.0000	< 0.5000	< 0.5000	3	07/30/96	07/25/96
7440-23-5	SODIUM	17700.0000	19600.0000	mg/L	10.0000	21900.0000	< 0.5000	< 0.2000	4	05/01/97	04/24/97
7440-23-5	SODIUM	19400.0000	17500.0000	mg/L	10.0000	21900.0000	< 0.2000	< 0.2000	5	07/29/97	07/24/97
7440-23-5	SODIUM	19800.0000	20000.0000	mg/L	4.0000	21900.0000		< 0.2000	6	03/19/98	03/05/98
7440-23-5	SODIUM	17550.0000	16500.0000	mg/L	0.5000	21900.0000		< 0.5000	7	08/17/98	07/15/98
7440-23-5	SODIUM	19700.0000	< 1.0000	mg/L	1.0000	21900.0000		< 1.0000	8	03/15/99	03/03/99
7440-23-5	SODIUM	15374.0000	16396.0000	mg/L	5.0000	21900.0000			10	03/16/00	03/15/00
7440-23-5	SODIUM	19800.0000	20300.0000	mg/L	1.0000	21900.0000		22.0000	11	10/26/00	09/20/00
7440-23-5	SODIUM	19790.0000	21340.0000	mg/L	0.5000	21900.0000		< 0.5000	12	05/10/01	03/14/01
7440-23-5	SODIUM	20910.0000	21060.0000	mg/L	0.2000	21900.0000			13	11/09/01	09/19/01
7440-23-5	SODIUM	20240.0000	20490.0000	mg/L	0.5000	21900.0000		< 0.5000	14	03/25/02	03/20/02
7440-23-5	SODIUM	15900.0000	16500.0000	mg/L	0.5000	21900.0000			15	10/01/02	09/18/02
7440-23-5	SODIUM	17100.0000	17100.0000	mg/L	0.5000	21900.0000			16	04/28/03	03/19/03
7440-23-5	SODIUM	17600.0000	16900.0000	mg/L	0.5000	21900.0000			17	09/26/03	09/17/03



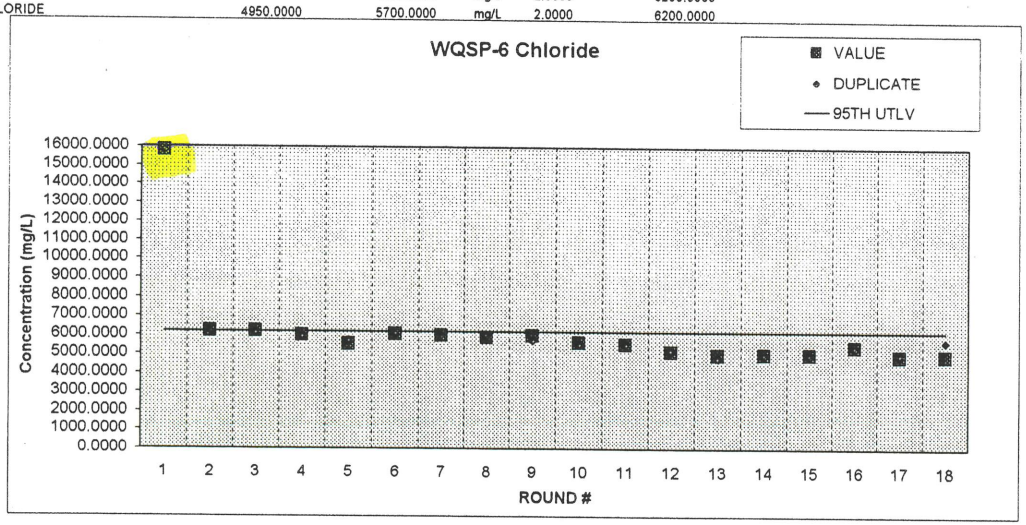
WQSP-1 Total Dissolved Solids

CAS #	PARAMETER	VALUE	VALUE DUPLICATE	UNITS	MINIMUM DETECTION LIMIT	95TH UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
	TOTAL DISS SOLIDS	77400.0000	77600.0000	mg/L	10.0000	80700.0000		< 10.0000	1	08/24/95	08/17/95
	TOTAL DISS SOLIDS	66300.0000	63500.0000	mg/L	2000.0000	80700.0000		< 20.0000	2	04/19/96	04/11/96
	TOTAL DISS SOLIDS	69000.0000	66600.0000	mg/L	200.0000	80700.0000		< 10.0000	3	08/01/96	07/25/96
	TOTAL DISS SOLIDS	66700.0000	66300.0000	mg/L	10.0000	80700.0000		< 10.0000	4	04/30/97	04/24/97
	TOTAL DISS SOLIDS	69000.0000	68600.0000	mg/L	200.0000	80700.0000		< 10.0000	5	07/31/97	07/24/97
	TOTAL DISS SOLIDS	69000.0000	68200.0000	mg/L	400.0000	80700.0000		< 10.0000	6	03/17/98	03/05/98
	TOTAL DISS SOLIDS	60000.0000	57000.0000	mg/L	10.0000	80700.0000		< 10.0000	7	07/22/98	07/15/98
	TOTAL DISS SOLIDS	64000.0000	64000.0000	mg/L	10.0000	80700.0000		< 10.0000	8	03/03/99	03/03/99
	TOTAL DISS SOLIDS	59000.0000	61000.0000	mg/L	10.0000	80700.0000		< 10.0000	9	09/02/99	09/01/99
	TOTAL DISS SOLIDS	260000.0000	240000.0000	mg/L	10.0000	80700.0000		< 10.0000	10	03/08/00	03/02/00
	TOTAL DISS SOLIDS	65000.0000	65500.0000	mg/L	10.0000	80700.0000			10	06/20/00	03/02/00
	TOTAL DISS SOLIDS	57000.0000	69000.0000	mg/L	10.0000	80700.0000		< 10.0000	11	09/12/00	09/07/00
	TOTAL DISS SOLIDS	63000.0000	63000.0000	mg/L	10.0000	80700.0000		< 10.0000	12	03/02/01	03/01/01
	TOTAL DISS SOLIDS	68300.0000	65700.0000	mg/L	10.0000	80700.0000			13	09/17/01	09/06/01
	TOTAL DISS SOLIDS	60500.0000	60600.0000	mg/L	10.0000	80700.0000			14	03/08/02	03/06/02
	TOTAL DISS SOLIDS	64500.0000	63900.0000	mg/L	10.0000	80700.0000			15	09/09/02	09/05/02
	TOTAL DISS SOLIDS	65100.0000	66400.0000	mg/L	10.0000	80700.0000			16	03/06/03	03/05/03
	TOTAL DISS SOLIDS	66500.0000	66700.0000	mg/L	10.0000	80700.0000			17	09/10/03	09/04/03
	TOTAL DISS SOLIDS	62800.0000	63900.0000	mg/L	10.0000	80700.0000			18	03/09/04	03/03/04



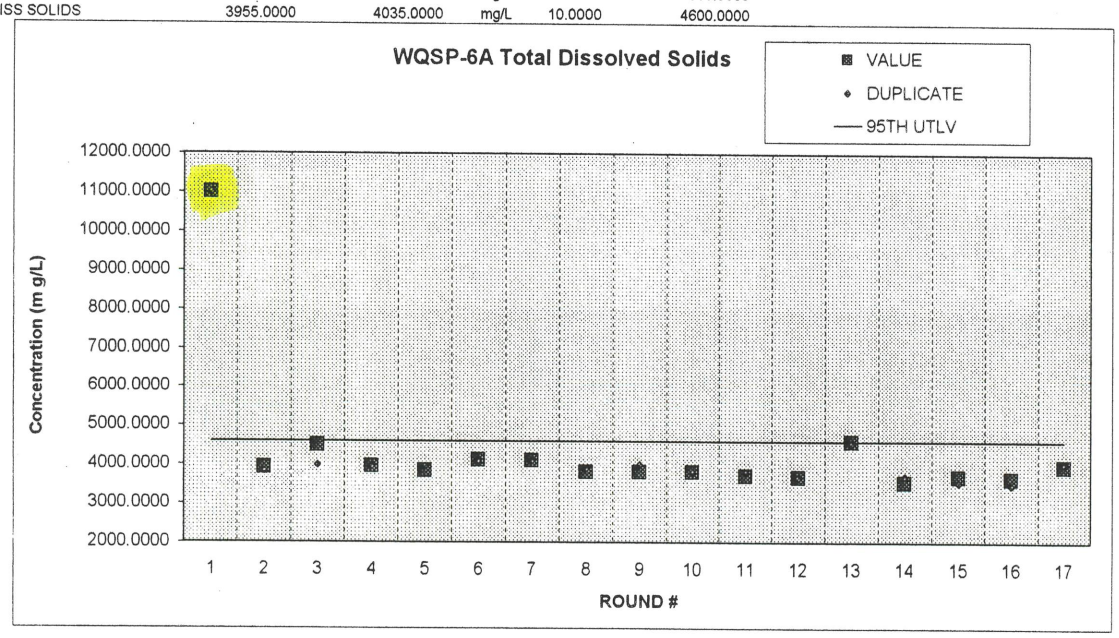
WQSP-6 Chloride

CAS #	PARAMETER	VALUE	VALUE DUPLICATE	UNITS	MINIMUM DETECTION LIMIT	95TH UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7782-50-5	CHLORIDE	15800.0000	15800.0000	mg/L	5.0000	6200.0000		< 5.0000	1	10/19/95	10/16/95
7782-50-5	CHLORIDE	6200.0000	6200.0000	mg/L	1000.0000	6200.0000		< 5.0000	2	03/21/96	03/12/96
7782-50-5	CHLORIDE	6198.0000	6098.0000	mg/L	500.0000	6200.0000		< 5.0000	3	07/10/96	06/27/96
7782-50-5	CHLORIDE	5973.0000	5923.0000	mg/L	250.0000	6200.0000		< 5.0000	4	04/14/97	04/03/97
7782-50-5	CHLORIDE	5500.0000	5750.0000	mg/L	5000.0000	6200.0000		< 5.0000	5	07/07/97	06/25/97
7782-50-5	CHLORIDE	6070.0000	6053.3300	mg/L	0.0160	6200.0000		0.0544	6	06/05/98	06/03/98
7782-50-5	CHLORIDE	6000.0000	6000.0000	mg/L	0.5000	6200.0000		1.6600	7	10/22/98	10/21/98
7782-50-5	CHLORIDE	5900.0000	6000.0000	mg/L	0.5000	6200.0000		< 0.5000	8	05/20/99	05/19/99
7782-50-5	CHLORIDE	6000.0000	5700.0000	mg/L	0.5000	6200.0000		< 0.5000	9	11/03/99	11/03/99
7782-50-5	CHLORIDE	5600.0000	5500.0000	mg/L	0.5000	6200.0000		< 0.5000	10	05/19/00	05/10/00
7782-50-5	CHLORIDE	5500.0000	5500.0000	mg/L	2.0000	6200.0000		< 0.5000	11	11/16/00	11/15/00
7782-50-5	CHLORIDE	5140.0000	5170.0000	mg/L	0.5000	6200.0000			12	05/23/01	05/16/01
7782-50-5	CHLORIDE	4970.0000	4820.0000	mg/L	2.0000	6200.0000			13	11/27/01	11/07/01
7782-50-5	CHLORIDE	4990.0000	4950.0000	mg/L	2.0000	6200.0000			14	05/23/02	5/15.02
7782-50-5	CHLORIDE	5020.0000	4940.0000	mg/L	2.0000	6200.0000			15	11/13/02	11/13/02
7782-50-5	CHLORIDE	5410.0000	5360.0000	mg/L	2.0000	6200.0000			16	05/14/03	05/07/03
7782-50-5	CHLORIDE	4910.0000	4980.0000	mg/L	2.0000	6200.0000			17	11/13/03	11/12/03
7782-50-5	CHLORIDE	4950.0000	5700.0000	mg/L	2.0000	6200.0000			18	05/20/04	05/19/04



WQSP-6A Total Dissolved Solids

CAS #	PARAMETER	VALUE	VALUE DUPLICATE	UNITS	MINIMUM DETECTION LIMIT	95TH UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
TOTAL DISS SOLIDS		11000.0000	11000.0000	mg/L	10.0000	4600.0000		< 10.0000	1	07/19/95	07/13/95
TOTAL DISS SOLIDS		3920.0000	3820.0000	mg/L	200.0000	4600.0000		< 10.0000	2	04/08/96	03/28/96
TOTAL DISS SOLIDS		4500.0000	3980.0000	mg/L	200.0000	4600.0000		< 10.0000	3	07/17/96	07/11/96
TOTAL DISS SOLIDS		3960.0000	3960.0000	mg/L	10.0000	4600.0000		< 10.0000	4	04/16/97	04/10/97
TOTAL DISS SOLIDS		3840.0000	3950.0000	mg/L	200.0000	4600.0000		< 10.0000	5	07/17/97	07/10/97
TOTAL DISS SOLIDS		4120.0000	4100.0000	mg/L	20.0000	4600.0000			6	06/13/98	06/10/98
TOTAL DISS SOLIDS		4100.0000	4100.0000	mg/L	10.0000	4600.0000		10.0000	7	11/10/98	11/03/98
TOTAL DISS SOLIDS		3800.0000	3900.0000	mg/L	10.0000	4600.0000		10.0000	8	05/27/99	05/26/99
TOTAL DISS SOLIDS		3800.0000	4000.0000	mg/L	10.0000	4600.0000		10.0000	9	11/15/99	11/10/99
TOTAL DISS SOLIDS		3800.0000	3800.0000	mg/L	10.0000	4600.0000		10.0000	10	05/31/00	05/24/00
TOTAL DISS SOLIDS		3700.0000	3800.0000	mg/L	10.0000	4600.0000			11	12/04/00	11/30/00
TOTAL DISS SOLIDS		3680.0000	3670.0000	mg/L	10.0000	4600.0000			12	06/12/01	06/06/01
TOTAL DISS SOLIDS		4600.0000	4550.0000	mg/L	10.0000	4600.0000			13	11/20/01	11/14/01
TOTAL DISS SOLIDS		3540.0000	3700.0000	mg/L	10.0000	4600.0000			14	05/29/02	05/22/02
TOTAL DISS SOLIDS		3685.0000	3545.0000	mg/L	10.0000	4600.0000			15	11/25/02	11/20/02
TOTAL DISS SOLIDS		3650.0000	3475.0000	mg/L	10.0000	4600.0000			16	05/27/03	05/21/03
TOTAL DISS SOLIDS		3955.0000	4035.0000	mg/L	10.0000	4600.0000			17	11/21/03	11/19/03



WQSP-6A Chloride

CAS #	PARAMETER	VALUE	VALUE DUPLICATE	UNITS	MINIMUM DETECTION LIMIT	95TH UTLV	ACID BLANK (AVERAGE)	WATER BLANK (AVERAGE)	ROUND #	DATE ANALYZED	DATE SAMPLED
7782-50-5	CHLORIDE	1040.0000	1040.0000	mg/L	5.0000	1040.0000		< 5.0000	1	07/25/95	07/13/95
7782-50-5	CHLORIDE	507.0000	515.0000	mg/L	50.0000	1040.0000		< 5.0000	2	04/10/96	03/28/96
7782-50-5	CHLORIDE	6748.0000	6698.0000	mg/L	5.0000	1040.0000		< 5.0000	3	07/17/96	07/11/96
7782-50-5	CHLORIDE	675.0000	665.0000	mg/L	250.0000	1040.0000		< 5.0000	4	04/14/97	04/10/97
7782-50-5	CHLORIDE	660.0000	665.0000	mg/L	50.0000	1040.0000		< 5.0000	5	08/29/97	07/10/97
7782-50-5	CHLORIDE	644.0000	624.0000	mg/L	0.0160	1040.0000			6	06/13/98	06/10/98
7782-50-5	CHLORIDE	770.0000	680.0000	mg/L	0.5000	1040.0000		1.0500	7	11/05/98	11/03/98
7782-50-5	CHLORIDE	540.0000	510.0000	mg/L	0.5000	1040.0000		< 0.5000	8	05/28/99	05/26/99
7782-50-5	CHLORIDE	540.0000	540.0000	mg/L	0.5000	1040.0000		< 0.5000	9	11/11/99	11/10/99
7782-50-5	CHLORIDE	530.0000	510.0000	mg/L	0.5000	1040.0000		< 0.5000	10	05/24/00	05/24/00
7782-50-5	CHLORIDE	480.0000	480.0000	mg/L	0.5000	1040.0000			11	11/30/00	11/30/00
7782-50-5	CHLORIDE	536.0000	505.0000	mg/L	0.5000	1040.0000			12	06/07/01	06/06/01
7782-50-5	CHLORIDE	414.0000	411.0000	mg/L	2.0000	1040.0000			13	11/27/01	11/14/01
7782-50-5	CHLORIDE	487.0000	400.0000	mg/L	2.0000	1040.0000			14	05/23/02	05/22/02
7782-50-5	CHLORIDE	419.0000	417.0000	mg/L	2.0000	1040.0000			15	11/20/02	11/20/02
7782-50-5	CHLORIDE	384.0000	370.0000	mg/L	2.0000	1040.0000			16	05/21/03	05/21/03
7782-50-5	CHLORIDE	391.0000	394.0000	mg/L	2.0000	1040.0000			17	11/19/03	11/19/03

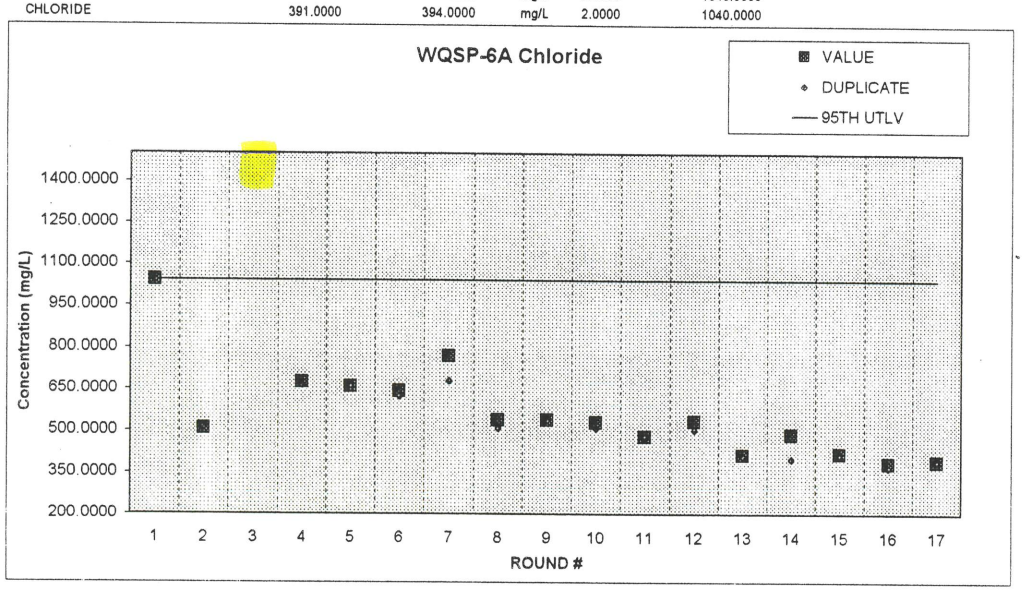


Table 14
Summary Statistics for General Chemistry at WIPP Monitoring Well WQSP6a
concentrations in mg/L unless otherwise stated

Chemical	N	Percent ND	Distribution Type	Minimum	Maximum	Median	Mean	Standard Deviation	95th Percentile	95th UTL
ALKALINITY	20	0	Lognormal	100.0	111.0	103.0	104.0	3.47	111.0	113
BORON	20	35	Nonparametric	<0.50	0.5	0.4	0.4	0.08	0.5	NA
BROMIDE	20	55	Nonparametric	0.9	14.5	<2.0	2.4	4.13	14.5	NA
CALCIUM	20	0	Normal	563	681	647	636	41	681	733
CHLORIDE	20	0	Nonparametric	507	6748	652	1255	1876	6723	NA
CYANIDE	4	100	Nonparametric	<0.01	<0.01	<0.01	<0.01	--	<0.01	NA
DENSITY (g/mL)	20	NA	Nonparametric	0.98	1.01	1.00	1.00	0.01	1.01	NA
FLUORIDE	20	20	Nonparametric	1.00	<6.0	1.48	1.71	0.63	2.95	NA
IODIDE	20	100	Nonparametric	<0.5	<2.0	<2.0	0.93	0.23	<2.0	NA
LITHIUM	20	40	Nonparametric	0.083	<0.5	<0.2	0.133	0.063	<0.5	NA
NITROGEN, NO3 (AS N)	20	0	Normal	2.750	11.000	6.595	6.372	2.424	10.450	12.2
ORTHOPHOSPHATE (AS P)	20	80	Nonparametric	<0.01	0.11	<0.02	0.03	0.03	0.11	NA
pH (SU)	20	NA	Normal	7.20	7.92	7.36	7.44	0.22	7.88	6.8-8.0
SILICA	20	0	Normal	0.34	28.10	23.94	17.88	9.28	28.05	40.1
SODIUM	20	0	Lognormal	267	347	296	304	25	347	369
SPECIFIC CONDUCTANCE (umhos/cm)	20	0	Lognormal	4300	5000	4564	4614	231	5000	5192
SULFATE	20	0	Lognormal	1790	2560	1960	2027	208	2520	2543
SULFIDE	4	75	Nonparametric	<1.5	5.38	<1.5	<1.5	2.32	5.38	NA
TOTAL DISS SOLIDS	20	0	Nonparametric	3800	4600	3960	3925	2170	4600	NA
TOTAL ORGANIC CARBON	20	35	Nonparametric	<0.1	15.60	1.14	2.76	4.43	15.45	NA
TOTAL ORGANIC HALOGENS	18	11	Normal	<0.01	0.2	0.066	0.1	0.048	0.2	0.19
TOTAL PHENOLS	15	100	Nonparametric	<0.01	<0.28	<0.07	0.032	0.035	<0.28	NA
TOTAL SUSP SOLIDS	20	95	Nonparametric	<1.0	91.0	<10.0	11.8	27.2	91.0	NA

Table 1
Suspect Analytical Results Deleted from the Updated Background Baseline Analysis

Well Number	Chemical Parameter	Sampling Round
WQSP-1	Calcium (Duplicate)	Round 8
WQSP-1	Magnesium (Duplicate)	Round 8
WQSP-1	Potassium (Duplicate)	Round 8
WQSP-1	Sodium (Duplicate)	Round 8
WQSP-2	Magnesium (Duplicate)	Round 8
WQSP-2	Potassium (Duplicate)	Round 8
WQSP-2	Sodium (Duplicate)	Round 8
WQSP-6A	TDS (Sample-Duplicate)	Round 1
WQSP-6A	Chloride (Sample-Duplicate)	Round 3
WQSP-1	TDS (Original Analysis)	Round 10

ADD:

WQSP-6	Chloride (Sample-Duplicate	Round 1

FROM: WIPP Groundwater Baseline Update Report (2000)