UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268
Office of Ground Water and Drinking Water
Technical Support Center
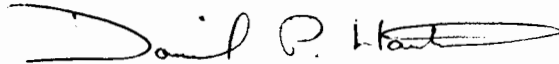
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MEMORANDUM

DATE: November 9, 1999

TO: Kirby Olsen
             New Mexico Environment Department
             Hazardous and Radioactive Materials Bureau

FROM: Daniel P. Hautman

SUBJECT: Report on Perchlorate Analysis

A total of eight samples were received in good condition from the New Mexico Environment Department, Hazardous and Radioactive Materials Bureau for perchlorate analysis. All samples were analyzed exclusively for perchlorate by EPA Method 309.0 (Attachment #1). Samples were labeled as originating from **Holloman AFB, NM** with specific information on each bottle as follows:

Sample #	# received	Type	Misc Information
NM-39-02-01	1	groundwater well	Down gradient monitoring well
NM-39-02-02	1	groundwater well	Down gradient monitoring well - *Based on a phone conversation, this sample is likely a Field Duplicate of NM-39-02-01, but for this analysis set, it was treated as separate sample*
NM-39-03	2	groundwater well	Array 0 monitoring well
LR-1	2	surface water	Lost River Pupfish pool upstream
LR-2	2	surface water	Lost River Pupfish pool downstream

All samples were above the Matrix Conductivity Threshold (Method Sections 9.2.8 & 11.1.2) and could not be analyzed directly due to their excessively high conductance. Samples were analyzed both following 10 X dilution in reagent water and as pretreated samples (to reduce the high total dissolved solid [TDS] levels). The 10 X dilution results indicated perchlorate was present in the ground water but at concentrations near and below 40 ug/L (The Minimum Reporting Level [MRL] is 4.0 ug/L which upon 10 x dilution becomes 40 ug/L). These samples were then pretreated to reduce the high TDS levels, as described in Method Section 11.1.4, and reanalyzed. These results are presented in Table 1.

Corresponding quality control (QC) data (except for the QC data for laboratory duplicates, which is included in Table 1) are presented in Table 2.

cc: David Munch

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Table 1: Analytical Results Following Pretreatment[1]

SAMPLE TYPE: Holloman AFB perchlorate samples
ANALYTE: Perchlorate
METHOD: U.S.EPA Method 309.0

Sample #	Perchlorate μg/L	QC Result	QC Criteria
NM-39-02-01	15.5		
NM-39-02-01 Lab Duplicate	14.1	RPD[2] = 9.46%	RPD < 15 %
NM-39-02-02	15.2		
NM-39-02-02 Lab Duplicate	15.6	RPD[2] = 2.60%	RPD < 15 %
NM-39-02-03	38.9		
NM-39-02-03 Lab Duplicate	34.4	RPD[2] = 12.3%	RPD < 15 %
LR-1	< 4.0		
LR-1 Lab Duplicate	< 4.0	no result	RPD < 15 %
LR-2	< 4.0		
LR-2 Lab Duplicate	< 4.0	no result	RPD < 15 %

FOOTNOTES
(1) Pretreated using a Dionex On-Guard Ba, Ag, and H+ in series as prescribed in Method 309.0.
(2) The result for the Lab Duplicate must meet a relative percent difference criteria (defined as the absolute difference of two #s divided by their mean then multiplied by 100) of no more than 15%.

Table 2: Quality Control Results

SAMPLE TYPE: Holloman AFB perchlorate samples
ANALYTE: **Perchlorate**
METHOD: U.S.EPA Method 309.0

Reagent Water Prepared QC Samples

Sample	Perchlorate µg/L	Fortified Concentration ug/L	QC Result	QC Criteria
Laboratory Reagent Blank (LRB)	< 4.0	-----	OK	< MRL of 4.0 ug/L
Pretreated[1] LRB	< 4.0	-----	OK	< MRL of 4.0 ug/L
Laboratory Fortified Blank (LFB)	24.4	25.0	98% Recovery	Recovery 85 -115%
Pretreated[1] LFB	108	100	108% Recovery	Recovery 85 -115%
Instrument Performance Check Standard	23.7	25.0	95% Recovery $PD_{A/H} = 22.7\%$	Recovery 80 -120% $PD_{A/H} < 25\%$
Initial Calibration Check Standard	4.1	4.0	103% Recovery	Recovery 75 -125%
End Calibration Check Standard	25.6	25.0	103% Recovery	Recovery 85 -115%

Laboratory Fortified Matrix Samples (All pretreated[1] and analyzed undiluted)

Sample #	Sample Perchlorate Conc. (C), ug/L	Fortified Perchlorate Conc., ug/L	Measured Perchlorate in LFM (C_s), ug/L	QC Result % Recovery	QC Criteria % Recovery range
NM-39-02-01	15.5	100	107	92 %	80 - 120%
NM-39-02-02	15.2	100	117	102 %	80 - 120%
NM-39-02-03	38.9	100	122	83 %	80 - 120%
LR-1	< 4.0	100	96	96 %	80 - 120%
LR-2	< 4.0	100	101	101 %	80 - 120%

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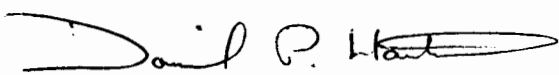
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