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Upper Animas Watershed

7/27/2004

SAJ

Preliminary Assessment - PASI Sites - Correspondence - Upper Animas Watershed - PA/SAJ/UPP

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TO: Gary Broetzman, C/O Animas Stakeholder Group

FROM: Camille Farrell

DATE: April 13, 1995

RE: Appendage to the DRAFT Animas Discovery Report

Hi All!

Attached, please find the newest section to be incorporated into the DRAFT Animas Discovry Report for distribution to the Animas Stakeholders.

Please note that the "Lab Data Validation " section of the report, as well as the CDPHE information provided in TABLE III, is currently being reviewd by CDPHE labs to confirm its validity.

Hope all is well.

See You on the 21st!

TABLE I

CDPHE Animas Basin Sampling

Draining Mine Adits - Aqueous Sources

Sampling Location	Site Name	Site Location Description
CEMENT CREEK AND ITS TRIBUTARIES		
CC 01	Queen Ann Adit	North Fork of Cement Creek Headwaters
CC 01b	Mogul Tunnel	North Fork of Cement Creek Headwaters
CC 01c	Mine Adit Above Mogul Tunnel	North Fork of Cement Creek Headwaters
CC 01d	Mine Adit Above Mogul Tunnel	North Fork of Cement Creek Headwaters
CC 01e	Mine Adit Above Mogul Tunnel	North Fork of Cement Creek Headwaters
CC 01f	Mine Adit Above Mogul Tunnel	North Fork of Cement Creek Headwaters
CC 10	Middle Fork Cement Adit	Middle Fork of Cement Creek Headwaters
CC 14	South Fork Cement Adit	N. trib. of S. Fork of Cement Cr. Headwaters
CC 19	American Tunnel	Cement C. below the confluence with Minnehaha
CC 24a	Prospect Adit	Mainstem of Prospect G.
CC 24b	Prospect Adit	Mainstem of Prospect G.
CC 29	Cement Adit	Trib. west of Cement Cr., below Prospect G.
CC 29a	Cement Adit	Trib. west of Cement Cr., below Prospect G.
CC 32	Cement Adit	Mainstem of Cement Creek
CC 37	Anglo Saxon Adit	Mainstem of Cement Creek
CC 37a	Anglo Saxon Adit	Mainstem of Cement Creek
CC 44	Topeka Adit	Mainstem of Cement Creek
MINERAL CREEK AND ITS TRIBUTARIES		
M 02a	Longfellow/Koehler Complex	Mineral Creek Headwaters
M 02b	Longfellow/Koehler Complex	Mineral Creek Headwaters
M 09	Mill Creek Adit	Upper Mill Creek
M 11a	Adit Below Beaver Ponds	Mainstem of Mineral Creek below Mill Cr.
M 12a	Browns G. Adit	Browns Gulch
M 12b	Browns G. Adit	Browns Gulch
M 21	Bonner Adit	Lower Middle Fork of Mineral Creek
M 21a	Bonner Adit	Lower Middle Fork of Mineral Creek
M 24	Bandora Adit	South Fork of Mineral Creek Headwaters
M 36	Mineral Creek Adit	Mineral Creek before confluence with Animas
M 37	Mineral Adit	Mineral Creek before confluence with Animas

TABLE II

Comparison of CDPHE existing data to EPA HRS Requirements
UPPER ANIMAS FIELD MEASUREMENTS

Sample Location		Field Parameters		Field QA/QC	
CDPHE	EPA	CDPHE	EPA	CDPHE	EPA
Background (water)	Background (water)	Temp.	Temp.	1 Field Blank per 18 samples (average)	1 Field Blank per 20 samples (blind)
Aqueous Sources (draining mine adits; mine waste seeps; natrual seeps)	Aqueous Sources	pH	pH	1 Rinsate Blank per 19 samples (same as filtered field blanks)	1 Rinsate Blank per day (1 per 20 samples)
+++	Solid Sources	EC	EC	Not Applicable	1 Trip Blank per trip (VOA only)
Surface Water	Surface Water	Discharge (High and low flow)		1 Duplicate per 13 samples (average)	1 Duplicate per 20 samples (blind)
	Sediments	Discharge (storm event)			

Field Blank = Quality Control to assess potential field contamination
Rinsate Blank = Quality Control to assess field decontamination procedures
Trip Blank = (For VOC's) Quality Control to assess sample handling/shipping procedures
+++ = Sampling of soild sources scheduled during future 'Site Characterization' of specific sub-basins

TABLE III

Comparison of CDPHE Existing Data to EPA HRS Requirements
UPPER ANIMAS LABORATORY MEASUREMENTS

Analytical Parameters		Analytical Methods (EPA Methods)		Detection Limits(ug/L)		Laboratory QA/AC		Laboratory Data Validation for Inorganics Analyses	
CDPHE	EPA	CDPHE	EPA	CDPHE	EPA CRDL	CDPHE	EPA	CDPHE	EPA
Aluminum	Aluminum	200.7; ICP	200.7; ICP	50	200	1 Spike per 10 samples	1 Spike per 20 samples	Holding Times: 6 mo; pH<2; (Hg<28 days)	Holding Times: 6 mo; pH<2; (Hg<28 days)
	Antimony		200.7; ICP 204.2; GFAA		60	1 Instrument Blank per 10 samples	1 Instrument Blank per 20 samples	Calibration: once/day	Calibration: once/day
Arsenic	Arsenic	200.3; HYDRIDE	200.2; GFAA	1	10	1 Duplicate per 10 samples	1 Duplicate per 20 samples	Blanks: No contamination	Blanks: No contamination
	Barium		200.7; ICP		200			ICP Interference Check: 2x/8-hrs	ICP Interference Check: 2x/8-hrs
	Beryllium		200.7; ICP 210.2; GFAA		5			Lab Control Sample: +/- 20%	Lab Control Sample: +/- 20%
Cadmium	Cadmium	200.7; ICP 200.9; GFAA	200.7; ICP 213.2; GFAA	40 0.25	5			Duplicate Sample: +/- 20%	Duplicate Sample: +/- 20%
	Calcium		200.7; ICP		5000			Matrix Spike: +/- 25%	Matrix Spike: +/- 25%
Chromium	Chromium	200.7; ICP 200.9; GFAA	200.7; ICP 218.2; GFAA	10 5	10			Furnace AA QC: spikes = +/- 15%	Furnace AA QC: spikes = +/- 15%
	Cobalt		200.7; ICP		50			ICP Serial Dilution: +/-10%	ICP Serial Dilution: +/-10%
Copper	Copper	200.7; ICP 200.9; GFAA	200.7; ICP	4 5	25			Sample Result Verification	Sample Result Verification
Cyanide	Cyanide	335.1; COLORIMETRIC	335.2	10	10			Field Duplicates	Field Duplicates
Iron	Iron	200.7; ICP	200.7; ICP	10	100			Overall Data Assessment	Overall Data Assessment
Lead	Lead	200.9; GFAA 239.2; GFAA	200.7; ICP 239.2; GFAA	5 5	3				
Magnesium	Magnesium	200.7; ICP	200.7; ICP	1000	5000				
Manganese	Manganese	200.7; ICP	200.7; ICP	4	15				
Mercury	Mercury	245.1; MANUAL COLD VAPOR	245.1; MANUAL COLD VAPOR 245.2; AUTO COLD VAPOR	0.2	0.2				
Nickel	Nickel	200.7; ICP	200.7; ICP	20	40				
	Potassium		200.7; ICP		5000				
Selenium	Selenium	SM3:HB; HYDRIDE 270.3; HYDRIDE	270.2; GFAA	11	5				
Silver	Silver	272.2; GFAA 200.9; C FURNACE AA	200.7; ICP 272.2; GFAA	0.2 0.2	10				
	Sodium		200.7; ICP		5000				
	Thallium		200.7; ICP 279.2; GFAA		10				
	Vanadium		200.7; ICP		50				
Zinc	Zinc	200.7; ICP	200.7; ICP	8	20				
	ORGANICS								

ICP = Inductively Coupled Plasma
CFAA = Carbon Furnace Atomic Absorption
GFAA = Graphite Furnace Atomic Absorption

4.4 Usability of Existing CDPHE Data

Upon review of the EPA HRS data requirements and the data previously collected by CDPHE, it seems that the Data Quality Objectives, sampling locations, sampling methods, analytical methods, required detection limits (except for lead) field and laboratory QA/QC measures and data validation requirements are comprable. Differences between what EPA would have included in a Site Investigation and what CDPHE has thusfar collected appear to be limited to:

1) analyses of Antimony, Barium, Beryllium, Cobalt, Potassium, Sodium, Thallium and Vanadium inorganic parameters;
2) analyses of organic parameters;
3) analyses of sediments (collocated with surface water) samples; and,
4) detection limits for lead (CDPHE = 5ug/L, whereas EPA = 3ug/L).

Sampling conducted in Cement Creek and the Upper Animas basins by Standard Metals and Sunnyside Gold Corporation between 1981 and 1993 reported the following concentrations of those metals (excluding cobalt) not sampled for by CDPHE (Perino, 1995):

Parameter Sampled	Cement Creek above the American Tunnel Concentrations reported in ug/L			Animas River above Boulder Creek Concentrations reported in ug/L		
	September 1986	September 1991	February 1993	September 1986	September 1991	February 1993
Antimony	< 10	0		< 10	0	
Barium	300	0		400	0	
Beryllium	1	2		< 1	0	
Thallium	< 100	0		< 100	0	
vanadium			< 10			< 10

Water quality analyses of 89 water qualiy samples from 49 draining mine sites (aqueous sources) were collected and anlayzed by the U.S. Bureau of Mines as part of their field inventory of abandoned mine lands on Bureau of Land Management administered lands in the upper Animas River Watershed, conducted during the summer and fall of 1994 (U.S.BOM, 1995). Amongst other parameters analyzed, the range of concentrations for those metals not analyzed for by CDPHE, except antimony and thallium, follow (Hite, 1995):

Antimony:	not analyzed;	EPA CRDL = 60 ug/L
Barium:	< 2 - 97 ug/L;	EPA CRDL = 200 ug/L
Beryllium:	< 1 - 3 ug/L;	EPA CRDL = 5 ug/L
Cobalt:	< 3 - 16 ug/L;	EPA CRDL = 50 ug/L
Thallium:	not analyzed;	EPA CRDL = 10 ug/L
Vanadium:	< 6 - 6 ug/L;	EPA CRDL = 50 ug/L

The Colorado Department of Health conducted Site Investigations