PROJECT 100-HR-3 Acid Titration

EL-1340-1

N/A

Chris Kramer conducted the following test on 9/10/98 0052203

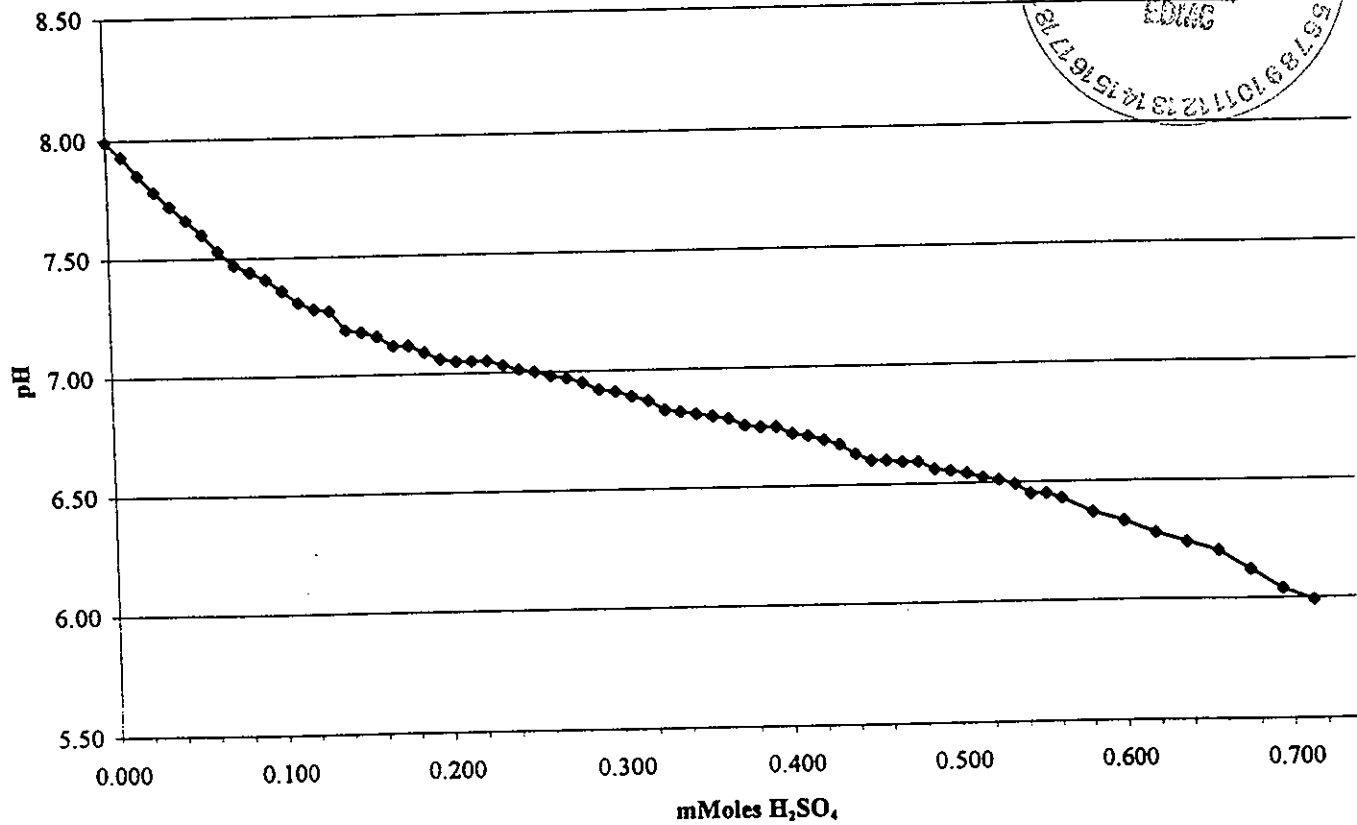
Acid Makeup @ 1% H_2SO_4

25ml ± 0.03 mL volumetric flask with stopper.

Tare weight (g)	21.94
Add water Weight:	40.53
With 250 2 concentrated H_2SO_4	41.03
Diluted to 25mL	47.15

pH measurement performed with HACH EC10 pH meter.

DEC 1999
RECEIVED
EDMC



M.A. Bracht / M.A. Bracht

Continued on Page

Read and Understood By

M.A. Bracht 9/29/98

100-HR-3 Acid Titration

EL-1340-1 78

100-HR-3 Acid Titration

pH	Acid Added (mL)	Cumulative Acid Added (mL)	mM Acid	Cumulative mM Acid
7.99	0.000	0.000	0.000	0.000
7.93	0.050	0.050	0.009	0.009
7.85	0.050	0.100	0.009	0.019
7.78	0.050	0.150	0.009	0.028
7.72	0.050	0.200	0.009	0.038
7.66	0.050	0.250	0.009	0.047
7.60	0.050	0.300	0.009	0.056
7.53	**0.050**	**0.350**	**0.009**	**0.066**
7.47	0.050	0.400	0.009	0.075
7.44	0.050	0.450	0.009	0.084
7.41	0.050	0.500	0.009	0.094
7.36	0.050	0.550	0.009	0.103
7.31	0.050	0.600	0.009	0.113
7.28	0.050	0.650	0.009	0.122
7.27	0.050	0.700	0.009	0.131
7.19	0.050	0.750	0.009	0.141
7.18	0.050	0.800	0.009	0.150
7.16	0.050	0.850	0.009	0.160
7.12	0.050	0.900	0.009	0.169
7.12	0.050	0.950	0.009	0.178
7.09	0.050	1.000	0.009	0.188
7.06	0.050	1.050	0.009	0.197
7.05	0.050	1.100	0.009	0.206
7.05	0.050	1.150	0.009	0.216
7.05	0.050	1.200	0.009	0.225
7.03	0.050	1.250	0.009	0.235
7.01	0.050	1.300	0.009	0.244
7.00	**0.050**	**1.350**	**0.009**	**0.253**
6.98	0.050	1.400	0.009	0.263
6.97	0.050	1.450	0.009	0.272
6.95	0.050	1.500	0.009	0.282
6.92	0.050	1.550	0.009	0.291
6.91	0.050	1.600	0.009	0.300
6.89	0.050	1.650	0.009	0.310
6.87	0.050	1.700	0.009	0.319
6.83	0.050	1.750	0.009	0.328
6.82	0.050	1.800	0.009	0.338
6.81	0.050	1.850	0.009	0.347
6.80	0.050	1.900	0.009	0.357
6.79	0.050	1.950	0.009	0.366

M.A. Buechler / M. A. Buechler

Continued on Page 80

M. A. Buechler 9/29/94

Read and Understood By

100-HR-3 Acid Titration

EL 1340-1
74

100-HR-3 Acid Titration

pH	Acid Added (mL)	Cumulative Acid Added (mL)	mM Acid	Cumulative mM Acid
6.76	0.050	2.000	0.009	0.375
6.75	0.050	2.050	0.009	0.385
6.75	0.050	2.100	0.009	0.394
6.72	0.050	2.150	0.009	0.404
6.71	0.050	2.200	0.009	0.413
6.69	0.050	2.250	0.009	0.422
6.67	0.050	2.300	0.009	0.432
6.63	0.050	2.350	0.009	0.441
6.60	0.050	2.400	0.009	0.450
6.60	0.050	2.450	0.009	0.460
6.59	0.050	2.500	0.009	0.469
6.59	0.050	2.550	0.009	0.479
6.56	0.050	2.600	0.009	0.488
6.55	0.050	2.650	0.009	0.497
6.54	0.050	2.700	0.009	0.507
6.52	0.050	2.750	0.009	0.516
6.51	**0.050**	**2.800**	**0.009**	**0.526**
6.49	0.050	2.850	0.009	0.535
6.45	0.050	2.900	0.009	0.544
6.45	0.050	2.950	0.009	0.554
6.43	0.050	3.000	0.009	0.563
6.37	0.100	3.100	0.019	0.582
6.33	0.100	3.200	0.019	0.601
6.28	0.100	3.300	0.019	0.619
6.24	0.100	3.400	0.019	0.638
6.20	0.100	3.500	0.019	0.657
6.12	0.100	3.600	0.019	0.676
6.04	0.100	3.700	0.019	0.694
5.99	**0.100**	**3.800**	**0.019**	**0.713**

M.A. Baechler / M.C. Baechler

Not Used

Continued on Page 8

M.C. Baechler 9/29/98

read and understood &

100-HR-3 Acid Titration SO4 Analysis Notebook No. CL-1340-1 -80

Sulfate Daily Activity Log
Project: 100-HR-3
Date: 09/11/98

1000	Arrived on-site at 200W, HO 68N-1985 mobile laboratory. Set up to analyze samples for hexavalent chromium using a HACH DR/2010 spectrophotometer, S/N 980300008248, Method 951, user calibrated sulfate.
1005	Adjusted pH of 100-HR-3 (100 mL sample size) using 1% sulfuric acid to pH levels of ~ 7.50, 7.00, 6.50, and 6.00.
1030	**Kevin Singleton** prepared 50 mg/L calibration check using 1000 mg/L HACH sulfate standard, lot # N7108, no expiration, by adding 1.5 mL standard to 28.5 mL deionized water. **The preparation and analysis of this standard serves as qualification to perform this method (M.A. Baechler).**
1055	Analyzed calibration standards.
1140	Performed 2X dilution on first sample and 5X dilution on following four samples. Analyzed samples.

Sample #	Adjusted pH	Dilution	Instrument Reading SO_4 (mg/L)	Concentration SO_4 (mg/L)
HR-3-1	7.99	2X	60	120
HR-3-2	7.51	5X	30	150
HR-3-3	7.02	5X	31	155
HR-3-4	6.51	5X	35	175
HR-3-5	5.98	5X	40	200

1230 Packed up equipment and left site.

M.A. Baechler / M.G. Baechler

Not Used

Continued on Page N/A

M.G. Baechler 9/29/98

Read and Understood By

Name Date Signed Date