

**CAMECO RESOURCES  
CROW BUTTE OPERATION**

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April 29, 2009

Mr. Keith I McConnell, Deputy Director  
Decommissioning and Uranium Recovery Licensing Directorate  
Division of Waste Management and Environmental Protection  
Office of Federal and State Materials and Environmental Management Programs  
Mailstop T8-F5  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Re: Source Materials License SUA-1534  
Docket No. 40-8943  
SM 6-20 Monitor Well Excursion

Dear Mr. McConnell:

On April 27, 2009 during routine biweekly water sampling of Cameco Resources, Crow Butte Operation (CBO) shallow monitor well SM6-20, the single parameter upper control limits (UCL) for conductivity and chloride were exceeded. As required by License Condition 11.2 of Source Materials License SUA-1534, a second sample was collected within 48 hours and analyzed for the three excursion indicator parameters. The results of the second sample also exceeded the single UCL for conductivity and chloride.

CBO notified Mr. Ronald Burrows on April 28, 2009 of the confirmation of the exceedance, as required in License Condition 9.2. Laboratory results for the sample analysis for SM6-20 are attached. In addition, graphs are attached for the three excursion indicator parameters and water levels that cover the period from August 18, 2008 to April 28, 2009.

CBO believes that this apparent excursion is due to increased groundwater levels caused by the significant amount of precipitation received at the facility this spring and is not caused by mining activity. This conclusion is supported by the following indications:

1. Water level in the well has increased approximately 3 feet this spring and is currently within approximately 21 feet of the top of the casing at the well. SM6-20 is located in Mine Unit 6 in an

## CAMECO RESOURCES CROW BUTTE OPERATION



Mr. Keith I McConnell

April 29, 2009

Page 2

area of high groundwater near the springs that form the source of English Creek. Groundwater quality in this area is under the influence of surface water.

2. The chloride concentration has increased from normal concentrations of 7-10 mg/l to 53 mg/l. If the monitor well were affected by an excursion of mining solutions, it would be expected that the chloride concentration would be much higher due to its high concentration in the lixiviant (which typically contains chloride concentrations in excess of 500 mg/l) and its mobility in the environment.
3. There are very few injection wells in operation near SM6-20. The nearest injector that is turned on is I1698, which is nearly 200 feet away.
4. There are twelve other shallow monitor wells in Mine Unit 6, Mine Unit 8 and Mine Unit 10 that are showing similar increases in water levels, conductivity, and chloride concentrations. An attached map shows the location of these wells highlighted in red. Most of these wells are showing gradual trends for the indicated parameters this spring, but several are experiencing sharper trends. All of these wells are located in close proximity to English Creek with the exception of SM10-21. On average over the past twenty samples, water levels have risen 3.3 feet, conductivity has increased about 77 umhos/cm and chlorides have increased almost 4.0 mg/l in these twelve wells.
5. The most recent spill in the Wellhouse 26 area was an 18 gallon spill from I1892 on June 12, 2008. This well is located approximately 400 feet from SM 6-20. A spill of this volume would not be expected to impact the water quality of a shallow monitor well located 400 feet away.

In discussion with Mr. Dave Carlson, Ms. Jennifer Abrahamson, and Mr. Kevin Stoner, all of the Nebraska Department of Environmental Quality (NDEQ), it was determined that the three wells nearest SM 6-20 (I1697, I1698, and P1612) will be MIT tested and the lateral lines associated with these wells will be pressure tested. These wells were all successfully MIT tested last year, but retesting will help ensure that the exceedance is due to natural conditions and not operational issues.

In accordance with License Condition 11.2, CBO has increased the sampling frequency for SM6-20 to weekly until three consecutive weekly samples are below the exceeded UCLs. CBO will continue weekly sampling for an additional three weeks after this goal has been achieved as required by CBO's NDEQ Class III UIC Permit requirements. If the well has not exceeded the UCLs after these

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



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Mr. Keith I McConnell  
April 29, 2009  
Page 3

samples, it will be returned to normal status.

If you have any questions or require any further information, please do not hesitate to call me at (308) 665-2215 ext 117.

Sincerely,  
CAMECO RESOURCES, CROW BUTTE OPERATION



Walt Nelson  
Environmental Leadership Coordinator

Enclosures: As Stated

cc: Mr. Ronald Burroughs - NRC  
Mr. Steve Collings - CBO, Denver  
CBO File

Sample Date 4/27/2009  
 Analysis Date 4/27/2009

## Crow Butte Project Monitor Well Laboratory Report

Well ID	Alkalinity			Conductivity			Chloride		
	(mg/L)	Alk SCL	Alk MCL	(µmho/cm)	Cond SCL	Cond MCL	(mg/L)	Cl SCL	Cl MCL
SM5-25	176	264	220	480	724	604	6.7	31	26
SM6-11	217	318	265	490	691	576	6.4	24	20
SM6-12	236	348	290	510	736	613	5	23	19
SM6-13	240	360	300	540	768	640	5.3	26	21
SM6-14	206	301	251	560	936	780	13	58	48
SM6-15	206	321	268	550	842	702	12	34	28
SM6-16	213	317	264	450	840	700	3.7	31	26
SM6-18	204	305	254	560	837	697	16	33	27
SM6-19	209	297	247	480	698	582	6.4	27	22
SM6-20	218	323	269	830	717	598	42	26	22
SM6-21	210	312	260	570	713	594	15	25	21
SM6-22	211	310	258	470	674	562	5.3	22	18
SM8-1	236	374	312	510	763	636	5	25	21
SM8-2	235	353	294	500	778	648	4.6	24	20
SM8-3	230	331	276	500	720	600	5	24	20
SM8-4	222	323	269	500	819	683	6.4	25	21
SM8-5	232	346	288	530	749	624	6	23	19
SM8-6	227	328	274	620	734	612	7.1	23	19

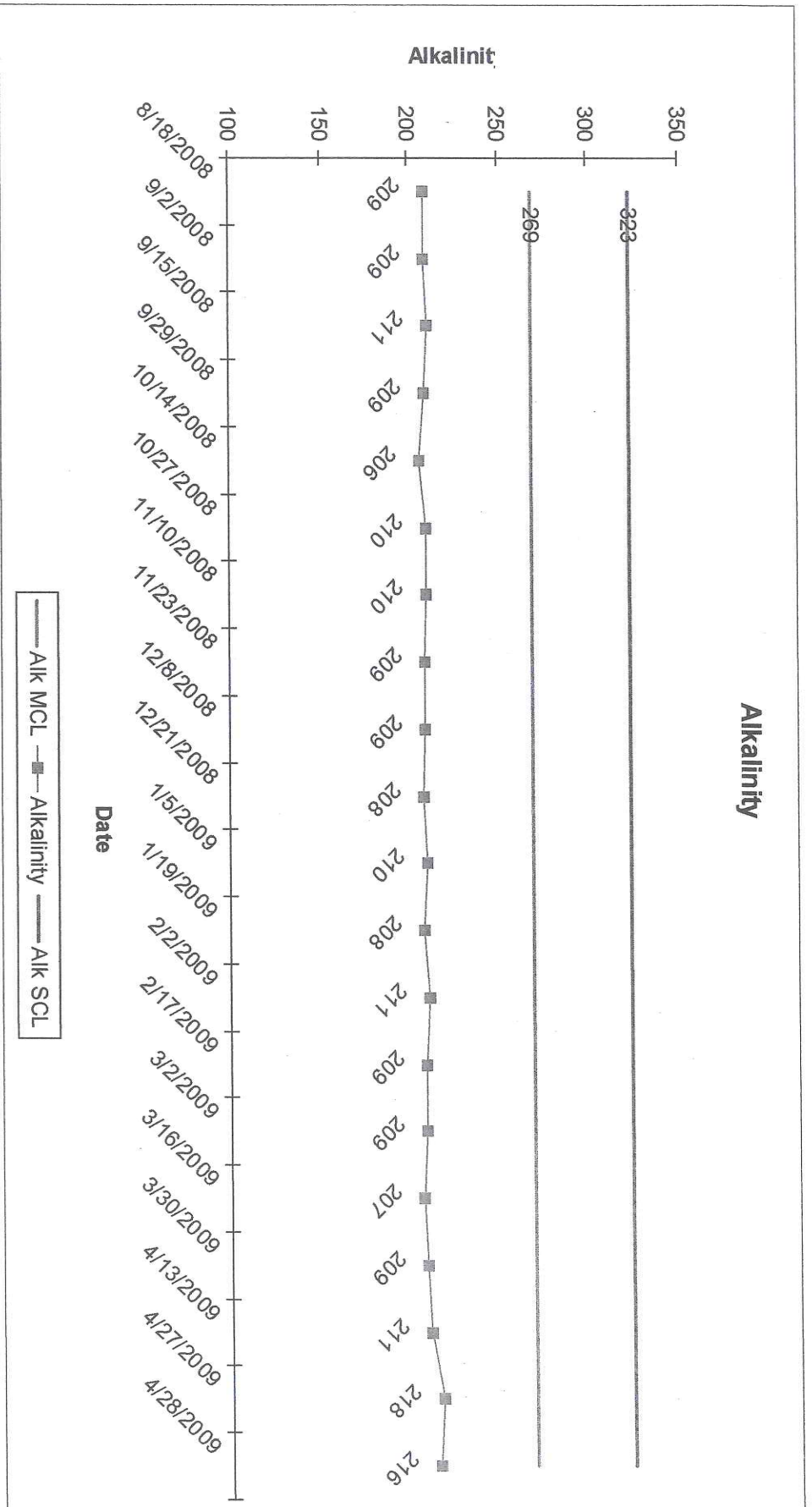


Sample Date 4/28/2009  
Analysis Date 4/28/2009

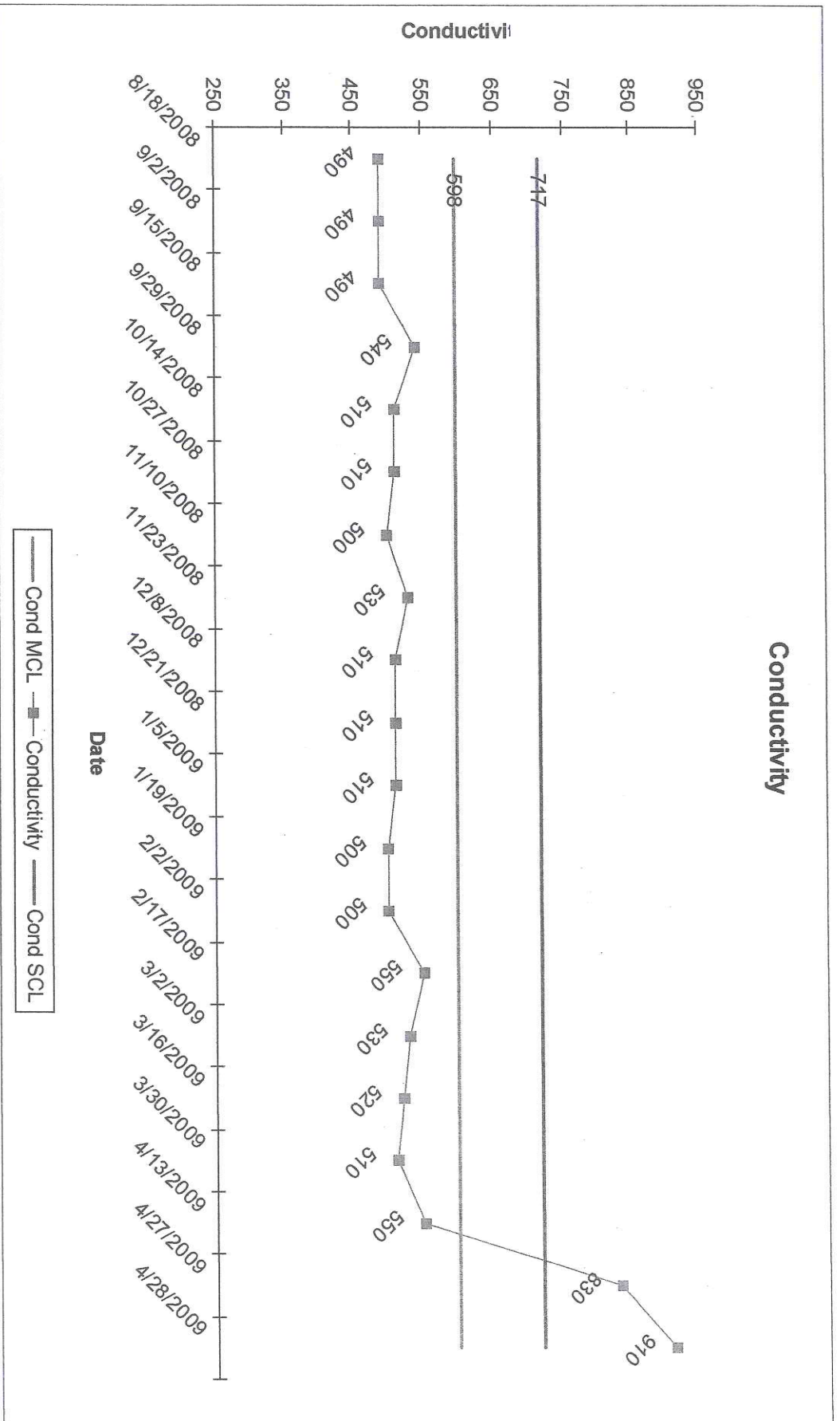
## Crow Butte Project Monitor Well Laboratory Report

Well ID	Alkalinity			Conductivity			Chloride		
	(mg/L)	Alk SCL	Alk MCL	(µmho/cm)	Cond SCL	Cond MCL	(mg/L)	Cl SCL	Cl MCL
SM5-1	234	363	302	610	1032	860	13	57	47
SM5-2	191	287	239	460	714	595	6	27	22
SM5-3	228	351	293	600	1048	874	13	81	68
SM5-4	210	327	272	580	973	811	20	66	55
SM5-5	237	367	306	610	1041	868	12	65	54
SM5-6	207	324	270	570	922	768	14	47	39
SM5-7	214	323	269	580	932	776	9.9	41	34
SM5-8	209	312	260	570	840	700	12	32	27
SM6-20	216	323	269	910	717	598	53	26	22
SM8-10	218	331	276	550	749	624	6.4	24	20
SM8-11	220	323	269	510	792	660	6.2	24	20
SM8-12	226	323	269	540	834	695	6.4	25	20
SM8-13	222	328	274	530	880	733	9.9	31	26
SM8-14	216	325	271	550	720	600	16	24	20
SM8-15	217	305	254	510	789	658	7.1	35	29
SM8-16	218	331	276	500	828	690	7.1	24	20
SM8-7	228	348	290	580	763	636	7.1	23	19
SM8-8	236	340	283	500	864	720	5.2	24	20
SM8-9	234	353	294	500	886	738	5	23	19

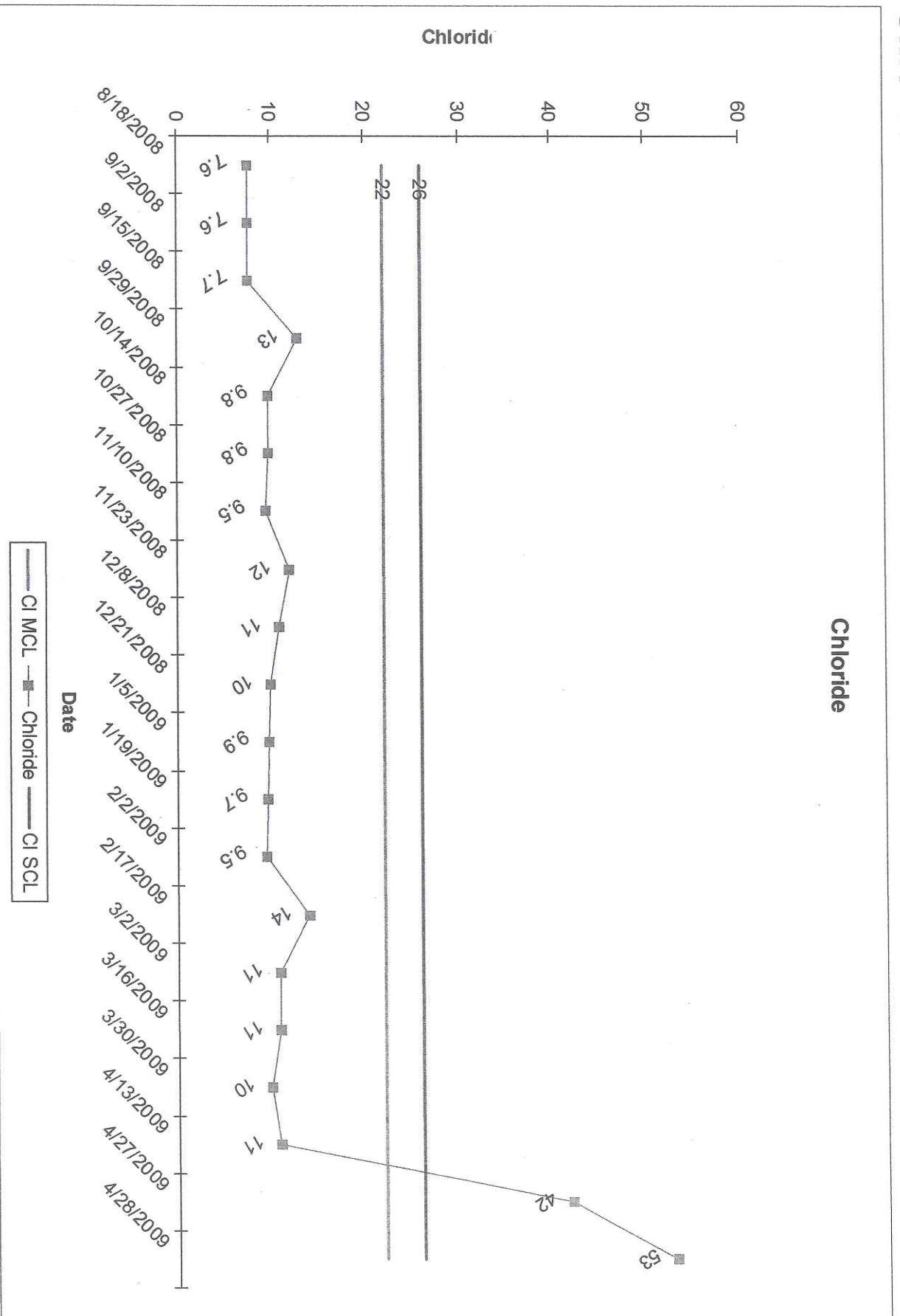
# SM6-20



# SM6-20



# SM6-20





## Water Level

