

**Cameco Resources  
Crow Butte Operation**



**86 Crow Butte Road  
P.O. Box 169  
Crawford, Nebraska 69339-0169**

**(308) 665-2215  
(308) 665-2341 – FAX**

October 28, 2013

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

Attn: Document Control Desk, 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  
U.S. Nuclear Regulatory Commission  
Mail Stop T8-F5  
Washington D.C. 20555-0001

Subject: 2013 Annual Pond Inspection Report  
Source Materials License SUA-1534  
Docket Number 40-8943

Dear Deputy Director:

Enclosed please find a certified copy of the Crow Butte Mine 2013 Annual Pond Inspection Report. This report is required under License Condition 11.4 of Source Materials License SUA-1534 in accordance with the latest revision of the Evaporation Pond Inspection Program dated February 5, 1996. Mr. David Coe, an independent contractor and a registered Professional Engineer in the State of Nebraska, performed the pond inspection and the technical evaluation, and wrote the final report. Civil surveys were performed by Pine Ridge Land Surveys of Chadron, Nebraska.

If you have any questions, please feel free to contact me at (308) 665-2215 ext 114.

Sincerely,  
CAMECO RESOURCES  
CROW BUTTE OPERATION

*Larry Teahon*

Larry Teahon  
SHEQ Manager

*FSME20*

# CROW BUTTE OPERATION

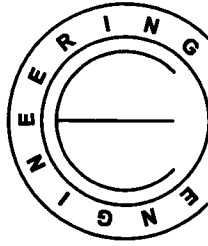


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Deputy Director  
October 28, 2013  
Page Two

Attachments: As Stated

cc: NDEQ – Chadron Field Office  
CBO - File  
ec: CR – Cheyenne Office



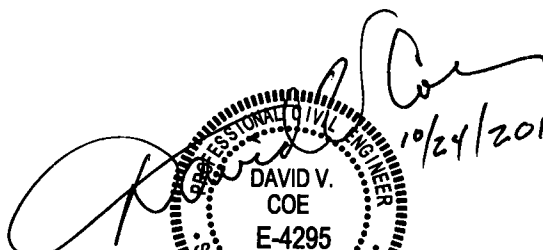
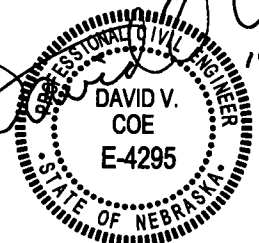
**CROW BUTTE RESOURCES, INC.**

**CROW BUTTE MINE  
DAWES COUNTY, NEBRASKA**

**2013 POND INSPECTION REPORT**

By: David V. Coe, PE  
Nebraska Registration No. E - 4295

October 24, 2013

  
  
10/24/2013

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## **1.0     GENERAL:**

An annual inspection of the Crow Butte ISL Mine pond system is required by the Evaporation Pond Onsite Inspection Program dated December 1992 (Revised February 26, 1993, August 30, 1993 and February 5, 1996) and by reference under license condition number 11.4 of SUA-1534. The inspection program provides for systematic inspections and an annual technical evaluation and inspection report, which compares field inspection data with engineering design reports to assess structural stability and hydraulic and hydrologic capacities.

The 2013 annual report covers the time period of September 30, 2012 through October 3, 2013. During that period five evaporation ponds were in use, two R&D ponds (Cells 1 & 2) and three commercial ponds (Ponds 1, 3 and 4).

The R&D pond design report was prepared by Klohn Leonoff Consulting Engineers in 1983 and construction of R&D cells 1 and 2 was completed in 1985. The R&D ponds have two horizontal to one vertical interior and exterior embankment slopes with a 34-mil interior hypalon liner placed on top of six inches of sand. The underdrain leak detection system piping is located beneath the pond liner and reports to two six-inch monitor stand pipes. The overall depth of the R&D ponds is 15 feet and the maximum operating level is 12 feet. This provides three feet of freeboard.

The commercial evaporation pond design report was prepared by Western Water Consultants, Inc. in 1988. Construction of ponds 3 and 4 was completed in 1990 and construction of pond 1 was completed in 1992. The exterior slopes of these ponds are 2.5 horizontal to 1 vertical. The interior slopes are 2:1. Ponds 3 and 4 have a 20-mil PVC bottom liner, an intermediate geonet and a 60-mil high-density polyethylene (HDPE) top liner. In pond 1, a 30-mil very low-density polyethylene (VLDPE) bottom liner was installed with an intermediate geonet and 60 mil HDPE top liner. Each pond has a leak detection system consisting of six separate perforated four-inch pipes, which report to leak detection standpipes located on the interior slopes.

The overall depth of Pond 1 is 17 feet from crest to pond bottom and the maximum operating level is 12 feet. The 12 feet provides five feet of freeboard. The overall depth of Ponds 3 and 4 is 17.5 feet with a maximum operating level of 12.5 feet, which equates to a five-foot freeboard.

## **2.0     REVIEW OF INSPECTION DATA:**

The Evaporation Pond Onsite Inspection Program dated December 1992 as amended calls for systematic inspections on a daily, weekly, monthly and quarterly basis. Data from the inspection reports are shown on Charts 1 through 4 including pond depths and underdrain measurements. **Zero pond depths are shown on the charts as a result of frozen pond conditions. Recordings indicate the existing freeboard along with the pond depth at the time of inspections.**

Two groundwater monitor wells are installed in the uppermost aquifer (Brule) in the commercial pond area and one groundwater monitor well in the R&D pond area. The wells are sampled quarterly for indications of leaks in the ponds. The wells provide backup leak detection for the underdrain leak detection system. The analysis of the quarterly samples tracks alkalinity, chloride, sulfate, sodium and conductivity. The concentration of the above chemicals is compared to baseline data established in 1990 and 1991. A review of the quarterly analysis reports for 2013 indicates all parameters have not substantially deviated from the baseline parameters.

A new sprinkler system was installed on the commercial evaporation ponds during 2006 & 2007. The sprinkler systems have a large influence on the reduction or likelihood of leaks caused by abrasive action of the sprinkler system. The sprinkler system function is to increase the rate of evaporation from the three commercial ponds. The sprinkler system in pond #4 is supplied from Pond #3 water. At the time of this inspection; Pond #3 was the only one with the sprinkler system in place. The weather this year has been wet compared to 2012, but natural evaporation addressed most of the needs for pond level reduction. Pond level was zero in pond #4. The pond levels for Ponds 1 & 3 were at a medium height. Power requirements for the operation of the sprinkler systems is provided from a north electrical service on pond #3 and the north side of pond #1. A new electrical distribution system has been installed around the perimeter fence line of the ponds. This distribution system was installed in 2012. There are several electrical disconnect switches located around the perimeter of the ponds.

### **3.0 TECHNICAL EVALUATION**

The technical evaluation of the Crow Butte Mine ponds utilizes data from the systematic inspection reports, results of the annual survey and a visual inspection of the ponds to assess the hydraulic capacities and structural stability of the ponds.

Diary notes of the annual inspection are attached to this report as Attachment 1. The notes cover the visual inspection of the five ponds and the review of the reports and records for the review period of September 30, 2012 through October 3, 2013.

The annual survey (elevations of four base lines) was completed September 30<sup>th</sup> and compared with previous annual survey data. No problems were indicated from a review of the survey information. The results for station 0+00 varied between previous years of only 0.2 feet. Station 5+00 varied about 0.2 feet and stations 10+00 & 15+00 had variations of less than 0.1 feet. The maximum differential between the two years of survey data was considered insignificant. Generally, the major differential elevation was approximately 0.1 foot. Results of the annual survey accomplished September 30, 2013 are included as Attachment 2.

Photos of the ponds have been taken for the last fourteen years. There has been significant improvement in the vegetative cover of the pond embankment slopes over the course of those years. The gravel surfacing of the embankment berms improves the stability of the dam surface embankments. The mixture of vegetation and gravel

surfacing use to give the impression of a sparse vegetative cover, but this inspection revealed good vegetation on both types of surfacing. The gravel surfacing of the top of the berms prevents erosion near the top shoulder of the embankments and provides additional stability of the berm when ATV travels on the berm during inclement weather.

No problems in the existing embankment alignment or sloughing were detected during the visual inspection of the ponds, diversion ditches and embankments. There were no signs of seepage in the embankments or at the toe of the embankment slopes. The drainage channel between ponds 3 & 4 is in good shape. The drainage off the road along the northeast corner of Pond #1 is improving with each season since 2010.

A review of the weekly, monthly and quarterly inspection reports indicate there were no significant shortfalls of the pond operations during the year of 2013. All the required inspections, reports and record keeping were accomplished during 2013. The monitoring well analysis reports were taken on a quarterly basis. No significant deviation from baseline data was reported. The quarterly reports for the last quarter of 2013 had recently been completed.

Calculations of diversion ditches were not included in this report. There have been no changes in the capacity of the diversion ditches over the last 12 years. The existing ditch calculation of ditch flow can be found in Attachment 2 of the 2001 annual inspection report. These ditch calculations are also permanent records on file in the office of Crow Butte Mine. The installed ditches are capable of containing the design storm (USBR one-hour thunderstorm, zone 3) with an adequate freeboard.

The ponds were operated in 2013 at a medium level and somewhat lower than in 2010 & 2011. The capability of transferring one pond's storage into another pond without overfilling was maintained during the 2013. As of October 3, 2013 the pond system contained about 30 acre-feet (AF) of stored water. The allowable storage capacity of the five ponds is 122.4 AF, which provides for transfer of any one pond's storage to another pond in the system in the event of an emergency. Visual observations seem to indicate the pond depths have been lower during the 2013 season than previous five years.

#### **4.0     CONCLUSIONS:**

The visual inspection of the five evaporation ponds and diversion ditches along with the review of the available inspection reports and data indicate the ponds are operating in the constraints of the engineering design.

The aeration system reduces the chances of liner damage and leaks. The system enhances the rate of evaporation, but was not required during this season's operation. The salt build-up on the pond liner was not significant during this year's inspection. Vegetation was in good shape. Mowing of the embankment slopes appeared not to have taken place. Absence of mowing reduces the slope damage on the embankments. There was an ample presence of vegetation on most of the slopes this year. The cut bank on the east side of pond #1 did not show any significant deterioration of vegetation versus last

year. The erosion of the cut bank on pond #1 has little effect on the safety of the pond itself.

The pond system is operating within its designed storage capacity. Adequate freeboard existed in each pond throughout the year and reserve capacity was available in the system to transfer the contents of any one pond to other ponds.

Gopher and rodent maintenance has shown a good improvement over the last few years. During 2013, there was not much rodent control necessary. There were very few indications of gopher operations on the embankment areas. Walt Nelson indicated they had addressed gopher control with in-house personnel. Poison is injected manually by hand.

The R & D ponds have excellent vegetative cover. The safety of the R & D ponds is good.

# Commercial Pond 1 - 2013

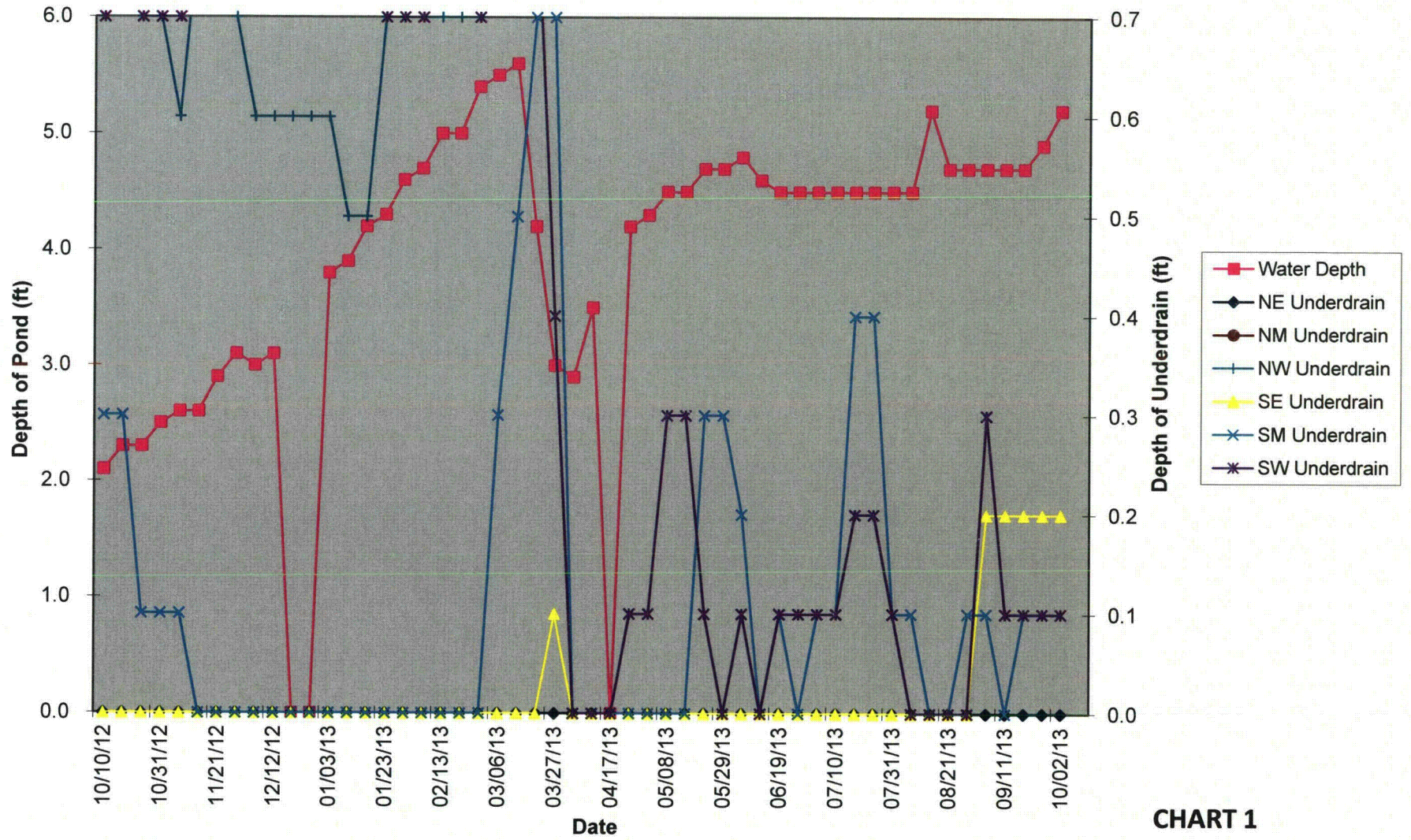


CHART 1



# Commercial Pond 3 - 2013

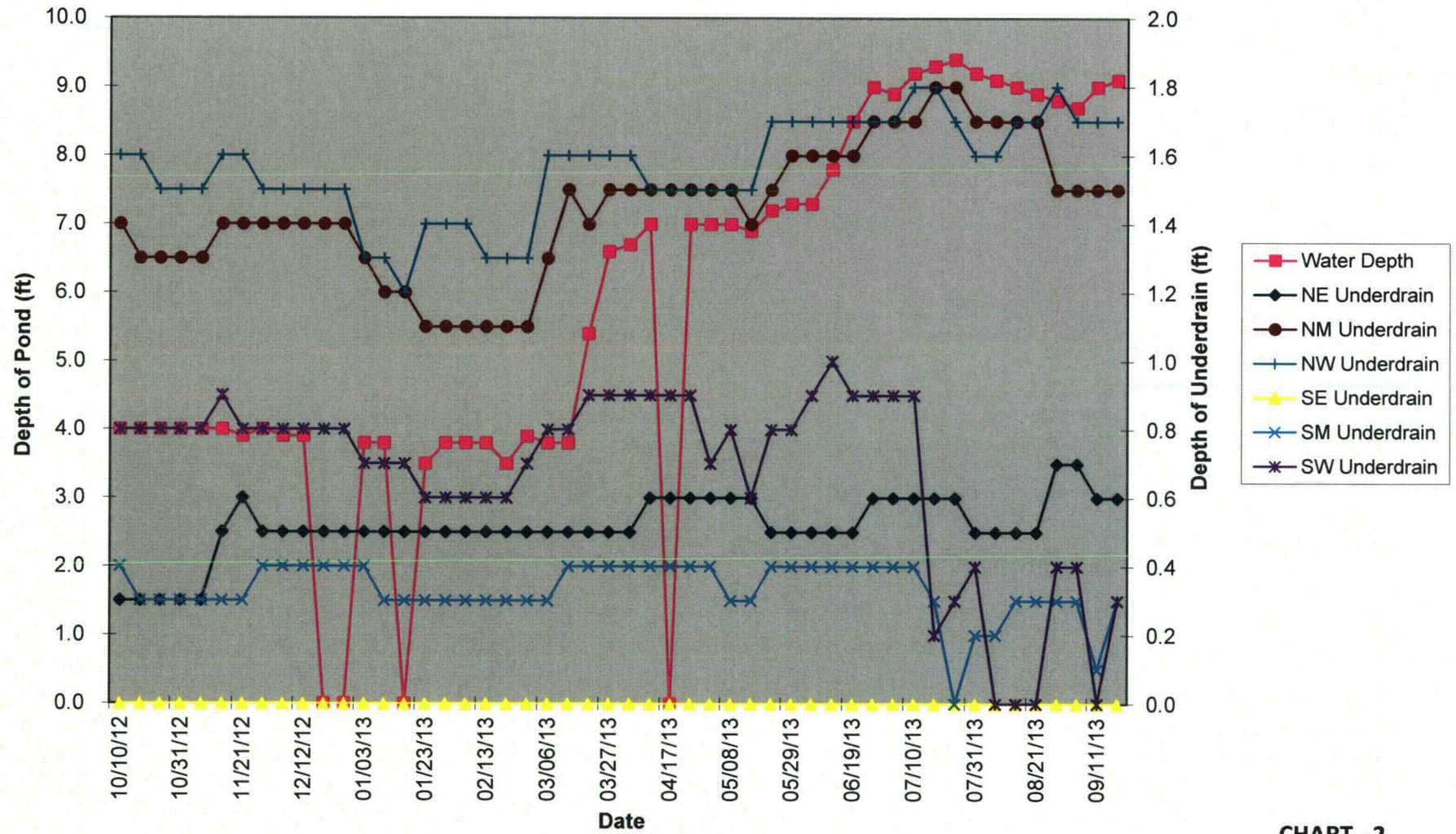


CHART - 2



# Commercial Pond 4 - 2013

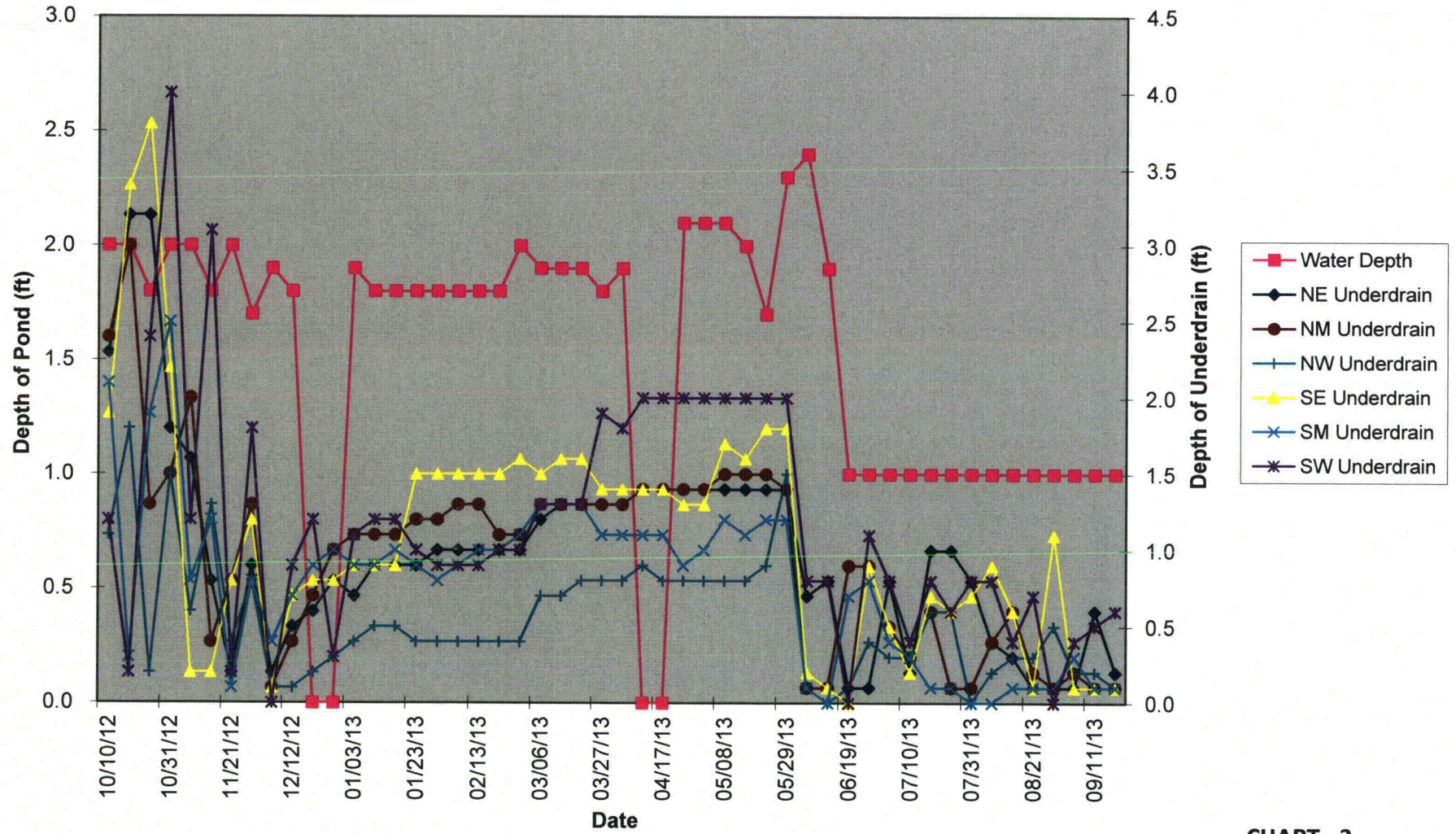


CHART - 3



## R & D Pond Levels - 2013

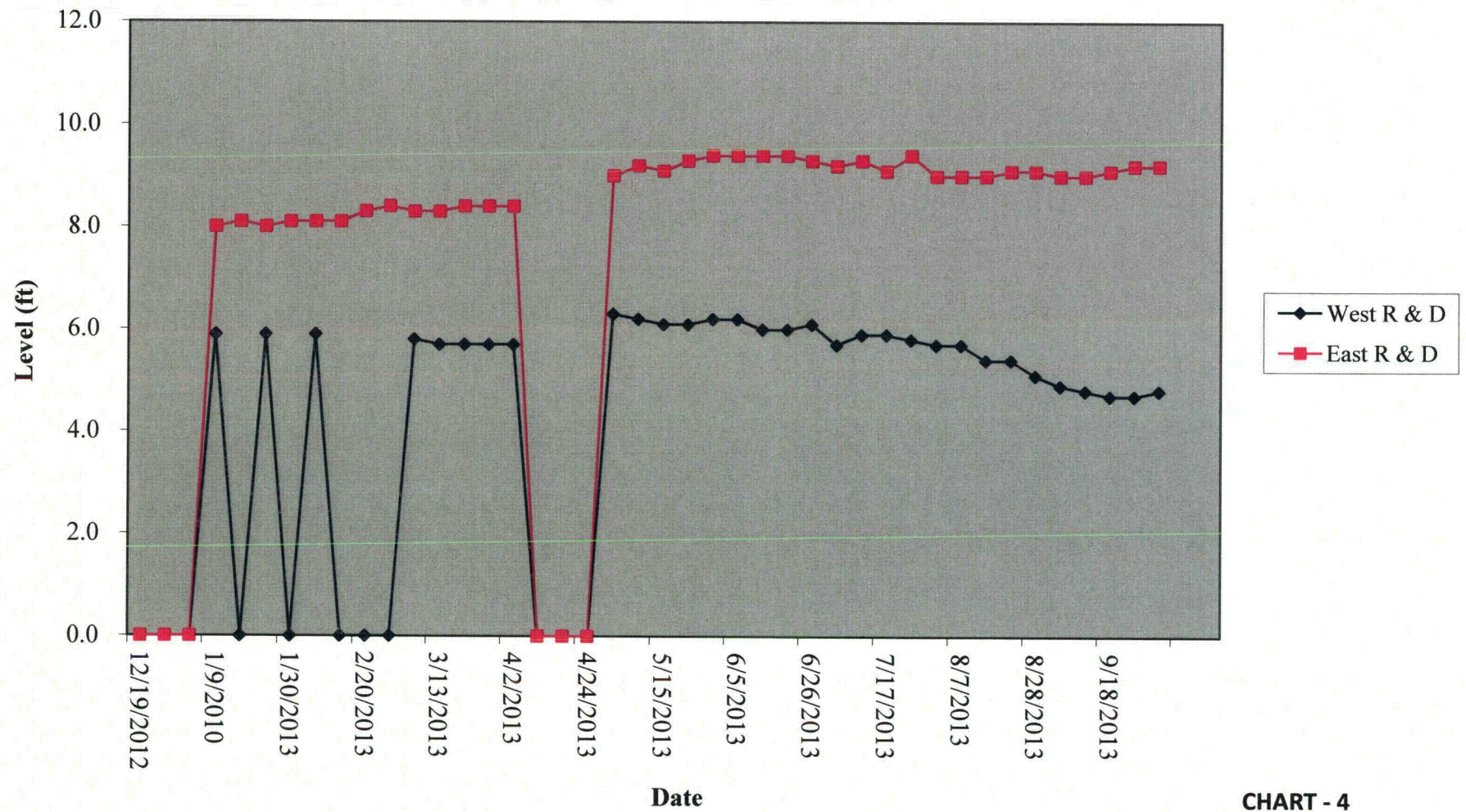


CHART - 4



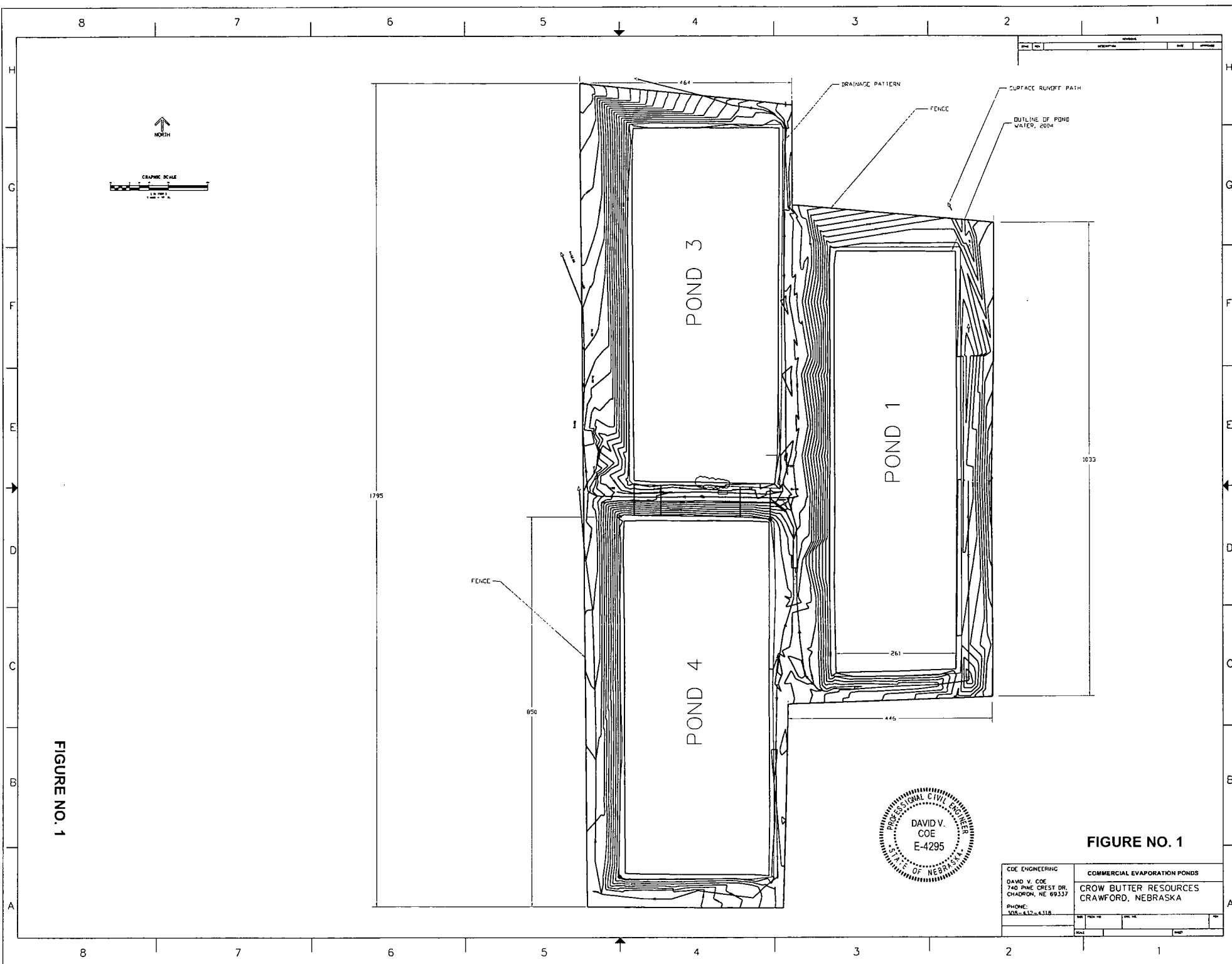
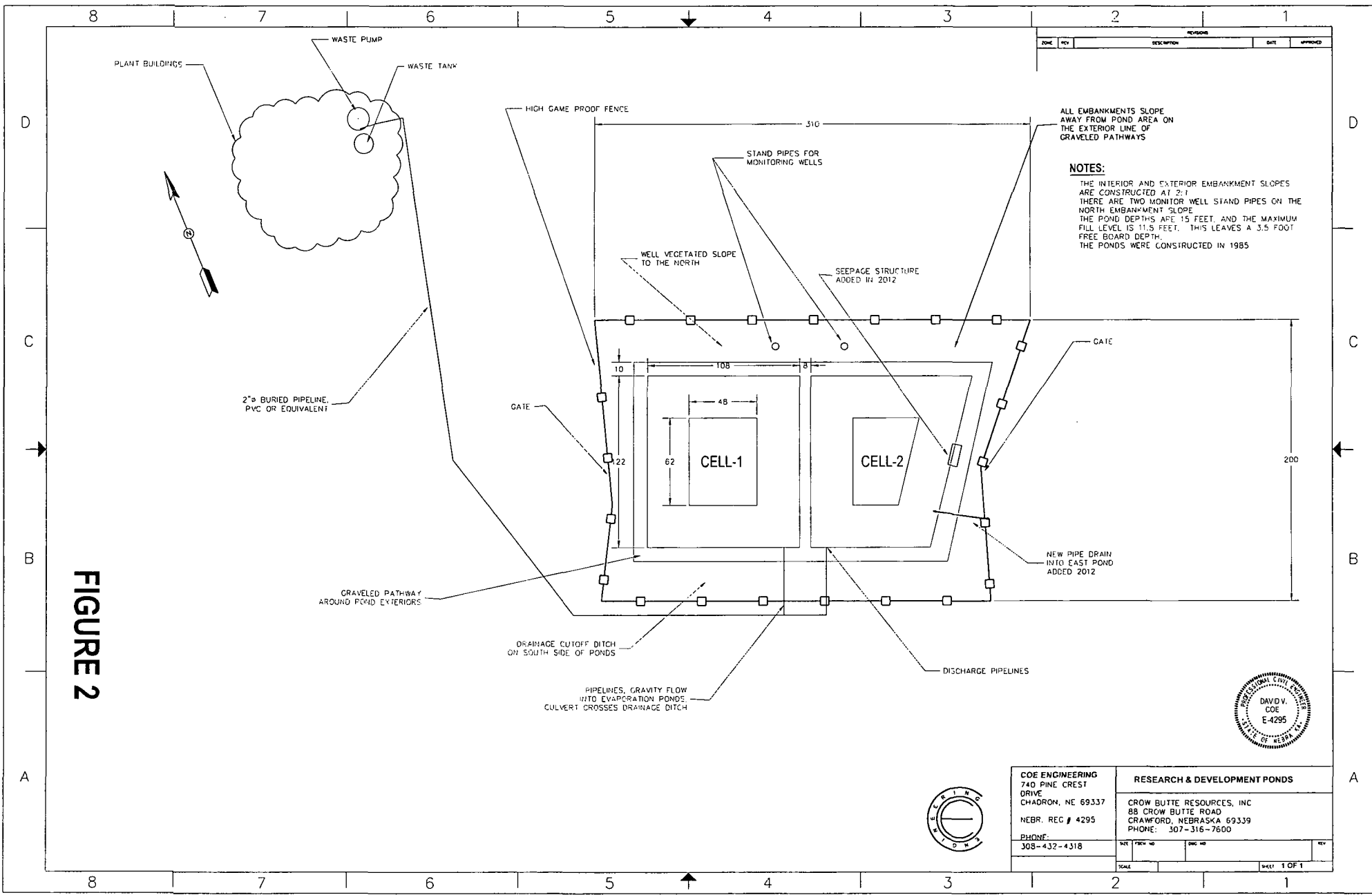


FIGURE NO. 1

FIGURE NO. 1

CCE ENGINEERING		COMMERCIAL EVAPORATION PONDS	
DAVID V. COE		CROW BUTTER RESOURCES	
740 PINE CREST DR.		CRAWFORD, NEBRASKA	
CHADRON, NE 69337			
PHONE:			
308-437-4318			
DATE	PROJECT NO.	DRAWN BY	CHECKED BY



<b>COE ENGINEERING</b> 740 PINE CREST DRIVE CHADRON, NE 69337 NEBR. REG # 4295 PHONE: 308-432-4318		<b>RESEARCH &amp; DEVELOPMENT PONDS</b> CROW BUTTE RESOURCES, INC 88 CROW BUTTE ROAD CRAWFORD, NEBRASKA 69339 PHONE: 307-316-7600	
DATE	PROJECT NO.	DWG NO.	REV.
SCALE		SHEET 1 OF 1	

## **CBR POND INSPECTION, October 03, 2013 by David V. Coe, PE**

I arrived at Crow Butte Resources mining operation about 9:15 this morning. I met with Walt Nelson. We discussed the safety requirements for performing work at Crow Butte Resources. I reviewed the safety requirements for entering the restricted areas of Crow Butte Resources. I was given a visitor's pass with a neck band. I was also given a radiation gage to track the amount of differential radiation received while at the Crow Butte Complex. I believe the gage was part of the visitor pass. Walt Nelson and I then made a physical inspection of the commercial retaining ponds and the research & development ponds. The annual survey of the elevation points had been accomplished by Pine Ridge Surveys last week. Walt will send me the survey information after he has received the report from Phillip Curd (Registered Land Surveyor). Walt indicated they had not experienced any substantial leaks during the year since my last inspection. The weather this summer has been wet, with a fair amount precipitation during the summer. The depth of pond #3 was a little deeper than last year. Pond #4 was at a "zero" elevation. They were still using a new pumping system (bladder type pump) operating in pond number 4. This is a slow process, but it is an attempt to clean up the water deposits between the two liners. The cleaning process is very time consuming.

Walt Nelson and I began our inspection of the commercial retention ponds about 9:50 this morning. We started on the northwest corner of pond #1. Below are my visual comments as I walked around the top of the berms and the toe of the slopes of the three retention ponds. Pond #1 depth was 5.1' or about 11.9 feet of freeboard remaining.

On the west berm of pond #1 there is vegetation mixed with a limestone gravel surface. The vegetation looked good. The vegetation along outside slope of the pond is good and well established. I did not see any evidence of sloughing along the embankment of Pond #1. There were very few gopher holes noticed during the inspection of all the ponds. Minor gopher control is currently accomplished by hand with Crow Butte employees. The sheet erosion along the east cut bank, middle part of pond did not change much since the last inspection. There is still evidence of sheet erosion, but no significant change since the last inspection. There are no signs of leaks along the toe of the dam embankment.

The vegetation along the west embankment of Pond #1 looks very good.

This completed the visual inspection of pond #1. We then began inspection of pond #3 at the northeast corner and walking to the west and along the west embankment of pond #3. The pipeline for adding development water to pond #3 was moved further to the south. Since the pond depth of #3 was deeper than last year; I did not notice any dirt deposits near the outflow of the water tube. The vegetation is excellent on the fill slopes of pond #3.

The spray heads used for evaporation were used very little this summer. Most of the evaporation was addressed with the natural evaporation. The spray heads and manifold for pond #4 were lying on the embankment.

Pond #3's vegetation along the north and west embankments is very well established. The pond depth of pond #3 was 9.4 feet (this is to the water surface; which would leave about 7.6 feet of additional storage). I reviewed the vegetation establishment and drainage between ponds #3 & #4. This has been graded to drain and there were no standing water between the two embankments. The riprap embankment of the slope below the two ponds is in good shape. The vegetation between the two ponds was excellent. I did not notice any sloughing along the west embankment slopes of pond #3 and #4.

We then inspected the embankment of Pond #4. The berm on top of the embankment looked good. The last 300 feet of the east embankment of pond #4 has a limestone base course surface.

The pond depth of #4 was 0.0 feet leaving about 17.0 feet of additional storage. They were washing the residual pond sediments to the north end. Near the north end, there were mud pumps transferring Pond #4 sediments into Pond #3. I noticed a water truck in the area which was being used to furnish wash water into Pond #4. Larry Teahon indicated they were planning to have a liner specialist inspect Pond #4's liner to give them recommendation for future use of the liner.

We completed our visual inspection of the commercial ponds walking up the east embankment of Pond #3. The berm of the east embankment has a vegetated surface. The embankment is of minimum height and the vegetation is in good shape.

The inspection of the commercial ponds was completed by 10:30 this morning. Walt Nelson and I went to the Research & Development Ponds to inspect their condition.

The R & D ponds consist of two ponds about 15 feet deep with a filling allowable depth of 11.5 feet. The personnel adding water to the R & D ponds assume the free board height of 11.5 feet. This marked elevation was noted on both pond liners. The vegetation in the entire pond area was in great shape.

I noticed CBR was storing water in these ponds between 5 to 9 feet. This leaves about 6 to 10 feet of freeboard. The two ponds have a cutoff dike on their south side. The cut off dike does not drain, but I did not notice any, standing water in the bottom of the trench. The cut-off dike is lined. There is vegetation in the bottom of the cut off dike. I haven't noticed any significant change in the cut off dike for the last six years. The east cell had a depth of 9.1 feet or a freeboard depth of 5.9 feet. The west cell pond depth was 4.8 feet leaving a freeboard depth of 10.2 feet.

The perimeter fence around the R & D Ponds had a few minor deficiencies, but overall the fence was in good condition.

I walked around the berms of both R & D ponds. The vegetation in the whole pond area is excellent. There is native gravel surfacing around the berms of these ponds. I completed my field inspection of the evaporation ponds about 11:00 this morning.

We went back to the office area and screened out clothing and skin for traces of radioactive material. Everything checked out okay.

I went into the office area and reviewed the weekly pond inspection reports. The reports seemed to be in order and are being accomplished as outlined in their operational procedures or directives. Items noted on the safety reports seemed to be taken care of within a reasonable time frame. The records I reviewed were from December, 2012 to October, 2013.

I reviewed the ground water sampling of the commercial ponds and the R. & D ponds. There are two wells on the west side of the commercial ponds and one adjacent to and north of the R & D ponds. These wells have a benchmark analysis taken in 1991, and then the water is sampled on a quarterly basis to determine if any contamination of the ground water is evident. There was no contamination noted on the reports.

My opinion, the evaporation ponds are being administered in a safe and prudent manner. The monitoring for leaks and serious pond erosion is in compliance with the approved monitoring plan. Records of monitoring reports are being maintained in compliance with the monitoring plan.

I observed the fencing of the pond areas; I feel the fencing was good in all pond areas.

Below is a tabulation of the Evaporation Pond Monitor Wells:

**EVAPORATION POND  
MONITORING WELLS**

	Date	Alk mg/L	Cl mg/L	Conductivity umhos	SO <sub>4</sub> mg/L	Na mg/L
<b>Commercial Pond Monitoring Well #1</b>						
	7-Sep-12	201	11	460	14	16
	12-Nov-12	202	12	460	15	16
	25-Mar-13	203	12	470	14	20
	8-Apr-13	202	12	460	15	20
	17-Sep-13	202	11.7	459	12.79	17.4
<b>Base Line-Commercial Pond #1 Monitoring well</b>						
	2-Jul-91	197	2.9	423	20.43	17.67

**EVAPORATION POND  
MONITORING WELLS**

	<b>Date</b>	<b>Alk mg/L</b>	<b>Cl mg/L</b>	<b>Conductivity umhos</b>	<b>SO<sub>4</sub> mg/L</b>	<b>Na mg/L</b>
<b>Commercial Pond Monitoring Well #2</b>	7-Sep-12	188	6.1	420	15	14
	12-Nov-12	186	6.2	430	15	15
	25-Mar-13	187	6.3	420	13	18
	8-Apr-13	186	6.2	420	15	17
	17-Sep-13	186	6.2	418	12.49	15.3
<b>Base Line-Commercial Pond #2 Monitoring well</b>	<b>2-Jul-91</b>	<b>190</b>	<b>3.47</b>	<b>412</b>	<b>11.33</b>	<b>13.37</b>

**EVAPORATION POND  
MONITORING WELLS**

	<b>Date</b>	<b>Alk mg/L</b>	<b>Cl mg/L</b>	<b>Conductivity umhos</b>	<b>SO<sub>4</sub> mg/L</b>	<b>Na mg/L</b>
<b>RESEARCH &amp; DEVELOPMENT PONDS MONITORING WELL</b>	7-Sep-12	170	2.2	390	8.5	15
	12-Nov-12	171	2.1	390	9.6	15
	25-Mar-13	171	2.4	390	8	20
	8-Apr-13	173	2.5	390	10	20
	17-Sep-13	170	2.1	387	7.7	16.2
<b>Base Line</b>	<b>15-Jan-91</b>	<b>175</b>	<b>1.7</b>	<b>409</b>	<b>10.8</b>	<b>14.5</b>

The annual survey of the commercial ponds was accomplished by Pine Ridge Surveys (Phillip Curd, R L.S.) September 30<sup>th</sup>. A review of the survey documents (Attachment #2) did not indicate there has been any appreciable settling of the original pond construction embankments. A comparison of the surveys completed in 2012 and 2013 had no deviations greater than 0.2'.

Photos of my inspection follow on the next six pages of this report.

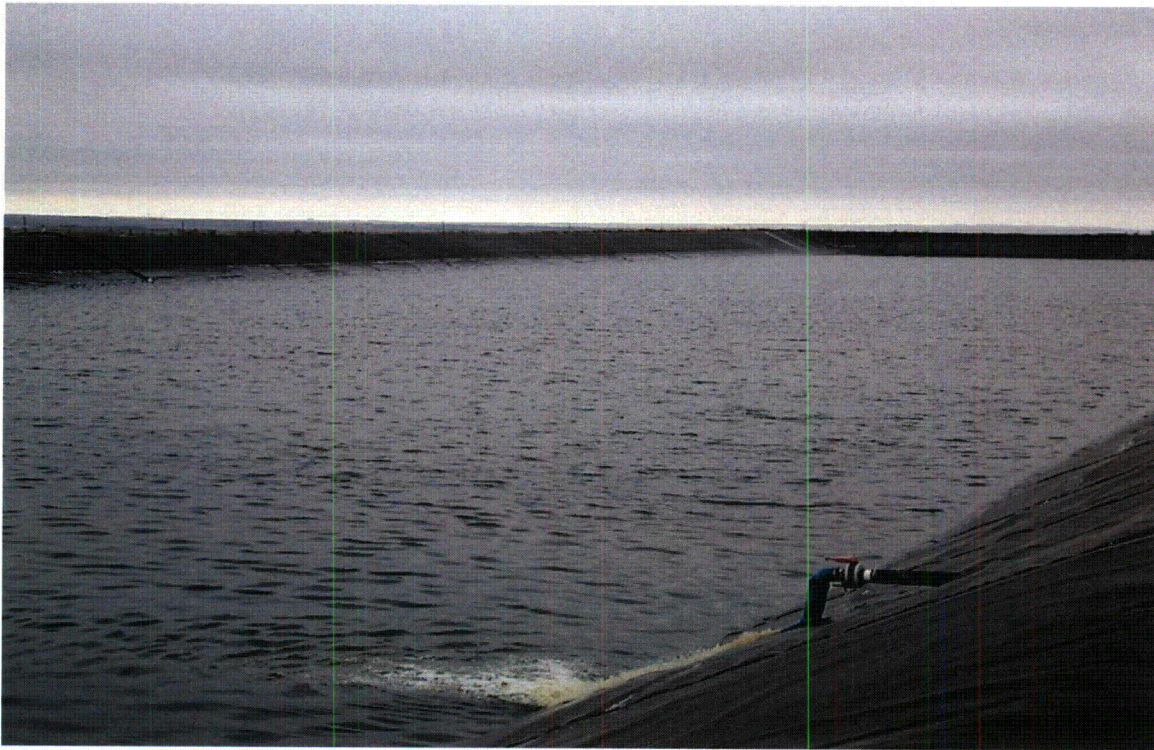
*David V. Coe*  
10/24/2013

DAVID V. COE, PE  
Nebraska Registration No. 4295



**#1 Southwest view of evaporation pond #1, date: 10/03/13**



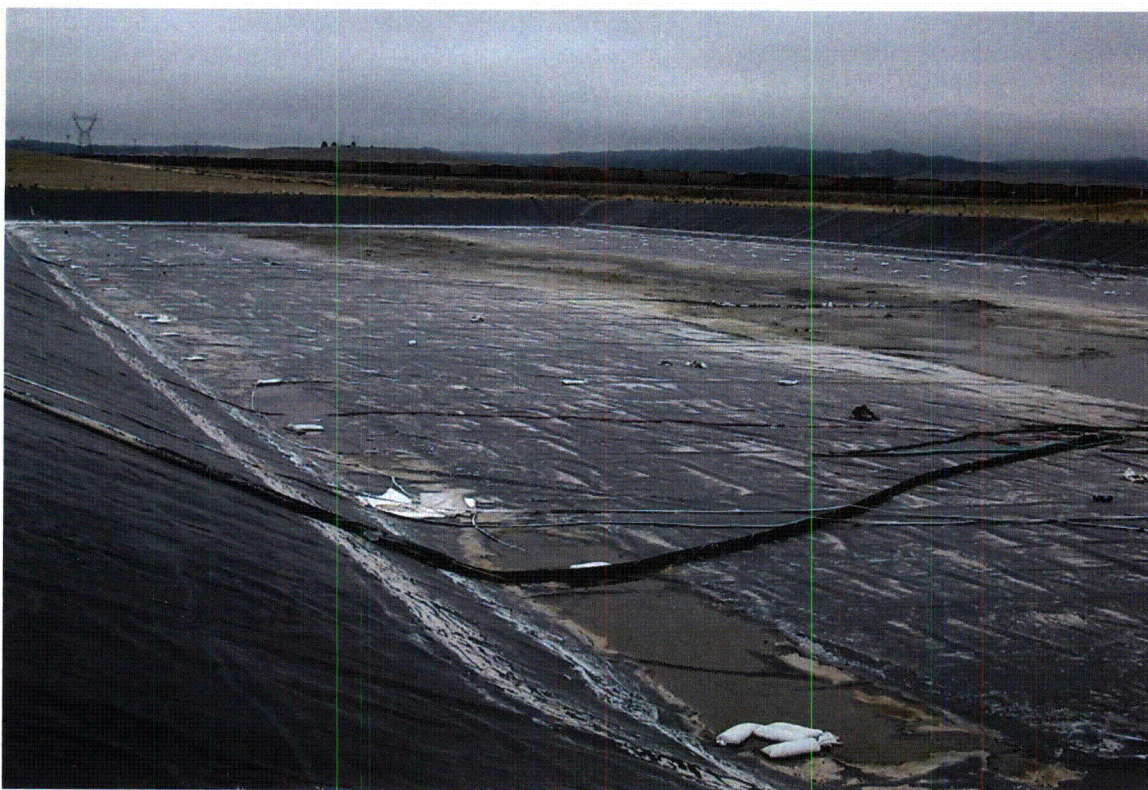


**#2 Northwest view of pond #1. Date: 10/03/13**

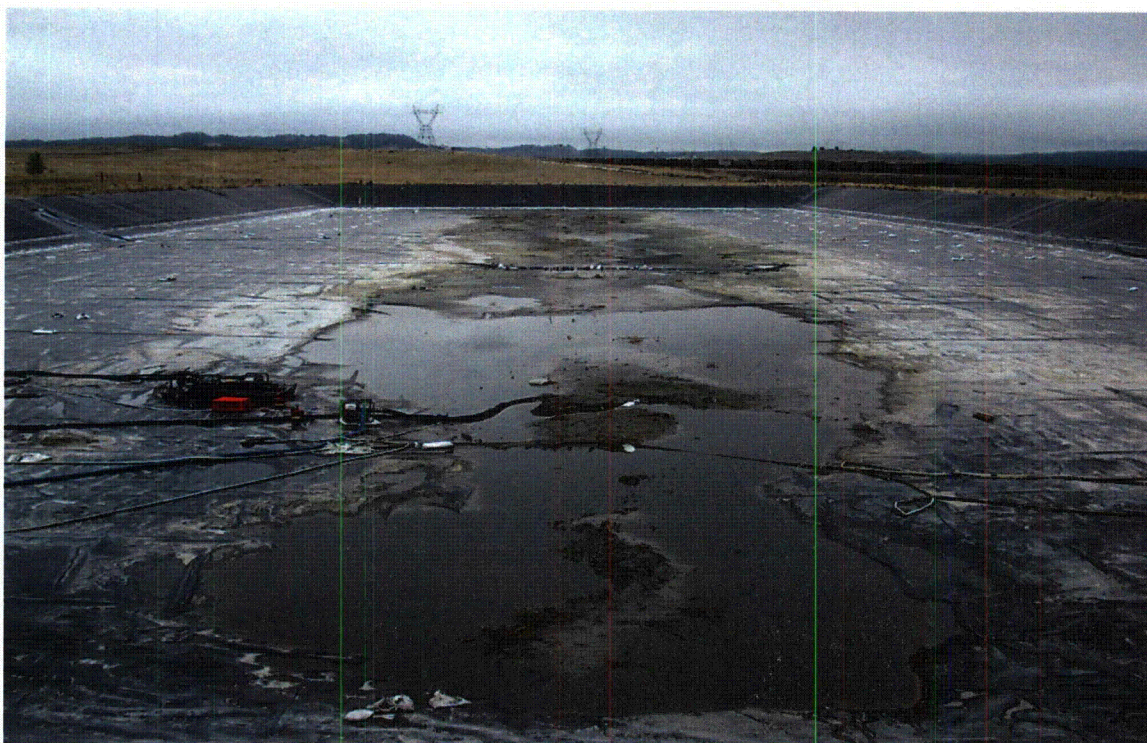


**North view of ponds #1, right & pond #3, left. Good vegetation. Date: 10/03/13**





**Southwest view of Pond #4. Date: 10/03/13**



**South view of Pond #4, zero storage depth. Date: 10/03/13**





**North embankment of Pond #3 Date: 10/03/13**

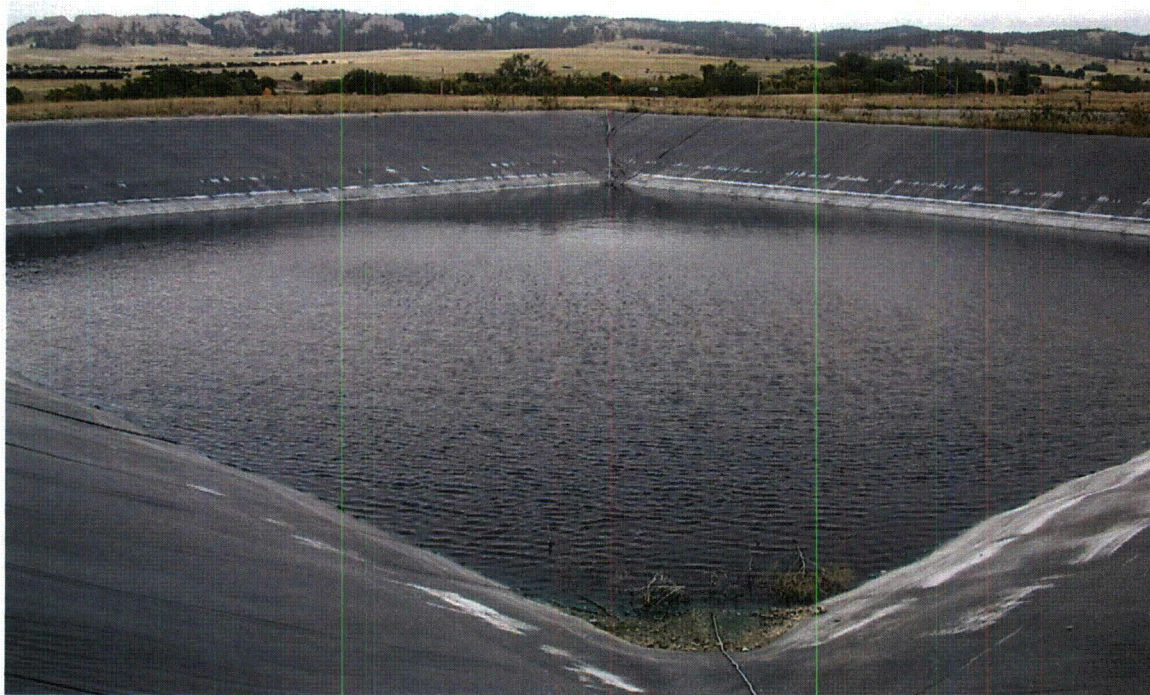


**Northeast view of Pond #3. 10/03/13**





**West view of R&D ponds. Cell #2 (east pond) in foreground. Date: 10/03/13**



**Northeast view, R & D pond, west cell: Date: 10/03/13**





**View of diversion ditch on the south side of the R & D ponds. Photo taken 10/03/13**



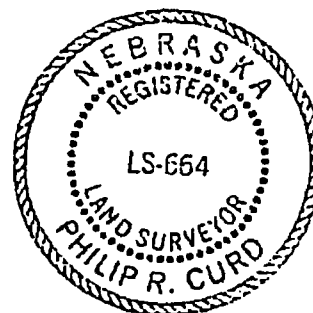
**North embankment slope of R & D ponds; Good vegetation. 10/03/13**

CROW BUTTE RESOURCES, INC.  
 RANGE ONE  
 CROSS SECTIONS FOR PONDS  
 STATION 0+00  
 September 30, 2013

LEFT OF BASELINE	SEA LEVEL ELEVATION	DESCRIPTION	SHOT TAKEN ON
0.00	3851.73	0+00 B.L.	REBAR&CAP
89.08	3851.09	FENCE	GROUND
118.08	3852.64	GROUND	HUB GONE
132.08	3854.21	TOE OF SLOPE	TOE
162.95	3867.14	MIDPOINT SLOPE/DIRT	GROUND
195.26	3879.89	OUTSIDE OF BERM	GROUND
356.88	3880.69	MIDPOINT POND ON BERM	REBAR GONE
532.75	3880.95	OUTSIDE EDGE BERM	GROUND
538.08	3879.11	"V" OF DITCH	GROUND
548.13	3882.97	TOP OF SLOPE	GROUND
553.78	3884.08	FENCE	GROUND
560.08	3883.84	WEST EDGE OF ROAD (NEW)	GROUND
564.08	3883.99	ROAD (FORMER EDGE)	GROUND
576.48	3884.39	ROAD (FORMER EDGE)	GROUND
579.58	3884.29	EAST EDGE OF ROAD (NEW)	GROUND
585.68	3883.78	SIDE OF DITCH	GROUND
588.18	3883.50	"V" OF DITCH	GROUND
594.58	3885.03	TOP OF DITCH (new 2006)	GROUND
639.68	3888.49	0+00 E.B.	REBAR&CAP

Note: Elevations taken with a Topcon Total Station, with estimated accuracy of .10 of a foot.

Philip R. Curd  
 Philip R. Curd, LS-664





CROW BUTTE RESOURCES, INC.  
 RANGE TWO  
 CROSS SECTIONS FOR PONDS  
 STATION 5+00  
 September 30, 2013

LEFT OF BASELINE	SEA LEVEL ELEVATION	DESCRIPTION	SHOT TAKEN ON
0.00	3862.19	5+00 B.L.	REBAR&CAP
92.58	3860.88	FENCE	GROUND
144.03	3862.25	HUB	HUB
150.11	3862.84	TOE OF SLOPE	GROUND
173.17	3871.34	MIDPOINT OF SLOPE	GROUND
194.58	3880.49	OUTSIDE EDGE BERM/DIRT	GROUND
205.28	3881.42	INSIDE EDGE BERM/LINER	LINER
522.28	3880.57	INSIDE EDGE BERM/LINER	LINER
528.02	3880.43	OUTSIDE EDGE BERM/REBAR	REBAR
537.58	3878.92	"V" OF DITCH	GROUND
563.08	3883.00	WEST EDGE OF ROAD	GROUND
577.28	3882.97	EAST EDGE ROAD	GROUND
608.81	3894.09	MIDPOINT OF SLOPE	GROUND
634.58	3904.69	OUTSIDE EDGE BERM	GROUND
636.78	3904.92	PREV. OUTSIDE EDGE BERM	REBAR
646.08	3905.14	INSIDE EDGE BERM	LINER
907.10	3905.02	EDGE BERM	LINER
909.87	3905.04	INSIDE EDGE BERM	LINER
915.35	3904.91	CENTER OF BERM	REBAR
918.72	3904.98	OUTSIDE EDGE BERM	GROUND
933.88	3899.82	W. EDGE FLAT BOTTOM DITCH	GROUND
945.08	3899.72	E. EDGE FLAT BOTTOM DITCH	GROUND
970.08	3908.65	TOE OF SLOPE	GROUND
993.08	3910.02	FENCE	GROUND
998.58	3910.79	TOP OF SLOPE	GROUND
1007.28	3913.99	W. EDGE OF ROAD	GROUND
1019.38	3914.34	E.EDGE OF ROAD	GROUND
1022.08	3915.68	E. TOE OF SLOPE	GROUND
1033.58	3919.44	MIDPOINT OF SLOPE	GROUND
1077.08	3928.87	TOP OF SLOPE	GROUND
1094.50	3929.38	5+00 E.B.	REBAR&CAP

CROW BUTTE RESOURCES, INC.  
 RANGE THREE  
 CROSS SECTIONS FOR PONDS  
 STATION 10+00  
 September 30, 2013

LEFT OF BASELINE	SEA LEVEL ELEVATION	DESCRIPTION	SHOT TAKEN ON
0.00	3874.28	10+00 B.L.	REBAR&CAP
95.83	3868.82	FENCE	GROUND
122.11	3870.46	TOE OF SLOPE	HUB
147.97	3879.49	MIDPOINT SLOPE	GROUND
174.26	3890.01	OUTSIDE EDGE BERM	REBAR GONE
186.11	3890.79	INSIDE EDGE BERM	LINER
500.42	3890.78	INSIDE EDGE BERM	LINER
509.93	3889.76	OUTSIDE EDGE BERM	REBAR
537.11	3887.93	WEST EDGE ROAD	GROUND
545.41	3888.08	EAST EDGE ROAD	GROUND
553.21	3886.94	W. EDGE FLAT BOTTOM DITCH	GROUND
560.71	3886.93	E. EDGE FLAT BOTTOM DITCH	GROUND
569.81	3889.41	TOP OF DITCH	GROUND
598.96	3891.16	TOE OF SLOPE	HUB/gone
617.36	3897.76	MIDPOINT OF SLOPE	GROUND
634.61	3904.90	OUTSIDE EDGE BERM	REBAR
644.13	3905.26	INSIDE EDGE BERM	LINER
908.75	3904.98	INSIDE EDGE BERM	LINER
918.83	3904.90	OUTSIDE EDGE BERM	REBAR
931.87	3900.43	W. EDGE FLT. BTM. DITCH/TRAIL	GROUND
942.84	3900.37	E. EDGE FLT. BTM. DITCH/TRAIL	GROUND
974.71	3911.01	TOP OF DITCH	GROUND
989.71	3911.99	FENCE	GROUND
1014.27	3914.76	TOP OF DITCH	GROUND
1020.51	3913.51	"V" OF DITCH	GROUND
1024.71	3915.20	TOP OF DITCH	GROUND
1039.06	3917.64	MIDPOINT OF SLOPE	GROUND
1067.81	3920.57	TOP OF SLOPE	GROUND
1086.92	3919.89	LOW POINT	GROUND
1148.47	3924.83	10+00 E.B.	REBAR&CAP

CROW BUTTE RESOURCES, INC.  
RANGE FOUR  
CROSS SECTIONS FOR PONDS  
STATION 15+00  
September 30, 2013

LEFT OF BASELINE	SEA LEVEL ELEVATION	DESCRIPTION	SHOT TAKEN ON
0.00	3883.65	15+00 B.L.	REBAR&CAP
99.56	3875.68	FENCE	GROUND
136.74	3876.02	TOE OF SLOPE	HUB
155.91	3883.58	MIDPOINT OF SLOPE	GROUND
173.05	3890.33	OUTSIDE EDGE BERM	GROUND
186.06	3891.03	INSIDE EDGE BERM	LINER
499.21	3890.64	INSIDE EDGE BERM	LINER
509.01	3890.98	OUTSIDE EDGE BERM	GROUND
514.81	3889.53	"V" OF DITCH	GROUND
524.11	3892.03	TOP OF DITCH	GROUND
536.01	3892.76	FENCE	GROUND
554.24	3892.98	TOE OF SLOPE	GROUND
559.31	3894.48	TOP OF SLOPE	GROUND
696.96	3903.53	HIGH POINT	GROUND
789.74	3904.90	LOW POINT	GROUND
985.57	3915.06	15+00 E.B.	REBAR&CAP