REVISED PLAN OF OPERATIONS
BUSS LAKE RECLAMATION

Prepared for:

Power Resources, Inc.
dba Cameco Resources
2020 Carey Avenue, Suite 600
Cheyenne, Wyoming 82001

Prepared by:

Lidstone and Associates, Inc.
4025 Automation Way, Building E
Fort Collins, Colorado 80525

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1.0 INTRODUCTION

Power Resources, Inc., doing business as Cameco Resources (CR), reclaimed the Buss Pit Area in 1994 and 1995 under Wyoming Department of Environmental Quality (DEQ)/Land Quality Division (LQD) Permit to Mine No. 438 and the U.S. Bureau of Land Management (BLM) Plan of Operations WYW-127579. The approved reclamation plan included a final groundwater fed impoundment at the Buss I Pit (Buss Lake). Although the approved reclamation plan anticipated suitable water quality for this final impoundment, no alternate reclamation plan was presented, or required by LQD or BLM. LQD holds a revegetation bond under Permit No. 438 and CR has requested final bond release because they believe they have met their obligations under the approved reclamation plan. Reclamation was completed over 15 years ago and the reclamation site is generally stable. There is little erosion and vegetation is well established and meets bond release criteria. LQD District II agrees with CR's request and has requested BLM's concurrence. LQD recognizes that the water quality of the impoundment does not meet DEQ/Water Quality Division (WQD) Class III livestock standards but the pit:

- Is isolated;
- Will not discharge to other surface water sources; and
- Will not contaminate groundwater because of evaporative losses from the free water surface of the pit lake.

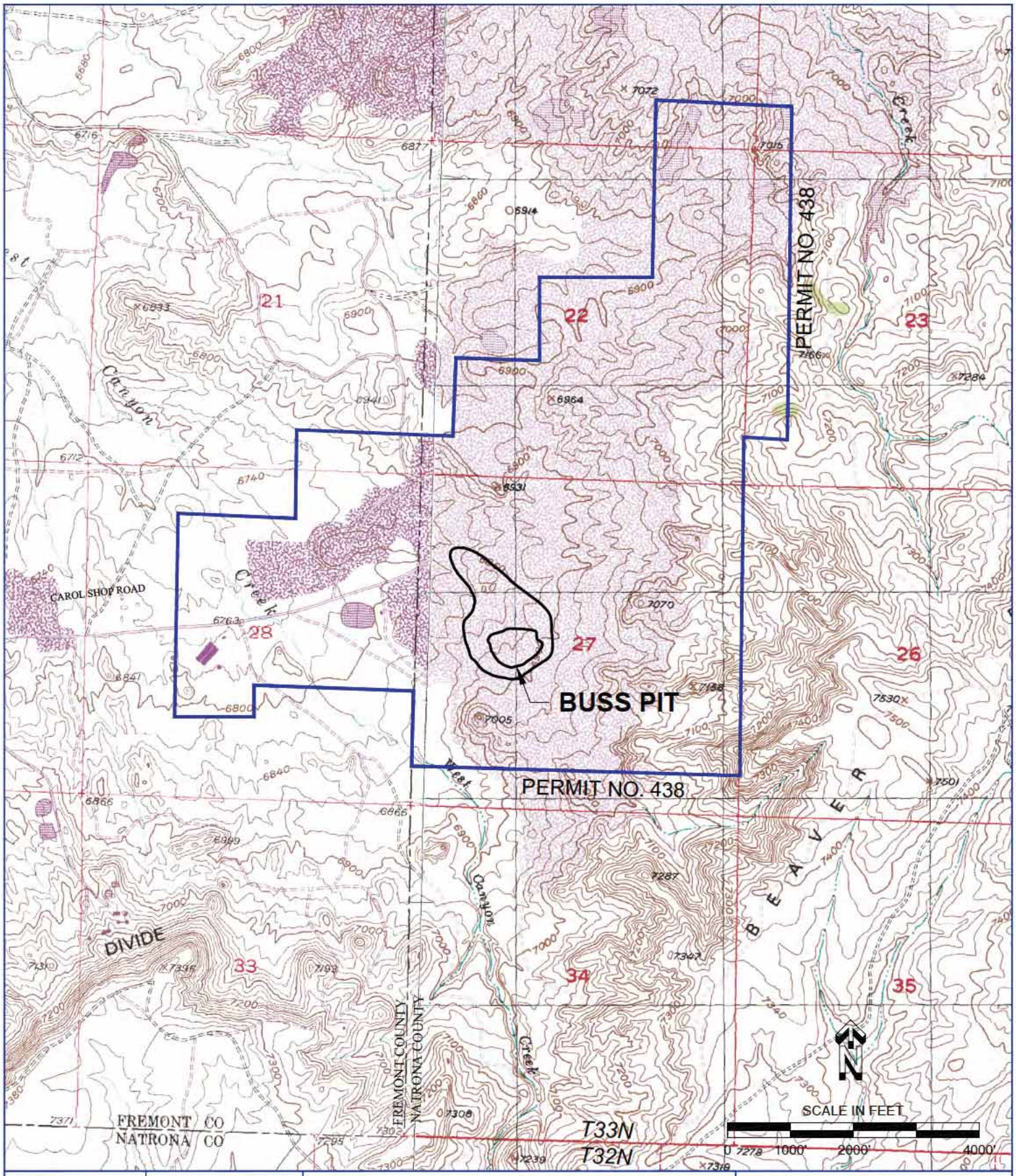
CR believes that there is no risk to wildlife, livestock or humans given that there are numerous freshwater sources within the general area. CR also believes that any proposed reclamation plan revision will damage the existing and successful reclamation effort.

The BLM Casper Field Office (CFO) disagrees with the CR and LQD request for bond release concurrence because they consider the low pH water in the Buss I Pit to be characteristic of an "acid lake and as such it represents an unnecessary or undue degradation (of the environment) with the potential to adversely affect wildlife and groundwater." Between 1995 and 2001, the pH of the pit lake declined from 7.4 to 4.0, while the pit water level recovered from 6641 to 6650. Since 2001 the pH has stabilized (currently 3.8) and the pit water level has fluctuated between 6650 and 6645. It appears that both pH and water level have achieved an equilibrium state and with the exception of pH and aluminum, the waters of the Buss Pit meet DEQ/WQD Class III livestock standards. Water quality data and the comparative standards are presented in **Table 1**. The Buss I Pit currently acts as a groundwater sink due to free water evaporation from the water surface. This prevents the low pH water from migrating away from the site. The site is currently not eligible for remediation under the Wyoming Abandoned Mine Land (AML) Program.

The Buss Pit is located in the eastern portion of the Gas Hills Uranium District in Fremont and Natrona Counties, Wyoming (**Figure 1)**. CR is also developing a uranium in-situ recovery (ISR) project on lands adjacent to the Buss Pit (**Figure 2)**. The ISR Project is permitted by the LQD under Permit to Mine No. 687 and is licensed by the U.S. Nuclear Regulatory Commission (NRC) under Source Material License SUA-1548. CR has recently (March 2011) submitted an updated Plan of Operations to the BLM for the Gas Hills ISR Project for their review and approval.

Table 1 Buss Pit Water Quality

Analyte	2009 Data	2006 Data	Class III Standards	Units
A/C Balance (± 5)	1.49	0.729	NA	%
Acidity, Total as CaCO3	128	NA	NA	mg/L
Alkalinity, Total as CaCO3	<1	ND	NA	mg/L
Anions	55.5	51.9	NA	meq/L
Bicarbonate as HCO3	<1	ND	NA	mg/L
Carbonate as CO3	<1	ND	NA	mg/L
Cations	57.2	52.7	NA	meq/L
Chloride	17	15	2000	mg/L
Conductivity	3840	3970	NA	umhos/cm
Fluoride	2.2	1.4	NA	mg/L
Nitrogen, Nitrite as N	<0.1	ND	100	mg/L
pH	3.84	3.83	6.5-8.5	s.u.
Solids, Total Dissolved Calculated	3660	3410	5000	mg/L
Solids, Total Dissolved TDS @ 180 C	4030	3830	5000	mg/L
Sulfate	2640	2470	3000	mg/L
Aluminum	14.2	11	5	mg/L
Arsenic	0.002	0.001	0.2	mg/L
Barium	<0.1	ND	NA	mg/L
Boron	0.1	ND	5	mg/L
Cadmium	<0.005	ND	0.05	mg/L
Calcium	587	575	NA	mg/L
Chromium	<0.05	ND	0.05	mg/L
Copper	0.03	0.04	0.5	mg/L
Iron	1.47	1.3	NA	mg/L
Lead	0.003	ND	0.1	mg/L
Magnesium	250	221	NA	mg/L
Manganese	8.37	7.76	NA	mg/L
Mercury	<0.001	ND	0.00005	mg/L
Molybdenum	<0.1	ND	NA	mg/L
Nickel	0.60	0.55	NA	mg/L
Potassium	60	52.3	NA	mg/L
Selenium	0.014	0.017	0.05	mg/L
Silica	24.3	20	NA	mg/L
Sodium	73	60.3	NA	mg/L
Uranium	0.226	0.262	NA	mg/L
Vanadium	<0.1	ND	0.1	mg/L
Zinc	0.27	0.25	25	mg/L
Nitrogen, Ammonia as N	<0.05	0.4	NA	mg/L
Nitrogen, Nitrate+Nitrite as N	<0.05	ND	100	mg/L
Radium 226	1.8	1.9	5	pCi/L
Radium 226 MDC	0.17	0.5	NA	pCi/L



BUSS LAKE
REVISED PLAN OF OPERATIONS

PROJECT NUMBER	WYCR101	DESIGNED/DRAWN	D/D
DRAWING DATE	4/23/11	CHECKED	CDL
		APPROVED	CDL

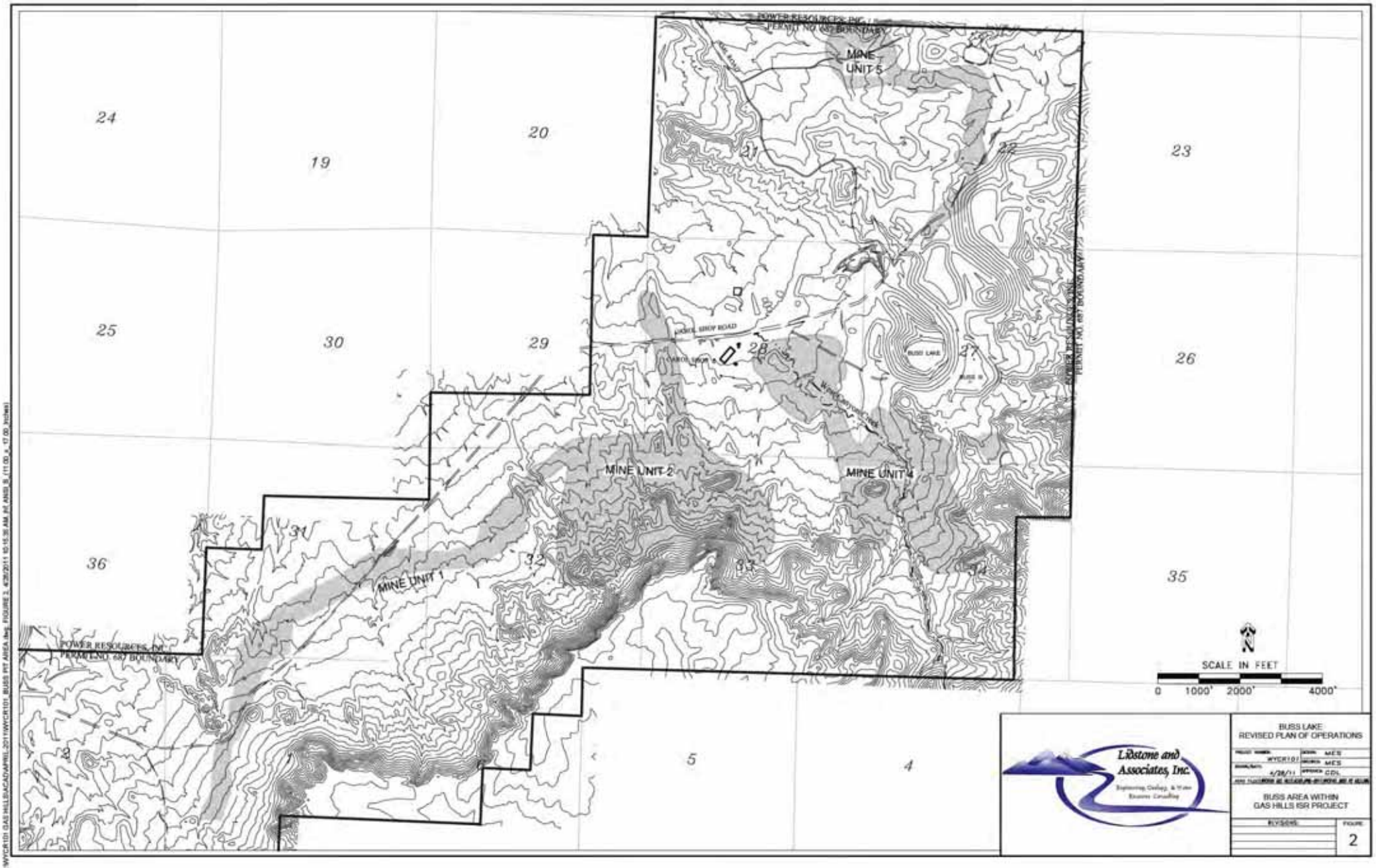
LOCATION MAP

FIGURE 1

REVISIONS

GENERAL NOTES

LEGEND


POWER RESOURCES, INC.
PERMIT NO. 687 BOUNDARY
MINE UNIT 5
24
19
20
21
22
23
25
30
29
28
27
26
36
31
32
33
34
35
MINE UNIT 2
MINE UNIT 4
MINE UNIT 1
BUSS LAKE
POWER RESOURCES, INC.
PERMIT NO. 687 BOUNDARY
2
5
4
N
SCALE IN FEET
0
1000'
2000'
4000'
Lidstone and Associates, Inc.
BUSS LAKE
REVISED PLAN OF OPERATIONS
BUSS AREA WITHIN
GAS HILLS ISR PROJECT
FIGURE
2

The BLM NEPA review of the ISR Project will focus on those surface disturbances on BLM-administered public lands caused by drilling exploration holes; installing production, injection and monitoring wells; and installing and removing surface facilities. CR estimates that approximately 1,500 acres will be disturbed in phases over the 25-year life of the ISR Project. It is anticipated that approximately 50 acres will be disturbed and reclaimed each year. Reclaimed land will be accessible for wildlife habitat for the duration of the Project. Once groundwater restoration has been completed throughout a mine unit, the entire mine unit area will undergo final reclamation, which will entail removal of surface and subsurface facilities, limited additional surface grading, contouring, and revegetation with native species. After revegetation success has been demonstrated, the mine unit surface area will be fully available for its pre-mining use of livestock grazing and wildlife habitat. At the end of the Project, after reclamation of the final mine unit and the ancillary surface facilities, the entire disturbed surface will be returned to its pre-mining land use. Because the ISR mining method does not require removal of vast quantities of rock, soil, or destruction of aquifers, the long-term post-mining footprint is negligible.

The ISR Project's relationship to the Buss I Pit is important in that:

1. CR will be actively mining uranium on BLM surface for 20 years and will be available to continue monitoring pH and water level recovery.
2. There are ore deposits (Mine Unit 4) within and adjacent to the Buss Pit and remediation options should consider access to this reserve.
3. CR will be completing aquifer restoration activities on BLM surface for 20 years and will have full mining and restoration staff available to support monitoring activities at the Buss Pit.
4. The State of Wyoming (LQD) will hold a comprehensive reclamation bond for CR's Gas Hills ISR operation (Permit No. 687) during the operations and restoration period.

This Plan (Buss Lake Plan of Operations) is intended to provide a summary in sufficient detail to inform the general public of CR's plans to modify the existing Plan of Operation at the Buss Lake. This plan will address the acidification of the Buss Lake. The BLM CFO has indicated that this Plan should, in addition to meeting the approved LQD reclamation plan, should also meet the requirements at 43 CFR 3809.1-7. BLM has stated that the unforeseen circumstances causing the low pH water in the Buss Lake are of such significance that modification of the existing Plan of Operations is required.

Mine Unit 4 of the Gas Hills ISR Project is located approximately 600 feet southwest of the Buss Lake. The Buss permit area (LQD Permit No. 438) is located entirely within the permit boundary for the ISR Project (LQD Permit 687). **Figure 2** shows the location of the Buss Pit relative to several mine units planned for the Gas Hills ISR Project. The *Gas Hills ISR LQD Permit No. 687 Update* document (CR, 2009 and 2010) provides detailed Mine Operations and Reclamation Plans, site-specific data, and technical evaluation of land use, geology, hydrology, wildlife, vegetation, soils, radiological surveys, cultural resources/archeology, and climatology for the entire permit area. That permit application document, consisting of nine volumes, is available for public review at both the BLM Lander Field Office and the DEQ Lander office during business hours.

2.0 OPERATOR INFORMATION

Operator: Power Resources, Inc., dba Cameco Resources
Address: 2020 Carey Avenue, Suite 600
Cheyenne, WY 82001
Telephone: 307-316-7600
Taxpayer ID No: [redacted]

Point of Contact name, address and telephone:

Mr. Tom Young – Vice President of Operations
Power Resources, Inc., dba Cameco Resources
2020 Carey Avenue, Suite 600
Cheyenne, WY 82001
Telephone: 307-316-7600

3.0 BUSS I PIT LOCATION

The Buss I Pit is located in the eastern portion of the Gas Hills Uranium District of south-central Wyoming in Section 27, T33N, R89W in Natrona County, approximately 65 miles west of Casper, Wyoming and 45 miles east of Riverton, Wyoming.

4.0 AREA AND PROJECT HISTORY

4.1 Gas Hills Uranium District

The Gas Hills District has been one of the major uranium producing regions of the United States. The uranium reserves for the area, including past production and current known remaining reserves, represent approximately 12 percent of the nation's total known uranium reserves. The District is remotely located, near the geographical center of Wyoming and is entirely contained within eastern Fremont and western Natrona Counties. The mineralized subsurface encompasses an area of approximately 100 square miles.

Uranium was initially discovered in the Gas Hills in 1953 by a prospector named Neil McNeice. He reported his findings to the Atomic Energy Commission (AEC), who initiated preliminary geologic investigations in the area. Word of the discovery spread rapidly, and a rush to stake claims ensued. Within the next few years thousands of claims were staked, and a series of small open-pit mines were developed on shallow oxidized ore deposits above the water table. The ore was sold to the AEC at buying stations and shipped by rail to Edgemont, South Dakota for processing. By the mid to late 1950s, a uranium mill was constructed in Riverton, Wyoming and began milling Gas Hills' ore. During the late 1950s, significant deposits were discovered below the groundwater table, and large-scale surface and underground mining commenced. Over the next few years properties were consolidated, and three uranium mills were constructed in the Gas Hills District. By the early 1960s, production from the District approached 5,000 tons per day of ore that averaged greater than 0.20 percent U_3O_8 ("yellowcake," or uranium oxide concentrate). Production at these levels continued more or less until the early 1980s, at which time the steep decline in uranium prices forced the closure of the mines and mills. Although intermittent production has occurred since that time, most activity in the District has involved former mine and mill reclamation. Total production from the District during its conventional mining history is approximately 100,000,000 pounds U_3O_8.

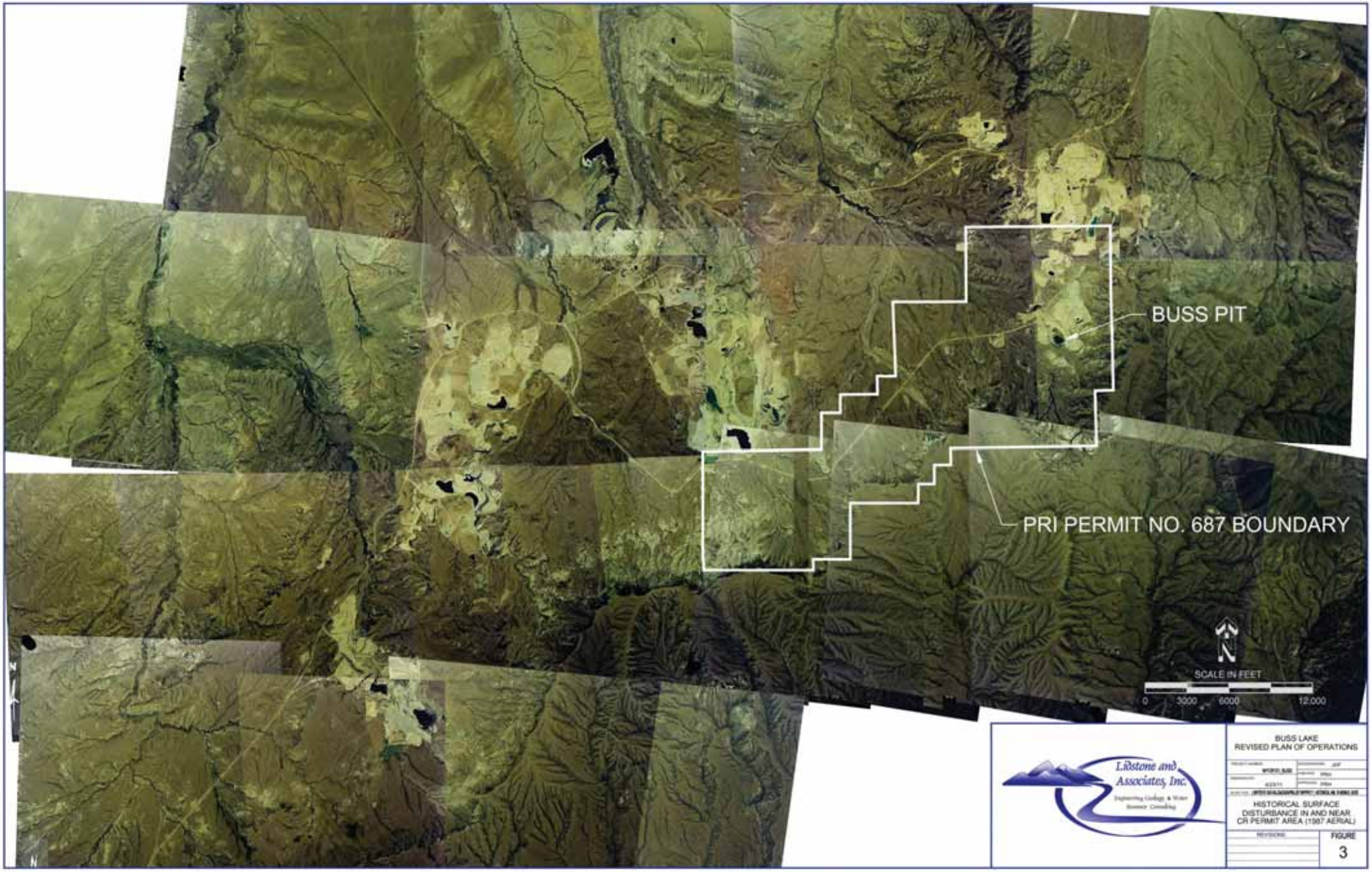
From the 1950s to the early 1980s, much of the surface area within and adjacent to the Buss Pit area was extensively mined for uranium employing both underground and surface mining methods. The majority of the uranium ore was recovered by surface mining methods. **Figure 3** provides a 1987 aerial photo of the East Gas Hills showing the extent of conventional mining disturbances in the vicinity of the Buss I Pit. This photo is relevant to the Buss Lake Plan of Operations in that it demonstrates the degree of conventional mine disturbance, which took place in the Gas Hills. Approximately 75% of the Gas Hills mining pits intersected the historic water table and nearly 100% of the reclamation of these pits included non-selective backfill of the groundwater flooded pits.

4.2 Buss Pit Mining and Ownership History

Mining claims in the vicinity of the Buss Pit were initially staked by a variety of small operators and companies during the 1950's. Most of the claims were consolidated when three of the companies; Gas Hills Uranium, Federal Resources, and Radorock Uranium formed a partnership and constructed a mill. Gas Hills Uranium changed their name to American Nuclear Corporation, and Federal Resources acquired Radorock. The subsequent mining group was called Federal American Partners (FAP). FAP signed a property development partnership agreement with the Tennessee Valley Authority (TVA) during the early 1970s and commenced an ambitious program of open-pit and underground mine development. During this time, the last significant property consolidation occurred with the Partnership's purchase of Western Nuclear's East Gas Hills properties. The TVA subsequently acquired all interest in the property from the partnership in the early 1980s. The TVA maintained the property through the 1980's and in 1993 sold the undeveloped property to CR. CR then sold a 25 percent interest to Urangesellschaft (UG) under an operating agreement between CR and UG. In 1996, CR reacquired UG's 25 percent interest. CR never mined uranium from the Buss Pit and is currently 100 percent owner of all the property shown within the Permit 438 Boundary (**Figure 1)**.

At the time of CR's 1993 acquisition of the Buss Area, TVA's 1978 reclamation obligations and approved bond were transferred to CR. The 1978 Reclamation Plan in LQD Permit to Mine No. 438 was the last approved mine and reclamation plan for the Buss area. This Plan included 37.6 acres of an unreclaimed pit floor area, a final impoundment of no defined quality and over 6700 linear feet of unreclaimed highwalls. There had been a 1992 effort by Alta Gold Co. as operator for TVA, to more clearly define the overall reclamation plan for the area. As part of this effort, LQD asked TVA to reconsider additional reclamation at the Buss Pit, in place of reclamation obligations at the Two States and Blackstone Slot pits. However this agreement had not been finalized at the time of the property transfer from TVA to CR.

CR completed a variety of technical studies and submitted a revised reclamation plan to LQD and the BLM in 1993. The reclamation plan included the reclamation of several adjacent mine pits (Cap and Buss III), and associated spoil dumps. The 1993 plan for the Buss I Pit included a significant improvement over the approved TVA plan and committed to the reclamation of a significantly larger area near the floor of the Buss 1 Pit, reclamation of a 17 acre final pit impoundment, 2400 linear feet of remaining (but less vertical height) highwall, a stable drainage plan, as well as regrading, site stabilization and revegetation of the entire area. BLM and LQD approved this Plan (Permit 438-A2) in early 1994.



Lidstone and Associates, Inc.
Engineering Geology & Water Resource Consulting

BUSS LAKE
REVISED PLAN OF OPERATIONS

HISTORICAL SURFACE DISTURBANCE IN AND NEAR CR PERMIT AREA (1987 AERIAL)

REVISIONS

FIGURE
3

L:\WYCR101 GAS HILLS\ACAD\APRIL-2011\WYPR1111_HISTORICAL AIRL 16 AERIALS_BUSS.dwg, 11-17 DISTURBANCE AREA, 4/26/2011 10:31:46 AM, PX, ANSI_B_(11.00_x_17.00_Inches)

Reclamation activities commenced in April 1994 and continued through January 1995. During this period, 4.7 million cubic yards of material movement occurred including the partial backfill of the Buss I Pit. Earthmoving was completed and the area was topsoiled and seeded by October 1995. Monitoring of the area, including the water level recovery and Buss I water quality commenced following reclamation.

4.3 Water Level and Quality History

The water quality history of the Buss Pit impoundment was derived from various sources including AML records, TVA records and CR annual report data. The earliest obtained record was a measurement of field pH (pH= 6.7), completed by AML in a field inventory on October 5, 1987. By 1993 the pH of the Buss I Pit had declined to 5.8 s.u. Reclamation commenced in April of 1994 and because of the planned placement of calcite rich backfill below the water table, pH increased to 7.36 (June 16, 1995). For the next six years (1995 to 2001), pH decreased to 4.0 s.u. Between 2001 and 2006, pH dropped slightly further to its current measurement of 3.84 s.u.

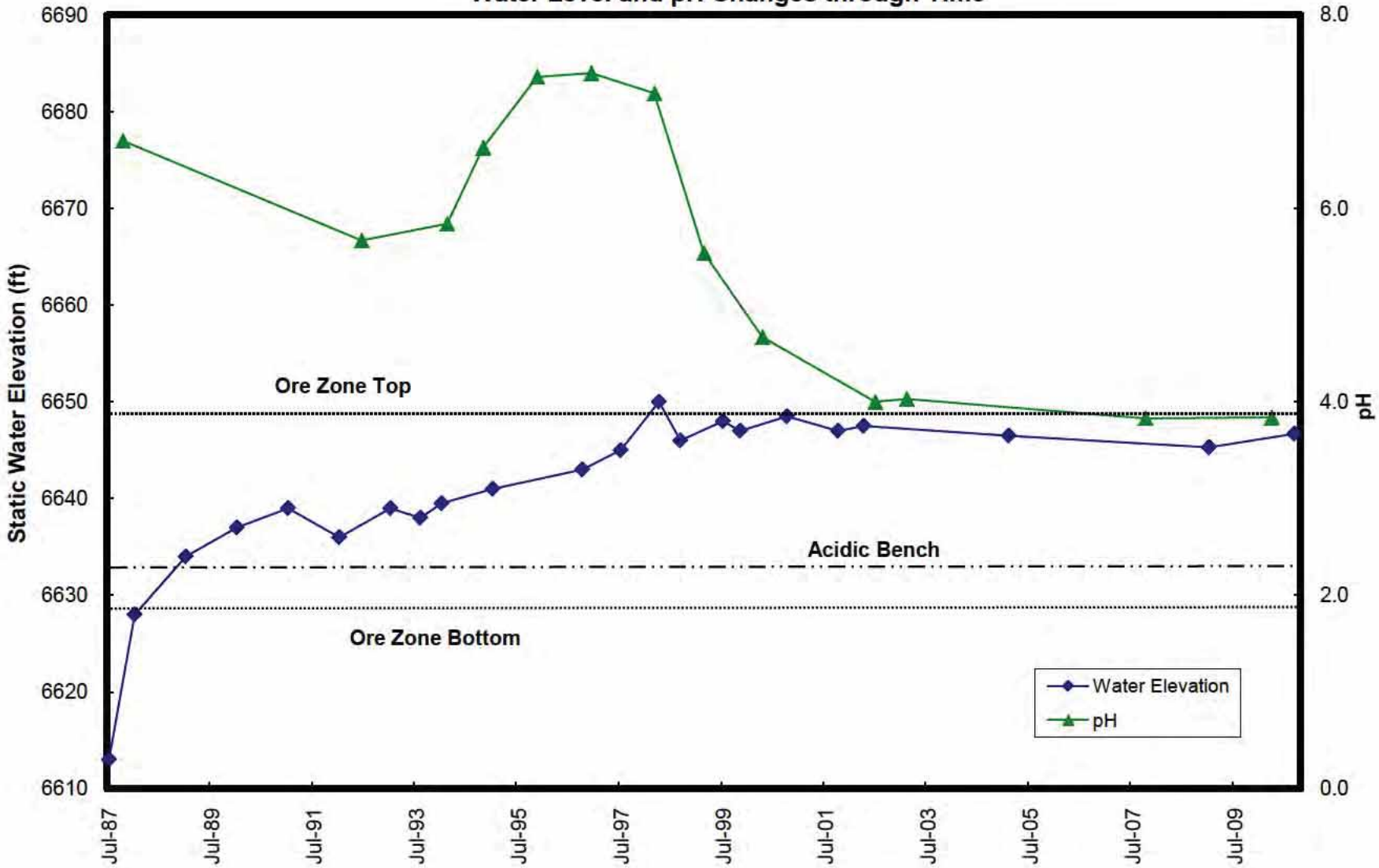
It has remained at that level for the last five years (**Figure 4**). At the same time that water quality degraded, the water level of the pit recovered. The 1994 predicted water level of the final impoundment was 6660 to 6686 feet after 20 years. The highest post reclamation water level elevation was measured at 6650 in April 1998. By the fall of that year, water level had decreased to 6646 and remained around that level through the present time. The most recent water level measurement (September 29, 2010) was 6646.7 (**Figure 4**). Over the 2000-2007 time period, annual precipitation in the Gas Hills dropped from 9 inches to less than 7.3 inches per year. Recent years (2008-2010) have experienced above average precipitation. The water level and pH data trend indicate that water level and water quality are nearing or have achieved an equilibrium state. Water quality reports from the 2006 and 2009 sampling of the Buss Reservoir and the 2006 sampling of adjacent area wells (GW5A; PRI-1 and GW 10A) are included in **Appendix A** of this document.

At LQD's request CR prepared an "Evaluation of Water Level and Water Quality at the Reclaimed Buss 1 Reservoir" (Lidstone and Associates, Inc. (LA), July, 2009). This report was prepared in response to a letter from Mark Moxley to PRI dated November 2, 2004, which requested the following:

> *"PRI should evaluate the performance of the Buss Pit lake, as well as the other small impoundments in the reclaimed area. This should include an evaluation of the underlying causes for the acidification of the Buss Pit lake and potential remediation options**. It is recognized that the Buss I pit was an extension of a pre-law pit and that PRI was not obligated to guarantee the success of the impoundment. (CR emphasis)** However the reclamation plan anticipated that the water quality would be within DEQ livestock standards. The plan also states that "there is no economically feasible alternative for the Buss pit in the event that water quality or quantity do not meet these success criteria". At this time it is incumbent on PRI to provide an objective evaluation of both of these assumptions."*

This report addressed (1) the cause of the pit lake acidification and (2) researched mitigation alternatives to eliminate the acid impoundment. The conclusion of this report (Lidstone and Associates, Inc. 2009; page 12) stated that PRI "had no statutory nor regulatory obligation to guarantee the success of the Buss Pit Impoundment". LQD concurred in their email to BLM dated July 9, 2010, where they stated:

Figure 4.
Water Level and pH Changes through Time



"We are satisfied with PRI's evaluation. We do not believe that there is a reasonable option for remediating the pit lake water quality. The pit lake does not meet WDEQ water quality standards for livestock use". LQD goes on to summarize their position in that *"(a) both agencies (LQD and BLM) approved the PRI Reclamation Plan without any guarantee of suitable water quality; (b) reclamation was completed in accordance with the approved plan; (c) the pit has become acidified and is not suitable for livestock or wildlife watering; (d) the 400+ acres of reclamation is acceptable in all respects; (e) there are a number of other nearby sources of suitable water for livestock and wildlife; and (f) the pit lake is self-contained and is not a threat to offsite surface or groundwater."*

BLM did not concur with LQD or CR conclusions (9/14/2010) and requested a modification of the Buss Pit Plan of Operations under the pre-2001 43 CFR 3809.1-7 statute. Relevant correspondence and meeting notes are presented in **Appendix B**.

5.0 DESCRIPTION OF MODIFICATION TO THE OPERATIONS

5.1 Introduction

To mitigate the acid conditions at the Buss Lake, CR proposes to pump and treat the low pH water with lime to achieve a pH above 7.0 s.u. and monitor water level and water quality of the pit lake over the subsequent 15 year period. By treating the lake water quality, CR will address BLM's immediate concerns towards "unnecessary or undue degradation" and will eliminate any risk to surface or groundwater.

The extended (15 year) pit water monitoring period is equivalent to the current post reclamation monitoring period and will provide adequate data to characterize the long term geochemical behavior of the lake system. If within that 15 year period, the lake pH drops below 6.5 s.u. for three successive years, CR will commit to backfill of the lake (the Alternate Plan) as described in the subsequent sections. If, at the end of 15 years, the lake water pH is stabilized above 6.5 s.u., CR shall request bond release from BLM and LQD for Permit 438. CR may at any time request concurrence for the implementation of the Alternate Plan under this Modified Plan of Operations. Should CR develop additional alternatives, these alternatives will be presented in a future modification to this Plan of Operations.

5.2 Reclamation Plan

5.2.1 Revised Plan of Operations: Base Additives

The waters of the Buss Lake meet Class III water use for all parameters except for pH and aluminum. Aluminum (and iron) will only persist in dissolved form under acid conditions and will begin to precipitate as a hydrous aluminum oxide when pH is elevated above 5.0 s.u. With this in mind, the preferred alternative is to treat the acid water with a neutralizing agent such as lime. To accomplish this water treatment, approximately 50 million gallons of water will be pumped and treated (with excess lime) and will be returned to the Buss Lake. The pump and treat option is a low impact option that will result in minimum damage to the existing reclamation. By pumping the water, CR can thoroughly mix the acid water with lime and ensure that the treated water will contain an existing neutralizing capacity before it is returned to the Buss Lake. CR will evaluate two pumping options:

1. Pump water to the Buss A stockpond and mix lime within the stockpond. The treated water will then overflow the Buss A stockpond rock lined spillway and discharge back to the Pit Lake. This water will be further oxidized as it passes over three rock drop

structures and aluminum and iron will precipitate into an insoluble form. Return flow to the pit lake will be immediate.

2. Pump water to the Buss III Pit and mix lime at the floor of the Buss III Pit. This water will return directly to the Buss I Pit through the processes of infiltration. Given the size and capacity of the Buss 1 Pit (containment for the ½ PMP) there will be no overflow. Return flow to the pit lake will be within one to five years via groundwater recharge.

Both options are outlined on **Figure 5** of this report. In either case, the pit lake level will be lowered approximately 15 feet. Currently the lake is between 30 and 35 feet deep. The Buss waters will be "overlimed" to ensure that there is excess buffering capacity. Approximately 40 tons of lime (100% CaO) are required to buffer the pH from 3.8 to 8.3, and CR anticipates that they will use 60 to 80 tons (100% CaO) to ensure adequate buffering capacity. This lime will be delivered as crushed or granular limestone from either the Pete Lien quarry north of Rawlins or as sugar beet lime from processing plants near Worland. The total volume of lime delivered to the site will be dependent on analytical certifications (lime purity) provided by the source and the pH and volume of water to be treated. The total volume of water to be treated is estimated to be 75 million gallons of pH 3.8 water. Possible sources of lime currently under consideration include a quarry in Rawlins with approximately 95 percent CaCO3 (54% CaO) and sugar beet by-product limestone from processing plants in the Big Horn Basin, e.g. Worland, with approximately 64 percent CaCO3 (<50% CaO). The lime will be delivered in crushed, granular, gravel-sized, or a combination of grain sizes and mixed during the pumping operation at the blend site- either the Buss A stockpond or the Buss III Pit. Calculations supporting the lime requirement are presented in **Appendix C**.

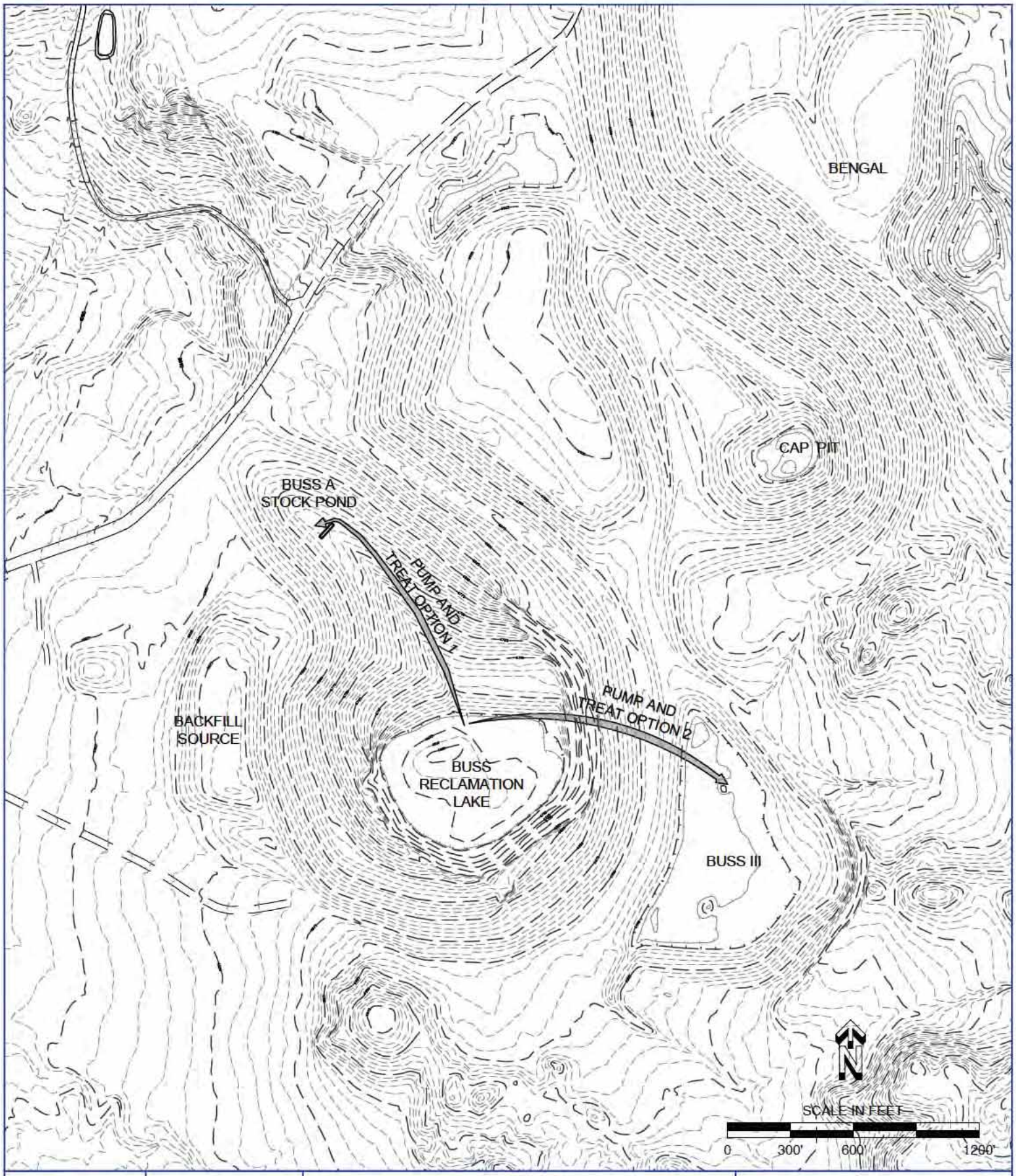
This approach addresses the BLM Acid Rock Drainage (ARD) Policy that states that "the use of base additives to neutralize acid generating materials" is considered a method to reduce oxidation of sulfides. Currently the water surface in the Buss Lake acts as a groundwater sink due to free water evaporation from the surface. The water level in the pit has reached an equilibrium condition with respect to recovery of the water table and no further water level recovery is anticipated. The waters within the Buss Lake will remain contained as defined in the ARD Policy.

CR will continue annual monitoring of the water level and water quality in the Buss Lake for 15 years. Field measurements shall include pH, EC and water surface elevation. A water quality sample shall be collected immediately following the initial lime treatment and an additional water quality sample shall be collected every three years subsequent to the lime treatment. The water quality sample shall be collected, handled and preserved in accordance with US Environmental Protection Agency (EPA) protocol and shall be analyzed by an EPA certified laboratory in accordance with the parameters listed on **Table 1**.

CR has collected intensive wildlife survey data in 2009 through 2010. Since CR will be developing ISR operations in the area, annual wildlife monitoring around the Buss I Pit will be incorporated into their wildlife monitoring plan.

5.2.2 Alternate Plan of Operations: Lake Backfill

If despite treatment with base additives, degradation of the Buss Lake water continues to occur, CR will implement a backfill option as shown on **Figure 6**. The Buss Lake will be backfilled to an elevation of 6675, which is 28 feet higher than the current pit lake recovery elevation and lies



BUSS LAKE
REVISED PLAN OF OPERATIONS

PUMP AND TREAT OPTIONS

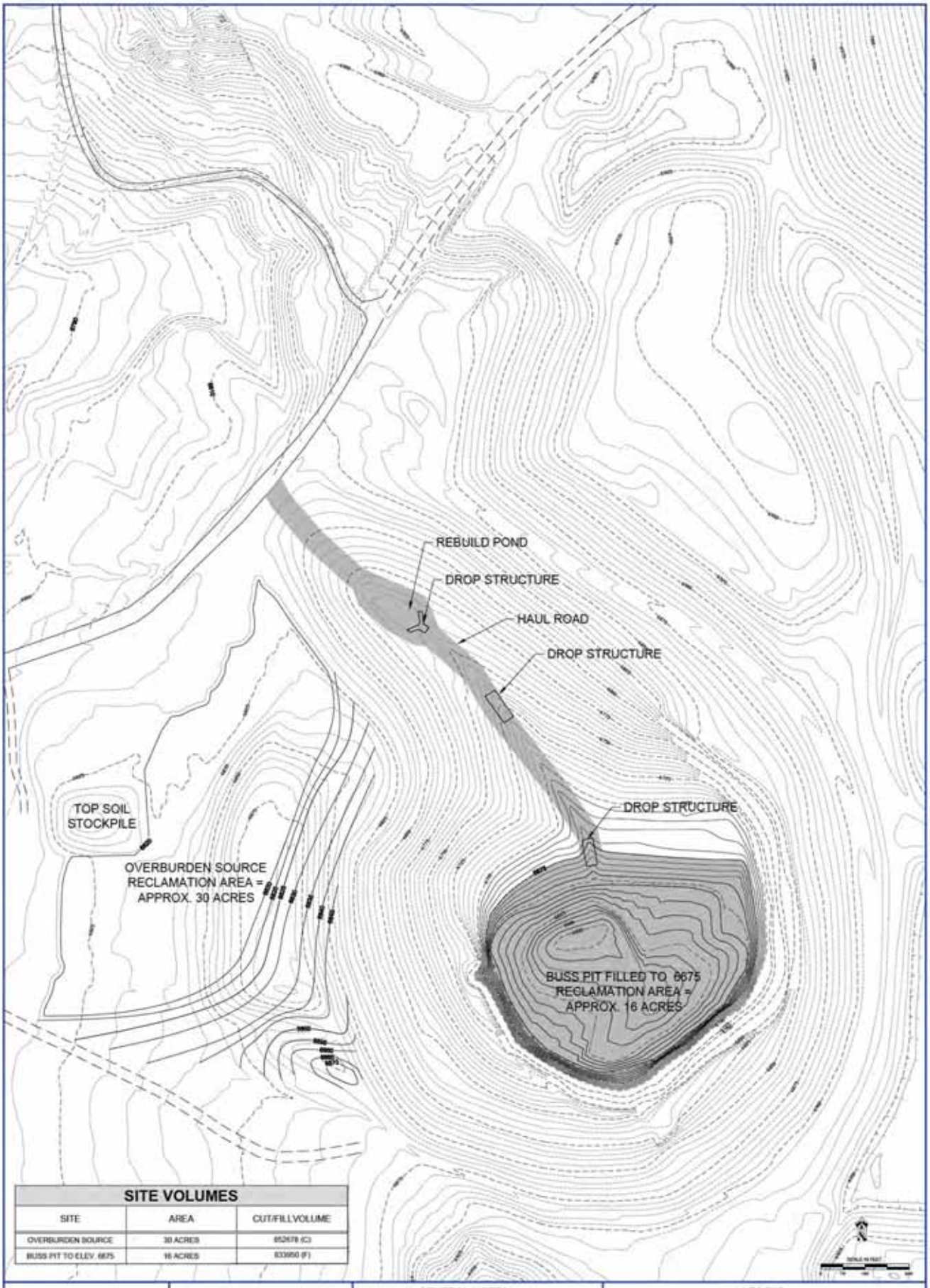
FIGURE 5

REVISIONS

GENERAL NOTES

LEGEND

EXISTING GROUND (CONTOUR INTERVAL 5 FT.)



SITE VOLUMES

SITE	AREA	CUT/FILL VOLUME
OVERBURDEN SOURCE	30 ACRES	852678 (C)
BUSS PIT TO ELEV. 6675	16 ACRES	833950 (F)

BUSS LAKE
REVISED PLAN OF OPERATIONS

PROJECT NUMBER: [illegible]	DESIGNED BY: D/D
DRAWN BY: 4/28/11	CHECKED: CDL
	APPROVED: CDL

BUSS PIT BACKFILL PLAN

FIGURE 6

REVISIONS

Lidstone and Associates, Inc.

GENERAL NOTES

LEGEND

6725
EXISTING GROUND (CONTOUR INTERVAL 5 FT.)

6825
PROPOSED GROUND (CONTOUR INTERVAL 5 FT.)

AREA OF ADDITIONAL DISTURBANCE

above the anticipated future groundwater recovery elevation. The determination to “backfill the pit” will be made, if, after treatment, the pH of the Buss Lake water shows an identifiable downward trend and if, the water quality remains below 6.5 s.u. for a period of three consecutive years. The backfill option is not the preferred action as it will require the disturbance and reclamation of 32 acres of successful reclamation and over 850,000 cubic yards of material movement. This proposed backfill option will use all of the available spoils, suitable subsoils and topsoil available on the west side of the current reclamation area. Any backfill proposal, which dictates a higher elevation will require new and additional areas of reclamation disturbance and will compound the negative footprint of this remediation effort. CR has completed an analysis of the proposed 6675 elevation and finds that it will meet the intent of the modified Plan of Operations: to eliminate the acid impoundment as discussed below.

Earlier planning studies (Lidstone and Associates, Inc. 2009) indicated that a backfill option should be completed to an elevation 20 feet above the proposed water table recovery elevation. The 1993 PRI Plan of Operations (WYW 127579) identified a post mining water table recovery to an elevation of 6686 based on historical information provided by TVA and incorporated into the PRI 1993 submittal (Permit 438-A2). The information was considered the best available information in 1993. The 2009 LA report incorporated all of the PRI well drilling information (over 40 wells within the area) and reviewed the 1973-1978 TVA drilling and identified a water table within the Buss area ranging from 6610 to 6690. LA noted (page 5 of that report) that “faulting and fracturing appeared to influence the water table locally”. LA predicted that the water would stabilize between 6650 and 6660 in that report and presented two backfill options (backfill to 6660 and 6700 feet AMSL). Since even the completion of that report, all data suggest that the free water table has reached and will remain near the 6650 elevation as it has between 1998 and 2010. Since the completion of the 2009 report there have been two very wet years in the Gas Hills, yet the water table has not risen. This information is presented on **Figure 4** of this report and clearly indicates that the groundwater recovery has reached and remained at an equilibrium state for over 12 years. Even under a backfill scenario, neither LA nor CR feel that the groundwater recovery data support the 6686 feet elevation predicted in the report. The proposed backfill elevation to 6675 is 28 feet higher than the current groundwater recovery elevation, which all evidence supports as steady state. Once a backfill plan is implemented, one would anticipate a higher level of groundwater recovery. However the data do not support that such a recovery will exceed 28 feet.

The proposed backfill plan will require CR to strip reclamation topsoil across 35 acres and stockpile near the Carol Shop Road. Such an effort will likely lose a certain volume of topsoil because of contamination of the topsoil by the underlying overburden material. Three drop structures will be removed from the reclaimed drainage to the Buss Pit and a haul road will be constructed to the Buss Lake water surface. The riprap will be separately stockpiled near the Carol Shop Road. Approximately 34 million gallons of water will be pumped from the Buss Pit to the Buss III Pit to allow access to shoreline for haul trucks and a haul pattern. This water will be treated with lime at the Buss III Pit location. CR will then haul 610,700 cubic yards of overburden from the west overburden source area to the Buss Pit as backfill. CR will encounter native materials at an approximate elevation of 6825. Based on past reclamation experience in this area, CR anticipates that these materials will include a combination of buried topsoil and suitable overburden. CR will strip 5 to 7 feet of material from this location and haul approximately 242,000 cubic yards of suitable material to the Buss Pit area. This will result in 10 feet of suitable upper cover. CR will commit to test the final regraded surface (upper five feet) to ensure cover soil suitability in accordance with DEQ/LQD Guideline 1 for Overburden

Suitability. All disturbed areas, including haul roads, borrow areas and final backfill will be ripped and disked prior to topsoil placement. CR will commit to replace 12 inches of topsoil (74,000 CY) over a minimum of five feet of suitable subsoil or overburden. CR will commit to placing a six inch layer of gravel (9000 CY) at a depth of 24 inches (below the topsoil and the upper lift of suitable overburden) in the topographic low (i.e., the immediate floor of the reclamation pit). The reclamation site will be drill seeded with a seed mix approved by BLM. CR recommends more salt tolerant species near the floor of the pit and upland seed mix commensurate with the current and successful seed mix. Drop structures will be rebuilt where appropriate.

The total estimated material movement is 930,000 to 950,000 cubic yards. Backfill material will originate from the west spoil pile and will include a final lift of native material including topsoil that was historically buried below the original TVA dump. CR characterized the material within this pile in 1993 and 1994 and these data were submitted with the original Plan of Operations (WYW 127579) and are included within **Appendix D** of this document. CR does not propose additional characterization in advance of the backfill plan. Based on the historical sampling data, the spoils material is suitable. The mine spoils used for backfilling were characterized for pH, extractable metals, salinity parameters, and lime ($CaCO_3$) content. The mine spoil materials contained low concentrations of salinity and extractable metals, and the majority of the materials had saturated paste pH values greater than 7. The spoils drilling data exhibited an average lime content of 1% suggesting an inherent capacity to neutralize acid. Acid/base accounting was not conducted. The suitability of these materials is further supported by overburden characterization data from the TVA 1978 permit. TVA analyzed 33 overburden samples and only one sample (#14205) showed any potential for acidity (18 meq/100g). The pH range of all other samples was 6.7 to 8.2 with an average value of 7.6 s.u. These data are also presented in **Appendix D**. While it is possible that some of the spoils used for reclamation could be acid producing, geochemical characterization has indicated that the majority of mine spoil samples will be suitable for general backfill purposes. It is likely that the limited amount of calcite present in the spoils will buffer the pH of the more acidic impoundment water until that calcite was consumed.

Because the backfilled Buss Pit will continue to remain as a topographic low, one should anticipate that the site will remain a “salt sink”. This effectively means that salts will accumulate where surface water collects and evapotranspiration of the plants will draw the salts to the near surface. The groundwater table will further complicate this condition since it is anticipated that final groundwater will be within 10 feet of the final ground surface. A capillary fringe will likely carry salts to the near surface and in the vicinity of the root zones of the plants. For that reason CR’s proposed Alternate Plan includes a “gravel barrier”. The purpose of the six inch layer of gravel (at a depth of 24 inches) is to provide a capillary rise barrier (from water movement from below) and a mechanism to flush the salts (gravity drainage from above) below the rooting zones of the plants. The proposed near surface grading plan and selective handling of materials represents Best Available Technology in handling saline and alkaline soil conditions. In summary, although the acid lake problem will be ameliorated by the backfill option, revegetation efforts should consider salt tolerant and wetland species. This will be appropriate since all surface drainage within the pit is interior and water will likely collect at the floor of the pit during wet years.

5.3 Rock Characterization and Handling Plan

The 2009 LA report addressed rock characterization in the vicinity of the Buss Pit. CR has presented two alternatives which will address the Buss Lake acid conditions. The initial lime treatment plan will over lime the Buss Lake waters and will buffer the acid generating capacity of

the surrounding rock. If the lime is completely consumed and acid conditions return, CR has committed to implement an Alternative Plan, which will entail pit backfill. If the backfill plan is implemented it will eliminate the open water over the oxidized bench identified at elevation 6634. CR believes that this bench is the principal source of acid forming materials and will be isolated from ongoing exposure to the weathering process. Good quality spoil material will provide additional buffering capacity as the backfilled material becomes saturated by infiltrating groundwater. Over time, the oxygen will be consumed and a reducing environment will develop. This will slowly reduce the acid generation capability of the rock outcrop. No additional rock handling will be necessary.

5.4 Quality Assurance

Quality assurance (QA) comprises all those planned and systematic actions that are necessary to provide adequate confidence that a product or service will satisfy the requirements for quality. Quality Control (QC) is the process used to ensure a certain level of quality in a product or service. Both NRC and LQD regulations require that an approved QA/QC program be established for each operating facility prior to permit or license approval. Required QA/QC program elements include:

- Organizational structure and responsibilities of managerial and operational personnel;
- Qualifications of personnel involved in quality activities;
- Standard operating procedures;
- Records and documentation of quality activities;
- QC in environmental sampling, including air, soil, vegetation, surface water and groundwater;
- Laboratory QC;
- QC for radiological and non-radiological effluent monitoring systems;
- Data verification and validation;
- Assessments and audits; and,
- Preventive and corrective actions.

CR has an approved QA/QC Plan for their operating Smith Ranch-Highland (SRH) Uranium Project, which is a part of CR's ISO 14001:2004 certified Environmental Management System. Because the Gas Hills Project will be operated as a satellite to the SRH Uranium Project, the existing comprehensive QA/QC plan will also apply to the Gas Hills Project. In a similar fashion, all work conducted on behalf of Permit 438 (the Buss Plan of Operations) will fall under CR's approved QA/QC Plan.

CR is committed to ensuring minimal disturbance to soils, vegetation, wetlands, wildlife and cultural resources throughout the life of the project. Prior to implementing this modification to the BLM Plan of Operations, CR will complete all required NEPA survey and investigation efforts. Since the entire project area has been previously disturbed and reclaimed, CR does not anticipate that there will be any NEPA related issues. CR will conduct all operations such that there will be minimal to no disturbance to wildlife or raptors. Mine operations personnel will be trained in these environmental procedures.

5.5 Spill Contingency Plan

It is CR's goal to prevent spills of any kind. CR has developed and implements spill contingency plans that are followed in the event of a spill at their SRH operating facility.

Construction disturbances and associated potential for the discharge of pollutants into Waters of the State via storm water runoff will be controlled using Best Management Practices as described in CR's Gas Hills Project Storm Water Pollution Prevention Plan (SWPPP). The SWPPP was prepared as part of the Gas Hills DEQ/WQD general Permit No. WYR103870 to discharge storm water associated with large construction activity under the Wyoming Pollutant Discharge Elimination System. The SWPPP is applicable to work at the Buss Pit area and will be modified whenever there is a change in design, construction, operation or maintenance that may change the potential for the discharge of pollutants into Waters of the State. A copy of the SWPPP is already kept on site. When operations commence at the Buss Pit Project, this construction permit will be converted to an industrial activity permit.

CR's SRH facility maintains and regularly updates a Spill Prevention, Control and Countermeasure (SPCC) Plan for operations involving petroleum products, which includes a detailed procedure for mitigating petroleum spills. In summary, should a spill occur, it will be contained, the location recorded, the volume estimated, responsible parties notified, samples collected to determine appropriate regulatory notification, appropriate clean up procedures completed, and procedures modified to prevent future similar spills. A copy of CR's SPCC Plan will be kept on site once construction commences. All equipment refueling activities will take place at the staging area (near the Carol Shop Road) or near the Carol Shop. The pump generator will be fully contained so that there will be no discharge of fuel into waters of the State.

A copy of CR's SHEQ Management System comprehensive procedure manuals will be kept on site once construction commences.

5.6 Project Schedule

Project work (Base Additives) will commence within one year following approval of the Modified Plan of Operations. Work will be completed within 60 days of project commencement. Surface disturbance will be topsoiled and revegetated by the fall seeding window.

5.7 Project Access and Facilities

Primary access to the project site will be either via Casper or Riverton. State Highway No. 136 is expected to be used for commuting by the majority of the work force for the Buss Pit project. The airports with scheduled commercial airline services that are closest to the Gas Hills site include Riverton Municipal Airport about 47 miles due west-northwest of the site and Natrona County International Airport about 56 miles due east of the site.

5.8 Road Ownership and Bonding

The AML Road was constructed by the DEQ/AML program in 1989 to provide access to reclamation projects within and adjacent to the Project site. The road crosses land owned by Philp Sheep Co. and the U.S. Government (BLM). A use agreement has been obtained from Philp Sheep Co. for that portion of the road that crosses their property. CR already carries a reclamation bond for the AML Road (see LQD Reclamation Plan (Permit 687) Table RP4-1: Reclamation Cost Estimate, part VII Misc Reclam, part II, access road reclamation). Prior to

project construction, CR will obtain a right-of-way (ROW) from BLM for the portion of the AML Road administered by them, in accordance with 43 CFR 2800. CR will accept the maintenance and reclamation responsibility for that portion of the AML Road that CR plans to use for primary access to the Project. LQD Permit Appendix A-Surface and Mineral Rights Plate A-1: Surface Ownership Map shows the surface ownership of areas including these roads.

The AML Road and the portion of the Dry Creek Road that will be used for primary access will be upgraded under Permit 687. The AML Road on federal surface will be upgraded with culverts and gravel surface prior to facilities construction, including proposed road realignments to allow for pond construction in accordance with BLM standards presented in BLM Manual 9113 – Roads and the BLM Gold Book. Dry Creek Road segments, on both private and federal surface, will be upgraded to meet Fremont County standards. The upgraded roads will be approximately 24 feet in width and will be graded, drained, surfaced, and capable of carrying highway loads. Plans for the upgrades will be submitted to BLM, Fremont County, and LQD for review prior to commencement of road construction. Professional engineering design and construction oversight will be employed as required.

Road base gravel needed to upgrade access roads may be hauled by truck to the site from off-site quarries. Specific quarry locations will be determined as part of the road upgrade plan designs to be prepared.

A ROW for the portion of the Dry Creek Road in the vicinity of the Project is held by Umetco Minerals. A portion of the road also crosses land owned by Philp Sheep Co. The road has been used for public access to the area for many years. Use agreements for the Dry Creek Road have been obtained from Umetco Minerals and Philp Sheep Co. Copies of these agreements are included in Addendum OP-5 to the LQD Operations Plan.

5.9 Project Site Roads

Main access to and from the Project will be over existing roads. A 1000 foot haul road will need to be completed to the Buss A stockpond to allow lime delivery and mixing. A 2000 foot road and ramp will be required to allow access to the Buss III Pit. If a backfill option is implemented, additional haul roads will be required. Primary haul roads are designed for two-way traffic including large trucks, while secondary access roads are designed for one-way traffic and light use. Both primary and secondary access roads will use culvert crossings at significant drainages. The LQD ISR Permit (No. 687) Operations Plan Plate OP-5: Typical Culvert Installation provides culvert design and construction details

5.10 Regrading and Reshaping

It will be the goal of final surface reclamation to return disturbed areas to as close to their original reclaimed condition. All salvaged topsoil will be replaced and any disturbance will be seeded with the approved native seed mixture.

Disturbed surfaces will be scarified and contoured followed by topsoil placement and seeding with the approved seed mix. Areas which have been compacted will be scarified, ripped, and/or disked as necessary to relieve the compaction and prepare the subgrade for topsoil placement. Where needed, the surface will be graded and contoured to approximate original contours and to blend with the surrounding topography. In areas that were stripped of topsoil, the salvaged topsoil will be reapplied. If necessary, the replaced topsoil will be disked to create a proper seed bed. Seed beds will be prepared only with appropriate soil and climatic conditions.

Topsoil will be placed in a single lift to avoid compaction. On slopes of 4:1 (horizontal to vertical) or steeper, topsoil will be placed along the contour. Topsoil will not be placed under excessively wet, dry or frozen ground conditions which would cause excessive clod or frost chunks to form. Topsoil thicknesses generally will be uniform and reflect the approximate thicknesses of topsoil originally available at the locality being reclaimed. Salvaged topsoil will be used for reclamation purposes.

Details concerning regrading and reshaping, building and facilities decommissioning, mine unit reclamation and revegetation, and topsoil handling are provided in the LQD ISR Permit Reclamation Plan (Permit 687).

5.11 Riparian Mitigation

There are no wetlands within the modified operations area.

5.12 Wildlife Habitat Mitigation

Affected wildlife habitat will be mitigated by revegetating disturbed areas as soon as practicable after construction in accordance with the Plan of Operations. After any remediation activity (lime treatment or backfill), vegetation will be reestablished in those areas disturbed by the final mitigation effort. As no effect is anticipated to existing rock outcrops, trees, seeps or ponds, mitigation is not planned for those features.

The Buss I Pit and much of the ISR project is on public land, and the surface is leased for livestock grazing purposes. All uranium processing and mine unit facilities will be fenced to exclude sheep and cattle from damaging or otherwise interrupting production infrastructure and activities. The Buss area reclamation site will be re-fenced to ensure no livestock incursion for the first five years. Fencing will be designed to allow wildlife access.

No power lines will be constructed as part of this project The BLM Lander Field Office outlined general time and area restrictions for drilling or other surface disturbing activities near raptor nests, sage grouse leks and mountain plover nests in a conditional drilling approval letter for Notice Level site activity (BLM, Oct. 2008). Conditions 6 through 8 of that approval letter therein state that, without prior consultation with BLM, drilling or other surface disturbing activities are not allowed:

- within 2 miles of active sage grouse leks from March 15 – July 15;
- within 0.75 mile of raptor nesting habitat from February 1 – July 31; and
- within 0.25 mile of mountain plover nesting habitat from April 10 – July 10.

CR will propose mitigation measures to avoid adverse impacts to any raptor, Threatened & Endangered species, or Migratory Birds of High Federal Interest on site. The primary mitigative action will be avoidance. Whenever possible, CR will avoid ground disturbing activities, including construction activities within certain areas during active nesting or breeding times. If avoidance is not practicable, alternative mitigation will be planned and implemented in consultation with BLM, the U.S. Fish and Wildlife Service, and Wyoming Game and Fish Department. Proposed mitigation may include construction of alternate nest sites on natural features, or the erection of appropriately sized nesting platforms. If needed, wildlife exclusion fences will be constructed as described in Section 6.2.2 above. Site speed limits will be implemented to reduce wildlife/vehicle collisions. Other proposed wildlife mitigation actions are described in the LQD Operations Plan Section 3.1.4: Wildlife Mitigation During Operations.

Adverse impacts to wildlife as a result of the ISR Project and reclamation of the Buss I Pit will be minimal for the following reasons:

- ISR activities disturb relatively small amounts of land surface at any one time.
- Areas disturbed by mine unit construction will be quickly revegetated and will then be available for wildlife use throughout the life of the Project. Livestock exclusion fencing will be limited to operating mine units and will be constructed so as not to impede wildlife movements.
- No big game migration routes or crucial winter habitats have been identified within or near the Project.
- Number of site workers involved in ISR activities is much less (50 to 80, versus several hundred) as compared to a conventional mining operation.
- Vehicular traffic will be limited with reduced speed limits used for safety purposes and to decrease the likelihood of vehicle and wildlife collisions.

5.13 Revegetation

All disturbed areas will be reclaimed and revegetated as soon as possible after construction has been completed. This revegetated acreage will be available for wildlife usage during the remaining life of the project. The approved permanent seed mixture is listed in the LQD Reclamation Plan **(**Permit 687**)** Table RP 3-1 and is include in **Appendix E** of this report. This seed mix will be modified with salt tolerant species (specific to lower 8 acres) following recommendations from BLM. This approved seed mix is comparable to what has been used at the original Buss Pit as well as other reclamation projects within the Gas Hills. It will reestablish a vegetative cover that is consistent with the pre-ISR land use of livestock grazing and wildlife habitat. If any of the individual seed species become unavailable or prohibitive in cost, appropriate substitutions will be made with prior approval of the BLM and LQD.

5.14 Isolation and Control of Acid-Forming, Toxic or Deleterious Materials

The modification to the existing Plan of Operations addresses handling of acid conditions at the Buss Lake. Any hazardous or toxic materials used on site will be handled, stored, and/or disposed of in accordance with state and federal hazardous materials requirements. Procedures for safe handling of processing operations materials are detailed in CR's approved QA/QC Plan for their operating SRH Uranium Project, which is a part of CR's ISO 14001:2004 certified Environmental Management System (see Section 5.4 above).

5.15 Removal of Buildings and Structures

This section is not applicable.

5.16 Post-Closure Management

The phased remediation effort consists of two major activities: (1) pump and lime treatment of the existing water; (2) final backfill, if monitoring data indicate that pump and treat is not successful. CR will monitor the success of the pump and treat option for a 15 year period. It is assumed that this period will coincide with Permit 687 mining and restoration operations. Should the pump and treat option not work, CR will implement the backfill option. This will include partial dewatering, material excavation from the west overburden source, backfill below the water table, selective handling and placement of a suitable upper overburden lift, material

testing as well as final topsoil handling and placement. Post closure management will include site inspection and revegetation monitoring.

When reclamation activities are completed, the final measure of reclamation success will be based upon criteria detailed in the LQD Reclamation Plan (Permit 687) Section 3.6: Vegetative Success Criteria. All reclaimed areas will remain fenced for a period of at least two years, or until the vegetation is capable of renewing itself with properly managed grazing and without supplemental irrigation or fertilization. The fencing will not be removed until BLM and LQD agree that the revegetated areas are ready for livestock grazing. Upon demonstration of vegetative success and bond release, the temporary fencing will be removed.

6.0 RECLAMATION COST ESTIMATE

As discussed at the January 26, 2011 meeting, CR recommends that the existing reclamation bond for the Buss area be assigned to that portion of the Buss area, governed by this proposed Plan of Operations Modification. The existing bond is $126,000.

The bond instrument currently is a letter of credit that is held by the DEQ and also names BLM. The reclamation costs must be reevaluated and the bonding instrument amount reset annually to satisfy LQD and NRC requirements. 43 CFR 3809.570 requires that BLM review and concur with reclamation plans and surety bond amounts. Each annual bond revision that is submitted to the LQD and NRC for review and approval also will be submitted to BLM for review and concurrence.

Under the provisions of 3909.570, a separate financial guarantee instrument with the Secretary of the Interior is not required if (a) the existing financial guarantee is redeemable by the Secretary, (b) it is held or approved by a state agency, and (c) it provides the same amount of financial guarantee as required by the BLM. CR will ensure that the Secretary of the Interior is an additional beneficiary on the Project's bonding instrument.

7.0 MONITORING

7.1 Post-Operational Groundwater Monitoring

CR does not propose any post operational groundwater monitoring. Mine Unit 4 baseline groundwater quality will be determined by CR during their Hydrologic Unit Testing Program. Groundwater monitoring will be part of the Permit 687 Plan of Operations.

The pump and treat option will not have any negative impact on area groundwater. The purpose of this option is to treat the contaminant water quality in place and maintain the existing status quo with respect to groundwater movement (i.e., a cone of depression). If a backfill option is implemented, CR predicts that groundwater at this site will be degraded for a period of time. There is no reason to believe that it will remain acidic, but there will be an increase in Total Dissolved Solids, elevated metals and elevated sulfates. This condition will likely persist until several pore volumes of upgradient groundwater have passed through the backfill. Based on past experience, groundwater will remain with a livestock class of use. This condition is common with every conventional pit backfill reclamation project in the Gas Hills and will not have a negative impact to groundwater usage. CR will monitor groundwater during their mining and restoration activities within their Mine Unit 4 and 5. CR will not line the walls of the pit or in any way treat the acid forming condition of the adjacent highwalls.

7.2 Post-Operational Vegetation Monitoring

The reclamation goal at the Project will be to return the land to a condition that will sustain the pre-mining land use of livestock grazing and wildlife habitat. The success of revegetation in meeting the land use goal will be assessed prior to application for bond release by using the Comparison Area (COMA) method as described in DEQ/LQD Rules and Regulations Chapter 3, Section 2(d)(vi)(C) and LQD Guideline No. 2: Vegetation. A COMA is defined as a land unit which is representative, in terms of physiography, soils, vegetation, and land use history, of a plant community where the pre-mining total vegetation cover and species diversity has not been collected, or where the area to be affected is small and incidental to the operation. The representative nature of each COMA is validated by a subjective field reconnaissance of the site or by subjective evaluation of the vegetation data generated by a sampling program. Post-mining quantitative data from the COMAs will be directly compared, by standard statistical procedures, to data from a reclaimed vegetation type when evaluating revegetation success for full bond release.

Revegetation will be considered successful when, at the end of the bonding period, the following have been demonstrated:

- Vegetation species of the reclaimed land are self-renewing under natural conditions prevailing at the site;
- Total vegetation cover of perennial species (excluding noxious weed species) and any species in the approved seed mix is at least equal to the total vegetation cover of perennial species (excluding noxious weed species) on the area before mining;
- Species composition and diversity are suitable for the approved post-mining land use; and,
- The above criteria are achieved during one growing season, no earlier than the fifth full growing season on the reclaimed lands.

Further details of vegetative success criteria are provided in Permit 687, LQD Reclamation Plan Section 3.6.

7.3 Air Monitoring

To ensure compliance with 10 CFR 20.1301, 20.1302 and 20.1501, CR will maintain a continuous air monitoring program at locations upwind and downwind relative to the 687 permit boundary. The air monitoring program will include passive gamma and radon monitoring devices. The Buss Lake site (Permit 438) is an inactive site and will not generate any air contaminants during the monitoring period. During construction, CR will meet all DEQ requirements for dust control and will apply water to control fugitive dust.

As the ISR Project will not contain yellowcake drying or packaging facilities, there will be no air effluent to be monitored. Air particulate air sampling will not be conducted.

7.4 Wildlife Monitoring

The most current occurrence and relative distribution of wildlife at the project site are reported in the annual wildlife survey reports (Permit 687) to both BLM and LQD. The initial baseline site wildlife surveys were conducted in 1992, 1993, 1994, 1996, 1997, and 1999. The results of these surveys are provided in Appendix D9 - Wildlife of the LQD permit application. CR resumed conducting site wildlife surveys annually in 2007; these annual Wildlife Survey Reports

have been submitted to LQD as addenda to the LQD Annual Report for the Project, and the BLM is copied on these reports.

The most current Wildlife Monitoring Plan was prepared in consultation with and approved by BLM, the lead agency for project wildlife issues, as well as Wyoming Game & Fish and the U.S. Fish and Wildlife Service. The plan provides the methodology and frequency of the annual monitoring as well as the specific species to be monitored. This approved plan was submitted to LQD in November 2010 as Addendum D9-E to the LQD Permit Appendix D9-Wildlife. CR met with the BLM Lander Field Office wildlife specialist most recently in February 2011 to discuss proposed updates to this plan, including reducing the number and frequency of surveys and eliminating surveys altogether for those species not observed within or near the permit area since 2007. The plan is undergoing revision to incorporate the findings of intensive site wildlife survey data collected 2009 through 2010.

Annual monitoring for active raptor and mountain plover nests will continue to determine proximity to currently proposed operational areas. If operations are or will be within prescribed buffer zones for the given species, temporary mitigation may be necessary. The primary mitigation will be avoidance, as discussed above.

CR will monitor potential water fowl activity in the area of the evaporation ponds. While birds and other wildlife may use the ponds for short, transient migratory stop-overs, the ponds are not expected to attract long-term residence of water fowl or other wildlife because they will not contain any food source or shoreline vegetation for hiding or nesting. There are numerous existing water bodies in the area that can provide food and hiding/nesting vegetation including West Canyon Creek, small stock ponds, and reclaimed open-pit mines.

8.0 MISCELLANEOUS INFORMATION

8.1 Exploration and Development Drilling Programs

There will be no drilling or exploration associated with this Modification to the Plan of Operations.

8.2 Temporary Closures

Permit 438 is an inactive pit and has been in a post reclamation status since 1995. No temporary closures are anticipated.

8.3 Baseline Operational and Environmental Information

The LQD permit application document, *Buss Reclamation Plan WDEQ Permit No. 438-A2 (Power Resources, 1993)* provides baseline data for the Plan of Operations. This permit amendment addresses the following:

- Preface/Introduction
- Reclamation Plan Summary
- Hydrology
- Mine Spoil Characterization
- Topsoil Resources/ Utilization
- Revegetation
- Wildlife
- Existing Reclamation

Updates to the surface and groundwater quality, wildlife, vegetation, and cultural resources information have been incorporated in the Permit 438 Annual Reports.

Another important reference for the Revised Plan of Operations is the report by Lidstone and Associates, Inc., July 2009 entitled "Evaluation of Water Level and Water Quality at the Reclaimed Buss 1 Reservoir". This report addresses:

- Mining History
- Review of Overburden Data
- Review of Adjacent Groundwater Quality
- Review of Geological and Geophysical Data
- Sulfide Oxidation
- Remediation Alternatives

8.4 Response to Comments

On February 07, 2011 Mr. Tom Foertsch, BLM CFO submitted questions and comments to Mr. Tom Young by email. CR has incorporated the response to a number of his questions within this document. To ensure that each comment/question was addressed, CR has incorporated a response to Mr. Foertsch's questions and comments in **Appendix F**.

9.0 REFERENCES

Cameco Resources (CR), October 2009: Gas Hills ISR WDEQ Permit No. 687 Update, volumes 1 through 9.

Cameco Resources, 2010. *Gas Hills ISR WDEQ Permit No. 687 Update* (CR, 2009 and 2010).

Cameco Resources, Meeting Notes with BLM:14 September 2010.

Cameco Resources, Meeting Notes with BLM:26 January 2011.

Cameco Resources, Tom Young letter to Tom Foertsch February 24, 2011.

Federal American Partners, 1978, *Buss Cap Reclamation Plan*. LQD Permits Number 323 and 438.

Lidstone and Associates, Inc., July 2009. "*Evaluation of Water Level and Water Quality at the Reclaimed Buss 1 Reservoir".*

Power Resources, 1993. *Buss Reclamation Plan WDEQ Permit No. 438-A2.*

US Bureau of Land Management Hand Delivered from Tom Foertsch (9/14/10) Briefing Cameco Buss 1 Acid Lake.

US Bureau of Land Management Email from Tom Foertsch (2/7/11) Buss Pit POO Modification.