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APPENDIX D6 - HYDROLOGY

1. GENERAL HYDROLOGY

The Gas Hills Project encompasses approximately 8,136 acres of land surface in the East Gas Hills area of Central Wyoming. Approximately 1,110 acres in the vicinity of the project have been affected by previous open pit and underground mining operations. Outside of the PRI Permit Area, extensive open pit mining and surface reclamation has occurred throughout the Gas Hills. Areas previously disturbed by mining are summarized in Table D6-1-1 and outlined on Plate D6-1. More detailed information on historic disturbances and reclamation activity is provided on Plates D1-E and D1-W. Relevant to this document, open pit mining and limited underground mining has occurred in the West Gas Hills area (Pathfinder and UMETCO), the Central Gas Hills area (Pathfinder), and the East Gas Hills area (Federal American Partners and UMETCO). These historic mining operations have significantly modified the surface and ground water regimes of the area. The Veca, A-8, PC, B2/B3, and Tee Pit areas were reclaimed between 1989 and 1992 as part of Wyoming's Abandoned Mine Lands (AML) program. The Buss area was reclaimed by Power Resources, Inc.(PRI) according to the reclamation plan approved by WDEQ/LQD under Permit to Mine 438-A2. Reclamation is ongoing at UMETCO's East Gas Hills Mine (Permit 349C) and Pathfinder's Central Lucky Mc Mine (Permit 356C).

The Eocene Wind River Formation is the primary geologic unit of interest within the Permit Area. It consists of greater than 600 feet of fluvial sediments with alternating beds of claystones, sandstones and conglomerates. The Wind River Formation in this area is underlain by units ranging from the Cretaceous Frontier Formation through the Mississippian Madison Formation. The stratigraphy of the units underlying the Wind River Formation in the area is summarized in Table D5-1-1 in Appendix D5 to this permit application. Quaternary alluvial deposits are present in West Canyon Creek and Fraser Draw. A geologic map of the project area is included in Appendix D5 (Plate D5-3).

Surface and ground water appropriations in the area have been historically used for livestock watering, by wildlife, and for limited domestic purposes. Some ground water resources have also been used for uranium mining related (industrial) purposes. The Wind River Aquifer has been locally dewatered during previous open pit and underground mining activities associated with the Pathfinder Lucky Mc mine located northwest of the Permit Area, and in the East Gas Hills located northeast of the Buss Pit in Mine Units 4 and 5. The residual drawdown associated with these historic mining activities decreases with increased distance from the pit(s) and/or underground workings.

Table D6-1-1. Historic Mining Disturbances.

Name	Location	Nature of Disturbance	Status of Disturbance
UPZ Shaft	Mine Unit 2	Underground Mine Shaft	Reclaimed 1991, TVA Permit # 438
Pathfinder Lucky Mc Area 4 Pit and Spoils	North of Mine Unit 3	Pit Open to Water Table, and Associated Spoils	Reclaimed as Ground Water-Fed Impoundment, Ongoing by Pathfinder, Permit # 356C
Atlas Mine Workings	Mine Unit 3	Underground Mine Workings Approximate Bottom Elevation 6400'	Surface Reclamation, 1989, AML Project 16C
Buss Pit and Spoils	Northeast of Mine Unit 4	Buss I, II, III and Cap Pits and Associated Spoils	Reclaimed as Ground Water-Fed Impoundment, 1995 by PRI, Permit # 438
Bengal Pit and Spoils	Northeast of Mine Unit 4	Open Pit and Associated Spoils	Reclaimed as Backfill, 1988-1991 by TVA, Permit # 438
Two States Pit and Spoils	North of Mine Unit 4	Open Pit and Underground Workings, Bottom Elevation 6670-6700, Above Water Table	Future AML Project 16I
Veca Pit and Spoils	South and West of Mine Unit 5	Open Pit and Associated Spoils	Reclaimed as Surface Water Impoundment, 1989, AML Project 16D
Tee Pit	East of Mine Unit 5	Open Pit and Spoils	Backfilled, Reclaimed 1989, AML Project 16E
A-8	Northeast of Mine Unit 5	Open Pit and Spoils, Underground Workings	Backfilled, Reclaimed 1989, AML Project 16E
C-13	Northeast of Mine Unit 5	Open Pit and Spoils	Backfilled, Reclaimed Pre 1988 by Umetco, Permit # 349C
C-18	North of Mine Unit 5	Open Pit and Associated Spoils	Future AML Project
Rox Shaft	West of Mine Unit 5	Underground Mine Workings, Ion Exchange Facility	Surface Reclamation, 1989, AML Project 16C
Thunderbird Shaft	West of Mine Unit 5	Underground Mine Workings	Surface Reclamation, 1989, AML Project 16C
PC Pit	West of Mine Unit 5	Open Pit and Spoils	Reclaimed Ground Water-Fed Impoundment, 1991, AML Project 16F

Locations of Disturbances Shown on Plates D6-1 and D6-3.

2. SURFACE WATER

2.1 Drainage Basin Description

The Gas Hills Uranium District lies primarily along the south-central flank of the Wind River Basin. The Beaver Divide, which trends along the southeastern portion of the District, forms a prominent drainage divide between the Wind River and Sweetwater River Basins. Only small portions of the district are within the Sweetwater River Basin. Major drainages within the project area are tributary to the Wind River.

Within the PRI permit boundary, surface drainage is primarily to West Canyon Creek, with lesser amounts of drainage to Fraser Draw. West Canyon Creek has its headwaters at the Beaver Divide in the southern portion of the project area. Its tributaries drain approximately 70 percent of the project area. West Canyon Creek is tributary to Canyon Creek, then to Deer Creek, and subsequently to Poison Creek. Fraser Draw and its tributaries drain approximately 25 percent of the southwest portion of the Permit Area. Fraser Draw is tributary to Muskrat Creek. Both Poison Creek and Muskrat Creek are within the Wind River Basin. Only a minor portion (less than 2 percent) of the area lies within the West Sage Hen Creek drainage in the Sweetwater River basin. The local topography and surface water drainage system are shown on Plate D6-2.

Tributaries to West Canyon Creek and to Fraser Draw drain in a northwesterly direction through the Permit Area. The headwaters of these tributaries are located along steep slopes of the Beaver Divide, which trends along the southeast boundary of the Project. The tributary drainages are generally small and have drainage basin areas that range from 0.02 to 0.24 square miles. Basin slopes are relatively steep, averaging from 10 to 15 percent. The drainage basins are elongate, and sub-dendritic in pattern. The natural elaboration of the stream network is characterized by the ongoing development of channel headcuts.

Many of the basin areas have been disturbed by previous surface and underground mining activities. These disturbances include total blockage of channels by spoils piles, stream capture by mine pits, and surface disturbance by exploration activities. Gully erosion and headcutting are actively occurring adjacent to the pit highwalls and oversteepened reaches near the basin divide. Sedimentation and ephemeral ponding occurs where drainages are impounded by spoil piles. Areas disturbed by historic mining are summarized in Table D6-1-1 and located on Plate D6-1.

In the Mine Unit 3 area, the West Fork of Fraser Draw drainage area has been affected by past mining activities. Historic underground mining at the Atlas Mine has produced surface spoil piles and surface disturbances. These spoil piles and surface disturbances were reclaimed under the AML-16C Project. Downstream of the project boundary, the drainage has been relocated and captured by operations at Pathfinder's Lucky Mc Mine. Lake Atlas is an impoundment of the West Fork of Fraser Draw created by Pathfinder's operations (Pathfinder's approved reclamation plan refers to the lake as the "Little Z" impoundment). This impoundment currently collects runoff primarily from the West Fork of Fraser Draw.

Following completion of Pathfinder's reclamation, runoff from the East Fork of Fraser Draw will be routed to Lake Atlas (Little Z Reservoir) as well. According to Pathfinder's reclamation plan, discharge from the lake will be routed to their Area 4 Pit upon completion of their reclamation. When the water surface within the Area 4 Reservoir reaches the estimated final water surface elevation (6491 ft. M.S.L.), the pit will discharge to the 4X Pit. AML reclamation designs for this mining disturbance are ongoing.

The existing channels are typically incised, with v-shaped to trapezoidal stream channels. Channel sideslopes range in slope from 1:1 to approximately 2.5:1. Vertical banks exist in areas where active erosion is occurring. Vegetative conditions in the channel beds range from being relatively well-grassed to a cover of scattered shrubs. The reach of West Canyon Creek, upstream of monitoring site WCC-2 (Plate D6-1), supports the most vegetation of any channels within the study area. Perennial discharge from upstream springs supports a dense cover of grasses and shrubs. Isolated groups of cottonwoods and willows are found along the reach of West Canyon Creek between WCC-2 and the southern permit boundary. This reach lies downstream of the spring which provides perennial flow within the reach. Tributaries within this basin are also well-vegetated and may receive discharge for a portion of the year from intermittent springs. Vegetation within the Permit Area is discussed in detail within Appendix D8 of this permit.

Where the stream channels are impacted by the adjacent disturbances, the channel beds are poorly vegetated to barren. Channel bed material is non-cohesive and typically within the medium to fine sand textural range. Disturbed channels often contain high volumes of sediment, remnant from the historic mining activities. These channels were characterized in the Buss Reclamation Plan, November 1993 (WDEQ/LQD Permit 438-A2).

2.2 Surface Water Hydrology

Drainages in the Gas Hills region are generally ephemeral. They flow only in response to snowmelt or rainfall events. Therefore, with the exception of isolated spring-fed reaches, these channels are dry for the majority of the year. These channels are generally above the local water table except at a few locations where springs or seeps may exist. Springs originating from perched aquifers within the White River Formation or at the contact between the White River and the underlying Wind River Formation exist. Discharge from these springs can create a limited reach of perennial flow.

Mine Unit 4 is drained primarily by West Canyon Creek. This creek is fed by a spring located immediately south of the project boundary. The spring provides perennial flow to the upstream reach of West Canyon Creek. Two surface water monitoring sites were constructed by PRI in September 1996 and reconstructed to permanent installations in October 1977. The locations of these sites (WCC-1 and WCC-2), are shown on Plates D6-1 and D6-2. The purpose of the stations is to characterize surface water quality upstream and downstream of the proposed disturbance area. Monitoring station WCC-1 was established in the upper portion of the watershed, approximately 1,200 feet downstream of the springs.

Monitoring station WCC-2 is located near the downstream end of the intermittent surface discharge.

Additional hydrologic analysis points have been selected for the purposes of surface hydrology evaluation. These sites are depicted on Plate D6-2. The locations of the hydrologic design points were selected to evaluate surface water discharge at key locations. Therefore, they either coincide with the surface water monitoring sites (WCC-1 and WCC-2), the permit boundary (WFD and EFD), or the confluence with a higher order stream (WCC-3). Discharge at hydrologic analysis points WCC-3, WFD, and EFD is ephemeral, therefore, surface water monitoring stations have not been established. In the event that discharge is occurring at the time that water quality monitoring is taking place, water quality samples will be obtained at these locations.

Each of the two permanent monitoring locations (WCC-1 and WCC-2) has been equipped with a combination v-notch/cipolletti weir to facilitate sample collection and discharge measurement. Calibrated staff gages allow for instantaneous discharge measurement at the time of sample collection. The weirs are capable of accurately measuring discharges as low as 5 gpm and as high as 2,100 gpm. Rating tables for the staff gages are included in Addendum D6-1. Grab samples for water quality monitoring purposes can easily be obtained in the weir nappe. Photographs of the WCC-2 monitoring station are provided as Figure D6-2-1.

Discharge from the spring was measured at 9 gpm (WCC-1, September 1996). Based on fourth quarter, 1996 observations, flow from this spring is predicted to occur year-round. At the time of third quarter gaging activities, there was no difference in flow between the upstream (WCC-1) and downstream (WCC-2) gaging sites. Approximately five hundred feet downstream from WCC-2, surface discharge disappears. In summary, approximately 1.7 miles of West Canyon Creek flows on a perennial or intermittent basis. The average (Fall, 1996) surface flow ranged from 9 to 10 gpm.

In the Mine Unit 3 area Cameron Spring discharges to the East Fork of Fraser Draw. The spring flows at a rate of approximately 2 to 3 gpm. Discharge from the spring can be monitored at a 3-inch Parshall flume. All discharge is impounded approximately 500 feet downstream of the spring where a stock pond has been constructed. This spring and associated stock pond is a permitted water right owned by the Matador Cattle Company (SEO Permit number P44457W). Photographs of Cameron spring and the downstream gaging point is provided as Figure D6-2-2. Other isolated wetland areas have been delineated downstream of the impoundment where water is temporarily impounded by earthen dams.

The climate greatly influences the local hydrology and produces a landscape typical of an arid region. Flashy, high-intensity storms are characteristic of the area. National Weather Service data for the Gas Hills 4E weather station located at the Lucky Mc millsite, were retrieved from the Wyoming Water Research Institute at the University of Wyoming. The period of record available is from September 1962 through July of 1996. There are 34 years

of daily climate data including precipitation and temperature ranges. Figure D6-2-3 presents a bar chart of the mean monthly data. Based upon the entire period of record, the mean annual precipitation is approximately 8.9 inches. Approximately half of the annual precipitation usually occurs between April and June, while less than a third occurs from October through March. Snow commonly falls as early as October and often as late as May. July is the warmest month and January the coldest. At the Gas Hills 4E weather station, the mean maximum and minimum temperatures for January are estimated to be 28°F and 10°F, respectively. The highest and lowest temperatures recorded since 1963 are 96°F and -34°F. The U.S. Weather Bureau estimates the average potential evapotranspiration rate for the site to be 22 inches annually. Average lake evaporation is estimated at 42 inches annually. Table D6-2-1 presents the point precipitation analysis utilized in the reclamation plan for the Buss/Russ area (PRI Buss Reclamation Plan Permit No. 438-A2, 1993).

Runoff from intense rainfall (i.e., thunderstorms) can be large. Runoff from spring snowmelt can also be significant depending upon the actual snowfall for any particular year. Methods of estimating stream discharge in ungaged watersheds have been developed by Lowham (1988) and Craig and Rankl (1978). Lowham examined streamflow data for several hundred gaged watersheds and developed regression relationships based upon basin characteristics (size, geographic factors, elevation, etc.). Lowham's regression equations are generally applicable to basins greater than five square miles in area. Craig and Rankl's (1978) methodology is generally accepted as more appropriate for small drainage basins. Table D6-2-2 presents the basin characteristics used in the hydrologic estimations. For the purposes of comparison, estimates of flood flows using both methods for selected locations are tabulated in Table D6-2-3. Flood volumes, estimated using Craig and Rankl's methodology, are also presented.

2.3 Surface Water Quality

2.3.1 Surface Water Quality Data

Surface water quality within the study area was characterized using data collected during the 1996 and 1997 water quality monitoring effort, augmented with data obtained from previous mine permits. Two permanent water quality monitoring locations were established, and preliminary data were evaluated. The locations and descriptions of the stations (WCC-1 and WCC-2) are described in Section D6.2.2. Grab samples and discharge measurements will be obtained at these locations on a quarterly basis. Quarterly baseline data have been collected and incorporated into this Appendix. The data collected from WCC-1 and WCC-2 have been augmented with data obtained from existing mine permits to characterize background water quality.

The surface water quality data are presented in a spreadsheet format in Addendum D6-2. These spreadsheets were prepared from electronic data files provided by Energy Labs, and will be updated as additional water quality data are collected. Historic data at sites no longer monitored have also been included in Addendum D6-2 (i.e, SW-1, SW-2, SM-5, SM-6, and SM-7) In some cases, the historic data are incomplete, and sampling techniques cannot be

verified. However, the data are useful for comparative purposes with the current data, and can be used to document long-term water quality trends, as well as spatial variability of water quality within the study area. Laboratory data sheets for the WCC-1 and WCC-2 samples are on file with PRI and will be provided as requested.

The permits and documents reviewed for historic water quality monitoring data include:

Pathfinder's Lucky Mc Permit (TFN 1 4/112 Permit no. 356 C A1),
Pathfinder's Project 9 Permit (TFN 1 6/258 Permit no. 356 C A2),
Union Carbide's Rim Permit (TFN 1 4/298 Permit 356C-L2),
Buss Reclamation Plan (Permit 438-A2), and
East Gas Hills Regional Planning Document (Forsgren, Perkins & Assoc. 1988)

Several types of water bodies have been sampled. Data are available from ground water-fed impoundments (i.e., Buss and PC Pits), springs (i.e., Cameron Spring), and spring-fed perennial stream reaches (i.e., West Canyon Creek). Monitoring stations SM-5, SM-6, and SM-7 were "true" ephemeral discharge monitoring sites. These sites were equipped with a crest gage to measure the maximum water surface elevation of an event and a self-sampling water sampler. These sites were established by Pathfinder Mine and monitored intermittently from 1984 to 1989. Historic and existing surface water monitoring sites are shown on Plate D6-1.

2.3.2 Characterization of Surface Water Quality

Water quality within the different surface water bodies varies considerably in chemical and physical quality. The variation is a result of numerous factors including the degree of impact from previous mining activities, stream discharge, water source (i.e, ground water vs rainfall runoff), etc. Figure D6-2-4 displays a trilinear diagram which graphically portrays the differences in water quality.

West Canyon Creek data characterize a perennial spring-fed reach. Historic data, obtained at SW-1 and SW-2, show very little variation with time or between the upstream and downstream stations. Initial water quality data obtained at sites WCC-1 and WCC-2 are consistent with the historic SW-1 and SW-2 sites. Water in West Canyon Creek during baseflow conditions can be characterized as a high quality, calcium-bicarbonate type water based upon the principal ions present. The pH range of the stream is slightly alkaline with a mean pH of approximately 8.1 s.u. Baseflow TDS shows relatively little variation with a range of 186 to 337 mg/L. With few exceptions, metals concentrations are consistently below detectable levels. Arsenic has been detectable in most samples and ranges from 0.004 mg/L to 0.020 mg/L.

Uranium in West Canyon Creek ranges from 0.01 mg/L to 0.08 mg/L. Historic radium 226 measurements have generally been below 5 pCi/L, however, higher concentrations have been observed. Baseflow discharge measured at the new sites has been consistently between 7

and 8 gpm. There are no measurable differences in terms of both quality or quantity between the upstream and downstream stations during baseflow conditions.

Surface water quality data obtained during actual runoff events are extremely scarce due to the low frequency of discharge events. Those data that are available show that surface water runoff is extremely variable in quality. Pathfinder's sample sites SM-5, SM-6, and SM-7 were equipped with self-sampling devices. Despite the fact that no corresponding discharge data are available, they can be used to qualitatively evaluate the general character of surface water discharge within the permit boundary. The high variability in data at these sites may also be reflective of impacts of the upstream mining disturbance. Sample sites SM-5 and SM-6 are located on the East Fork of West Canyon Creek within the Mine Unit 4 and 5 areas. These samples which originate from the Mine Unit 5 area are generally a calcium-sulfate type water. TDS observations range from less than 100 mg/L to over 2,400 mg/L and pH ranges from 3.3 to 7.6 s.u. at the two sites. With the exception of iron and manganese, trace metals have been below detectable limits. The Veca Pit which impounds surface water from the mine reclamation area in the East Gas Hills is also a calcium-sulfate type water. However, concentrations of the individual analytes are higher in relation to SM-5 and SM-6.

Pathfinder's sample site SM-7 and Cameron Spring, located in East Fraser Draw of the Mine Unit 3 area, have certain similarities in chemical quality. Both are slightly alkaline (pH 7.5 to 8 s.u.), and TDS content is relatively low (typically less than 200 mg/L) with a maximum recorded concentration of 786 mg/L.

The Buss Pit, although influenced by surface water, is ground water derived and therefore exhibits chemical quality reflective of the Wind River Aquifer. Water within the Buss impoundment is a calcium magnesium-sulfate type based upon the predominant cation and anion. Concentrations of the principal cations and anions are generally an order of magnitude higher than other surface water bodies. Likewise, TDS is significantly higher and approaches 3,000 mg/L. Trace metals are generally below detection limits. Manganese, nickel, iron, selenium and zinc are detectable, but low in magnitude.

2.3.3 Radionuclides

Uranium and radium 226 data are indicative of the extensive surface mining activities in the Gas Hills. Sample sites SW-1 and SW-2 have extremely low uranium contents, from 0.020 to 0.080 mg/L. SM-5 and SM-6, located downstream of mining disturbances, show higher variability in uranium concentrations with observations ranging from 0.006 to 3.2 mg/L. Variability may be due to the timing of the sampling in relation to the time since previous precipitation events.

Radium in surface waters shows significant variation without regard to the mine disturbances. Radium 226 values are typically below 5 pCi/L but elevated levels have been observed. The maximum level within the available data is 372 pCi/L recorded at SM-7. No other data approach this concentration which can be considered anomalously high. Radium in the open pits (Buss 1 and 3) are typically below 5 pCi/L. West Canyon Creek has shown

similar variability in radium concentrations. Since the monitoring sites were established, Radium 226 levels have generally been below 1 pCi/L, however, a high of 17.1 pCi/L was measured at WCC-1.

2.3.4 Summary of Surface Water Quality

In general, the surface water sources in the project area are acceptable for wildlife and livestock consumption. Surface water quality in the study area varies greatly with the type of water body sampled. Stream water quality also varies greatly with discharge. Trace metal concentrations are generally present in levels below livestock standards and are mostly below detectable limits. Iron, manganese, arsenic, and zinc are frequently present in detectable levels but generally do not exceed livestock standards. TDS concentrations are consistently below the livestock standard of 5,000 mg/L. Uranium and radium 226 are generally below the livestock standards of 5 mg/L and 5 pCi/L respectively, however, these levels are occasionally exceeded.

WCC-2 Looking Upstream

WCC-2 Looking Downstream

Figure D6-2-1. Photographs of Surface Water Sampling Site WCC-2.

Cameron Spring Discharge Point

Cameron Spring Gaging Flume

Figure D6-2-2. Photographs of Cameron Spring.

Mean Monthly Precipitation

Gas Hills 4E (9/1963 to 7/1996)

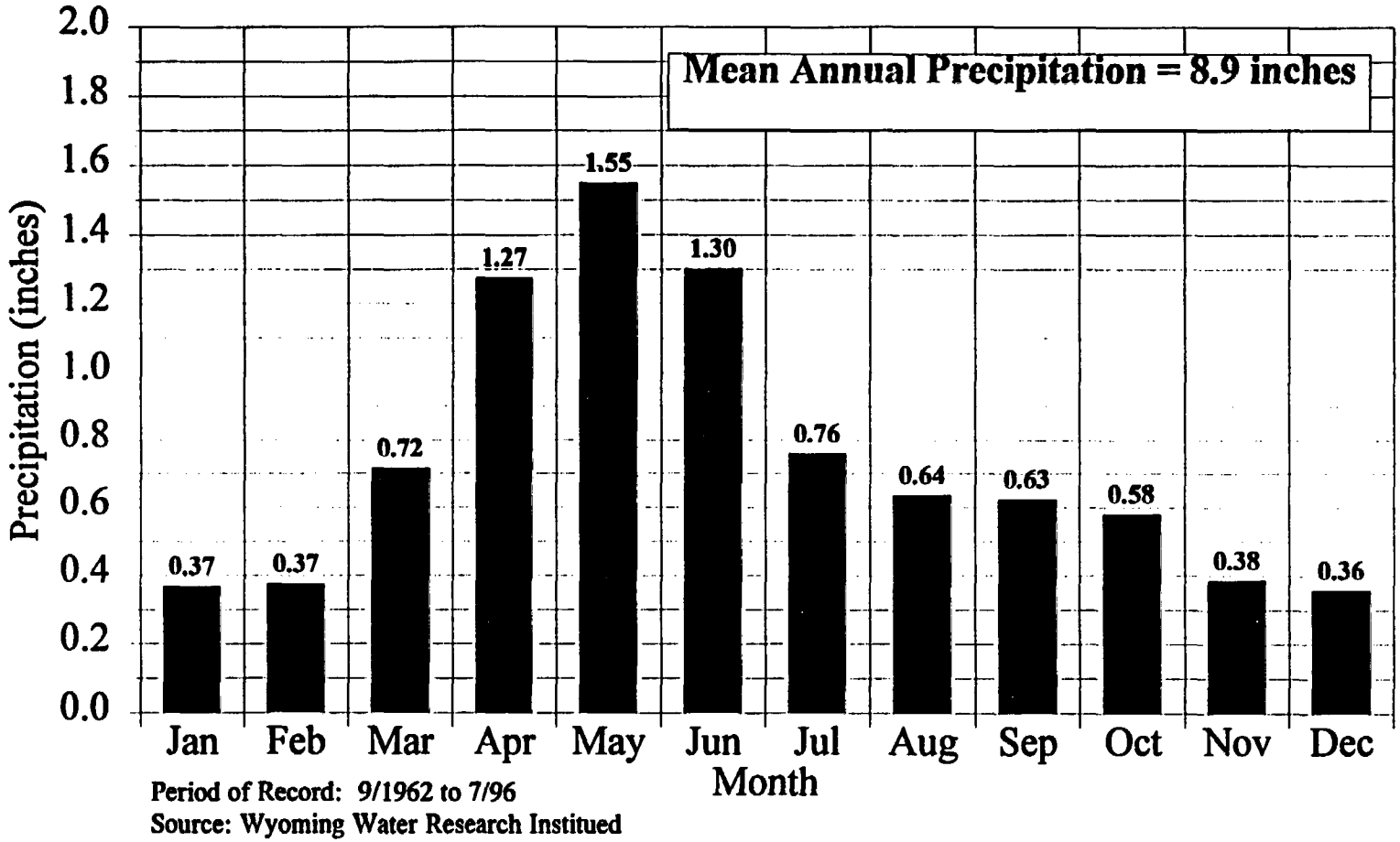


Figure D6-2-3. Mean Monthly Precipitation: Gas Hills 4E Weather Station.

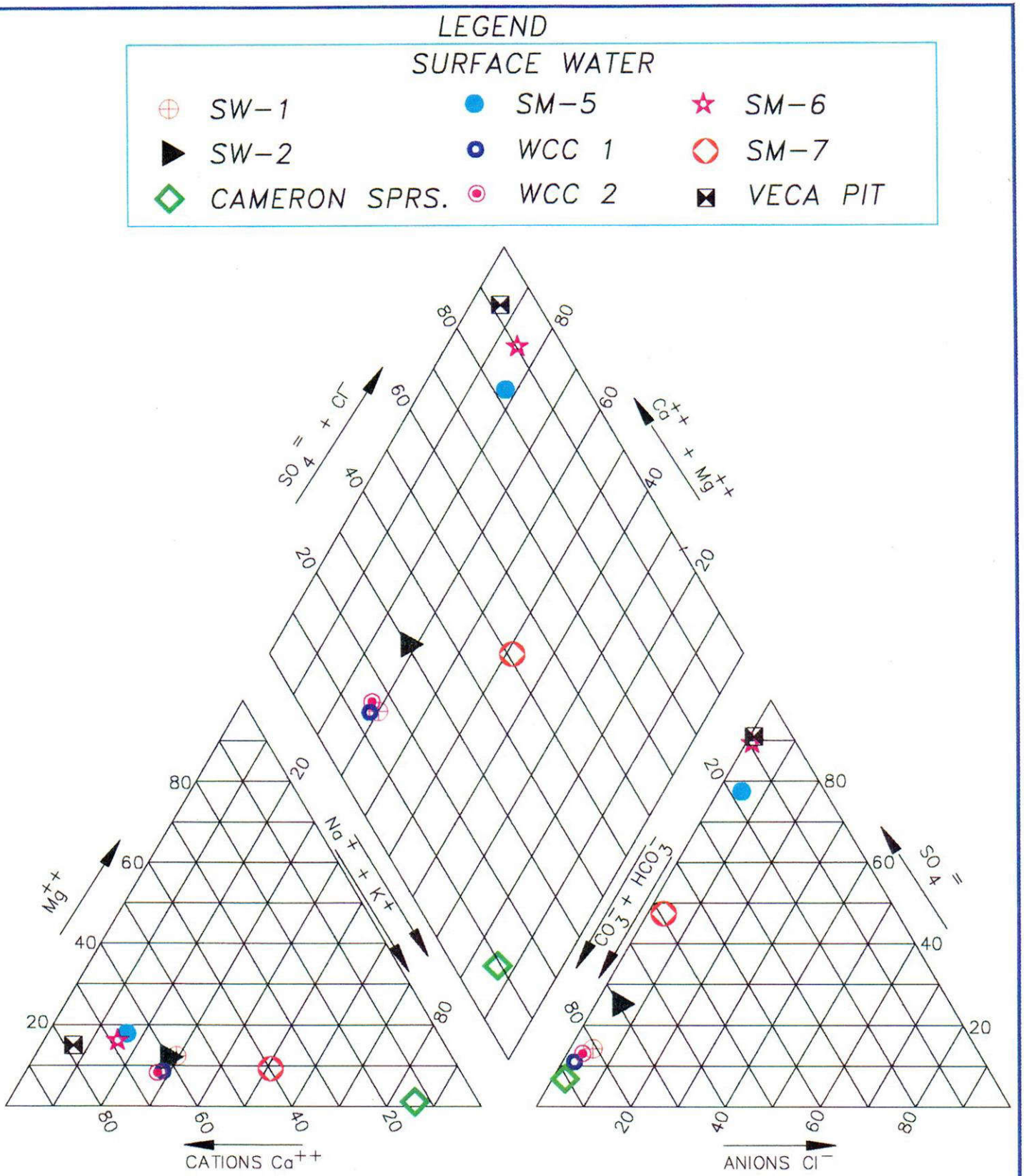


Figure D6-2-4.

Trilinear Diagram - Surface Water Quality, PRI Gas Hills Project

C-01

Table D6-2-1. Point Precipitation Analysis for PRI Gas Hills Project.

Return Period	Precipitation (Inches)
2-Year, 6-Hour	0.9
5-Year, 6-Hour	1.2
10-Year, 6-Hour	1.4
25-Year, 6-Hour	1.7
100-Year, 6-Hour	2.1
100-Year, 24-Hour	3.25

Source: NOAA Atlas, Volume II, Wyoming

Table D6-2-2. Drainage Basin Characteristics for PRI Gas Hills Project.

Basin	Design Point	Area (mi^2)	Basin Slope (ft/mi)	Relief (ft)
W. Fraser Draw	WFD	1.91	705	720
E. Fraser Draw-1	EFD-1	2.09	942	810
E. Fraser Draw-2	EFD-2	1.67	718	690
West Canyon Creek	WCC-3	14.5	211	840
Subbasin WCC-1	WCC-1	0.55	681	260
Subbasin WCC-2	WCC-2	1.79	564	520

Table D6-2-3. Estimated Peak Discharge Data for PRI Gas Hills Project.

Craig and Rankl Method

Basin	Design Point	2-Year		5-Year		10-Year		25-Year		50-Year		100-year	
		Volume (ac•ft)	Discharge (cfs)	Volume (ac•ft)	Discharge (cfs)	Volume (ac•ft)	Discharge (cfs)	Volume (ac•ft)	Discharge (cfs)	Volume (ac•ft)	Discharge (cfs)	Volume (ac•ft)	Discharge (cfs)
W. Fraser Draw	WFD	5.7	92.0	12.5	187.4	18.3	266.4	27.8	389.5	35.7	490.4	44.8	602.8
E. Fraser Draw-1	EFD-1	6.8	107.4	14.7	217.9	21.5	308.3	32.4	448.2	41.4	561.3	51.7	686.8
E. Fraser Draw-2	EFD-2	5.3	85.7	11.5	173.9	16.8	246.6	25.5	359.7	32.7	452.0	40.9	554.6
West Canyon Creek	WCC-3	18.5	268.1	41.9	566.8	64.0	835.6	101.2	1269.5	135.3	1655.5	175.1	2095.4
Subbasin WCC-1	WCC-1	6.8	107.5	12.6	188.8	17.0	248.8	23.6	335.9	28.7	401.7	34.2	471.3
Subbasin WCC-2	WCC-2	7.6	118.5	15.7	230.8	22.5	321.5	33.4	460.3	42.4	572.7	52.4	696.2

Lowham Method

Basin	Design Point	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
		Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
W. Fraser Draw	WFD	48.1	133.9	223.0	379.2	582.4	770.7
E. Fraser Draw-1	EFD-1	50.6	144.6	244.0	421.0	653.6	870.0
E. Fraser Draw-2	EFD-2	44.6	124.3	207.5	353.1	543.4	719.4
West Canyon Creek	WCC-3	134.5	335.8	517.5	828.5	1192.0	1539.9
Subbasin WCC-1	WCC-1	22.8	63.3	106.6	181.0	281.0	371.7
Subbasin WCC-2	WCC-2	46.4	126.5	208.5	350.6	534.0	703.6

3. GROUND WATER

3.1 Regional Hydrogeology

The Wind River Formation is the uranium host and aquifer of primary importance within the project area. The Eocene Wind River Formation consists of alternating layers of sandstone, siltstone, claystone, and conglomerate. The ore and water-bearing sand and conglomerate units are collectively referred to as the Wind River Aquifer. Ground water flow direction is generally to the southwest with some local exceptions in the vicinity of the Mine Unit 3 area where the aquifer has been penetrated by open pit and underground mining operations. The locations of historic mining disturbances are shown on Plates D6-1 and D6-3. Localized faulting combined with regionally discontinuous low permeability shale horizons have resulted in the perching of some saturated sand horizons above the main saturated zone of the aquifer. Subcropping and outcropping pre-Wind River deposits tend to restrict the regional flow of the Wind River Aquifer, forcing it to discharge through West Canyon Creek northwest of the Mine Unit 4 area, and Fraser Draw northwest of the Mine Unit 3 area. These discharge zones lie outside of the permit boundary.

Recharge of the Wind River Aquifer from precipitation occurs within the project area where the formation crops out and by vertical migration through overlying younger sediments. Recharge of upper perched horizons occurs along the Beaver Divide and from overlying younger sediments to the south. Recharge may also occur where subcropping pre-Wind River aquifers discharge into the Wind River Formation.

A thick sequence of pre-Wind River sediments containing several aquifers underlie the project area. The primary aquifers in this sequence are the Cretaceous Cloverly, Jurassic Nugget, and Pennsylvanian Tensleep Formations. The Cloverly and Nugget Formations are recharged north of the project area on the flanks of the Dutton Basin Anticline and discharge into the Wind River Formation within portions of the project area. The Tensleep Formation is recharged at high elevations along the southern and western flanks of the Wind River Basin. These formations primarily discharge into the Wind River Formation, south of the project area. The Tensleep is a very good aquifer and in places contains water hot enough to provide a geothermal energy source.

A fourth geologic unit, the Permian Age Phosphoria Formation is classified as a leaky confining layer and locally provides recharge to the underlying Tensleep Sandstone. The Phosphoria Formation is a hydrocarbon-bearing unit and is occasionally a target for oil and gas development in the area.

Pre-Wind River aquitards which subcrop beneath the project area are the Cretaceous Frontier, Mowry, Muddy and Thermopolis Formations, the Jurassic Morrison and Sundance Formations, the Triassic Chugwater and Dinwoody Formations and the Pennsylvanian Amsden Formation. The Triassic Chugwater and Jurassic Sundance Formations comprise the primary pre-Wind River aquitards underlying the Wind River Formation beneath

approximately 90% of the project area. A complete stratigraphic column showing the formations in the Permit Area is presented as Table D5-1-1 in Appendix D5.

Post-Wind River Formations that crop out within the project area are, in ascending order, the Eocene Wagon Bed, Oligocene White River and Miocene Split Rock Formations. Of these formations, the primary aquifer is the Split Rock Formation, which crops out south of, and caps, the Beaver Divide. The Split Rock Formation is both stratigraphically and topographically higher than the Wind River Formation and consists of arkosic sands and conglomerates. It is a source of springs and a significant ground water resource south of the project area. The Wagon Bed and White River Formations are generally considered aquitards. Quaternary alluvium occurs along Fraser Draw and West Canyon Creek and consists of unconsolidated sand, silt and clay. It is recharged vertically by precipitation and by discharge from springs, which originate from the post Wind River Sediments.

ISL mining activities will be isolated within the Wind River Formation with cased and cemented wells. State of the art operations and monitoring of all mining activities will result in no impact to any overlying or underlying aquifers. ISL mining will not impact the springs or direct precipitation recharge which sustain the base flow of West Canyon Creek.

3.2 Aquifer Characterization

PRI has conducted an intensive, on-going field investigation since the Fall of 1996 to collect site-specific geohydrologic data across the project area. The purpose of the field program was to collect well hydraulic and water quality data in the vicinity of the known ore zones to establish baseline conditions. PRI's field program was directed to utilize new data in conjunction with existing regional historical data for the purpose of characterizing the Wind River Aquifer in the vicinity of the project area. Abundant stratigraphic, aquifer testing, water level, and water quality data exist for the area, although historic monitoring well completion and sampling dates and techniques are not always well documented. Significant gaps in the historical data also exist corresponding to the cessation of active mining in the Gas Hills in the mid 1980's.

3.2.1 Monitoring Well Locations

Existing monitoring wells were inspected and geophysically logged to obtain or verify completion information and to establish standard measuring points. Nine new monitoring wells were completed in the Fall of 1996, in and adjacent to ore zone sands within the Wind River Aquifer at depths and stratigraphic horizons approximating ISL operating conditions. New wells were installed in the Mine Unit 1 area (MU96 M-1, MU96 M-2), Mine Unit 2 area (BS96 M-1), the Mine Unit 3 area (Peach M-1, Peach MP-1, Peach M-2, Peach MP-2), and the Mine Unit 4 area (WSL96 M-1, WSL96 MP-1).

In response to DEQ review comments, 10 additional wells were installed during the summer and fall of 1997 to obtain more detailed baseline data. Well MUMP97-1 was completed in the production zone in Mine Unit 1 approximately midway between the locations of the

historic Blackstone and Muskrat wells. In the Mine Unit 3 area a production well (PCHMP97-1) and an overlying well (PCHMO97-1) were completed to characterize conditions south of the PCH Fault. A borehole was advanced to a depth 175 feet below the production zone at this location, and no significant underlying, water bearing horizon was encountered. Three wells were completed near the southeastern end of Mine Unit 4, BUMP97-1 in the production zone, BUMO97-1 in an overlying sand unit, and BUMU97-1 in the underlying Canyon Creek Conglomerate. Well GW-10A was completed as a replacement to Well GW-10 located north of Mine Unit 4, downgradient from the reclaimed Veca disturbance. Three wells were also completed east of the historic Veca Disturbance in Mine Unit 5. Well PIXMP97-1 is a production zone well, PIXMO97-1 is an overlying sand well, and PIXMU97-1 is completed into the underlying Canyon Creek Conglomerate.

The monitoring wells were completed to PRI specifications, approximating operating well specifications. A typical monitoring well completion diagram is included as Figure D6-3-1. Permits for the monitoring wells were obtained from the Wyoming State Engineer's Office, and are included in Addendum D6-3. The locations of all monitoring wells utilized are shown on Plate D6-1. Completion diagrams and borehole lithology logs for all wells installed by PRI are included in Addendum D6-4. Where available, completion information for the historic wells is also included in Addendum D6-4. Geophysical logs for the 1996 and 1997 PRI wells are included in Addendum D6-5. The monitoring well completion information is summarized in Table D6-3-1.

After the wells were constructed, they were developed by air jetting, bailing, and pumping. Temperature, pH, and conductivity were measured during development. The wells were allowed to stabilize before aquifer testing and water quality sampling was initiated. With the exception of the 10 wells installed in 1997, at least six quarterly samples have been collected from the Gas Hills monitoring network. One sample was collected from the 1997 wells which overlapped with the sixth quarter samples collected from the rest of the network.

3.2.2 Aquifer Testing

Aquifer tests have been conducted by PRI on wells located in all of the mining units within the Permit Area. The aquifer tests were conducted to determine the characteristics of the ore zone aquifer and overlying and underlying units, evaluate the hydrologic significance of adjacent faults, and determine if the ore zone is hydraulically isolated from overlying and underlying units.

A 24-hour pump test was conducted in the ore sand in the east end of the Mine Unit 1 area, on July 23, and 24, 1990. The test utilized three wells which were installed in July of 1990 for that purpose. The completion data and total depth of each well are as follows:

Well	Total Depth (ft)	Screened Interval (ft)
P-1*	460	435.0 to 454.3
MP-1	460	433.0 to 452.3
MO-1	385	376.0 to 380.3

*Well P-1 is labeled as PW-1 on Cross Section B-B'.

Cross section B-B' (Plate D5-4) was generated in the vicinity of this pump test. The pumping well (P-1 or PW-1) was completed in the 70 Sand. Well MP-1 was an observation well and was completed in the same sand unit as the pumping well. Well MO-1 was completed in the next overlying sand unit above the production zone to determine potential leakage, if any, between the ore zone and the overlying sand unit. Well MO-1 was not plotted on Cross Section B-B', but immediately overlies Well P-1 (PW-1). Well P-1 was pumped at 25 gpm for a 24 hour period. Water level measurements were periodically obtained from all three wells.

Results of these tests are summarized in Table D6-3-2 and discussed in subsequent sections to this Appendix. Graphical analyses of the pump test data are presented in Addendum D6-6. All well locations are shown on Plate D6-1. All cross sections are included in Appendix D5.

A short-term, single well pumping test was conducted in conjunction with water quality sampling of well MUMP97-1 in October 1997. Well MUMP97-1 is completed northeast of the Muskrat wells in Mine Unit 1, in the 70 Sand at a depth of 390 to 410 feet (Cross Section D-D', Plate D5-6). Well MUMP97-1 was pumped at 24 gpm for 300 minutes. Drawdown and recovery were measured in the pumping well utilizing down hole pressure transducers connected to Hermit automatic data loggers. The purpose of this test was to obtain more hydraulic information for the 70 Sand on the east side of Mine Unit 1 between the locations of the Muskrat and Blackstone aquifer tests.

An aquifer test of the Blackstone wells in the Mine Unit 2 area was conducted in August of 1992. The completion zones and total depths of each well are as follows:

Well	Total Depth (ft)	Screened Interval (ft)
BSPW-1	440	406-425
BSMP-1	376	335-355
BSMP-2	410	383-408
BSMP-3	390	348-368
BSMU-1	485	455-485

Well BSPW-1 was utilized as the pumping well. All wells, except BSMU-1, were completed in the lower half of the ore bearing zone (the 70 Sand) and were utilized as observation wells. Well BSMU-1 was completed in the underlying 50 Sand. Two faults are present

north and south of the pumping well. Well BSMP-2 was located on the same side of the north fault as the pumping well, so that aquifer characteristics of the ore bearing sand could be determined for this area. Well BSMP-1 was located just beyond the north fault so that the hydrologic significance of this fault could be assessed. Well BSMP-3 was located just beyond the south fault so that the hydrologic significance of this fault could be assessed. Well BSMU-1 was located so that potential leakage through the underlying confining zone could be assessed. The relative positions of these wells and faults, are further illustrated on Cross Sections C-C' and D-D' on Plates D5-5 and D5-6.

Well BSPW-1 was pumped continuously at 12 gpm for 28 hours. During pumping, water level data were obtained at all wells at time increments sufficient to allow plotting and analysis of the data. Recovery water levels were measured in all wells for approximately 28 hours after pumping had ceased.

A multiple well aquifer test was conducted at the Mine Unit 3 area in October 1996 utilizing Wells Peach MP-1, and Peach M-1. Well Peach MP-1 was completed across the 40 ore sand as the pumping well from 290 to 310 feet. Well Peach M-1 was completed from 260 to 320 feet across the 30-40 Sands outside the ore zone. Well Peach M-2 was completed from 325 to 395 feet across the 30-40 Sands through a fault zone outside the ore zone. Prior to the pumping tests, step discharge tests were run to determine optimum pumping rates. A pumping rate of 12 gpm was maintained for 35 hours. Drawdown and recovery data were measured in the pumping well. Drawdown and recovery were measured in the pumping well and the observation wells utilizing down hole pressure transducers connected to Hermit automatic data loggers. The pressure transducer installed in Well Peach M-2 never responded during pumping, so the transducer was transferred to Well Peach M-1 to measure recovery.

Short-term aquifer testing was conducted in conjunction with water quality sampling of the newest wells in Mine Unit 3 in October of 1997. Well PCHMP97-1 was completed from 615 to 635 feet in the 30 Sand which is considered a producing horizon at this location. Well PCHMO97-1 was completed from 490 to 510 feet in the overlying 70 Sand. A borehole was advanced to a depth 175 feet below the production zone at this location, and no significant underlying, water bearing horizon was encountered. The relative positions of the two wells is shown on Cross Section J-J' (Plate D5-11). Well PCHMP97-1 was pumped at 22 gpm for 420 minutes. Drawdown and recovery were measured in both the pumping well and in well PCHMO97-1 utilizing down hole pressure transducers connected to Hermit automatic data loggers. A similar test was conducted utilizing well PCHMO97-1 as the pumping well and PCHMP97-1 as the observation well.

Testing was conducted in October 1996 utilizing wells WSL96MP-1 and WSL96M-1 at the Mine Unit 4 area. Well WSL96MP-1 served as the pumping well, and was completed from 260 to 275 feet across the 60 Sand in an ore zone. Well WSL96M-1 was utilized as an observation well, and was completed from 305 to 365 feet across the 60 Sand and the underlying 50 Sand. The relative positions of the two wells are shown on Cross Section M-M' (Plate D5-14). At the Mine Unit 4 area these two wells partially penetrate the main saturated zone of the aquifer which comprises the 50-60 Sands, confined by claystone layers

above and below the sand units. In addition to aquifer test data, these wells were located to obtain water quality samples representative of the ore zone, and the sands outside the ore zone at a stratigraphically equivalent horizon. Well WSL96MP-1 was pumped at 8 gpm for 35.5 hours. Drawdown and recovery were measured in both the pumping well and the observation well utilizing down hole pressure transducers connected to Hermit automatic data loggers.

Short-term aquifer testing was conducted in conjunction with water quality sampling of the three newest wells in Mine Unit 4 in October of 1997. Well BUMP97-1 was completed from 585 to 615 feet in the 60 Sand which is the producing horizon at this location. Well BUMO97-1 was completed from 348 to 368 feet in the overlying 90 Sand. Well BUMU97-1 was completed from 695 to 715 feet into the underlying Canyon Creek Conglomerate. These three wells were situated to collect aquifer data from the southeast corner of the Permit Area for correlation with the existing historical data. Three different tests were conducted utilizing each of the wells as the pumping well. During each test, drawdown and recovery were measured in both the pumping well and the observation wells utilizing down hole pressure transducers connected to Hermit automatic data loggers.

A short-term single well test was conducted on Well GW-10A in conjunction with sampling in October 1997. Well GW-10A is completed from a depth of 245 to 295 feet in the 50 Sand. The well was pumped at 19 gpm for 290 minutes. Drawdown and recovery in the pumping well were measured utilizing the down hole pressure transducers connected to Hermit automatic data loggers.

Similar short-term aquifer testing was conducted in conjunction with water quality sampling of the three wells completed in Mine Unit 5 in October of 1997. Well PIXMP97-1 was completed from 215 to 235 feet in the 50 Sand which is the producing horizon at this location. Well PIXMO97-1 was completed from 150 to 180 feet in the overlying 60 Sand. Well BUMU97-1 was completed from 265 to 295 feet into the underlying 40 Sand, Canyon Creek Conglomerate. The stratigraphic positions of these three wells are shown on Cross Section O-O' (Plate D5-16). These three wells were situated to collect aquifer data upgradient from the historic Veca disturbed area in the Mine Unit 5 area. Again, three different tests were conducted utilizing each of the wells as the pumping well and the other two wells as observation wells. Well PIXMP97-1 was pumped at 10 gpm for 270 minutes. Well PIXMO97-1 was pumped at seven gpm for 225 minutes. Well PIXMU97-1 was pumped at two gpm for 201 minutes. During each test, drawdown and recovery were measured in both the pumping well and the observation wells utilizing down hole pressure transducers connected to Hermit automatic data loggers.

3.2.3 Water Quality Sampling

Water quality sampling was initiated by PRI on September 12, 1996. Since then, quarterly samples have been collected from 37 wells, Cameron Spring, West Canyon Creek, and the Veca Pit. In October 1997, ten additional wells were added to the monitoring network. Samples from the new wells were collected during the fourth quarter of 1997 and overlapped

the sixth quarter of samples collected from the rest of the network. Sampling of the new wells will continue on a quarterly basis until four quarters of baseline data have been collected. Sampling of the remainder of the wells has been reduced to an annual basis for a list of indicator parameters.

Before sampling, the static water level is measured in each well utilizing an electronic well sounder. The total depth of each well is also measured utilizing a geophysical probe or a weighted measuring tape. The volume of water standing in each well is determined, and a minimum of three casing volumes are evacuated from each well using a submersible pump. The pumping rate varies from 1 to 18 gpm depending on the characteristics of the well. During evacuation, the temperature, pH, and conductivity of the water are measured and recorded on field sampling forms. The water samples are collected directly from the pump hose into one gallon plastic bottles. Radon samples are collected in glass VOA bottles. Each bottle is labeled with a permanent marker denoting Sample Number, Date, and Time of Sample collection. The samples are kept cool and shipped to Energy Labs in Casper, Wyoming for filtration, preservation, and analysis. Chain of custody documentation accompanies the samples to the lab. Duplicate samples are collected for QA/QC purposes. The samples are analyzed by Energy Labs for WDEQ/LQD Guideline 8 parameters for uranium mines utilizing standard EPA Procedures.

The purpose of this sampling is to characterize background water quality of the Wind River Aquifer within the Permit Area. Since six quarters of background data have been collected from a majority of the wells, sampling has been reduced to an annual basis for static water level, field indicator parameters and the following list of indicator parameters.

Calcium	Carbonate	Potassium	TDS
Magnesium	Bicarbonate	Chloride	pH
Sodium	Sulfate	Conductivity	Nitrate +Nitrite
Flouride	Ammonia	Arsenic	Iron
Manganese	Selenium	Uranium	Radium 226
Radium 228			

If the annual monitoring detects a significant change in the quality of the water at any well, then quarterly monitoring for the full suite of Guideline 8 constituents will be resumed. Annual samples will be analyzed for the full suite of Guideline 8 parameters every five years. The monitoring status of all of the wells is included in Table D6-3-1.

The water quality data are presented in a spreadsheet format in Addendum D6-7. These spreadsheets were prepared from electronic data files provided by Energy Labs, and will be updated as additional water quality data are collected. Additional historic data available for wells in the vicinity of the Permit Area are also included in Addendum D6-7. In many cases, the historic data are incomplete, and sampling techniques cannot be verified. The data are useful for comparative purposes with the current data, and document long-term water quality trends, and spatial variability of water quality within the Wind River Aquifer. Laboratory data sheets for the samples are on file with PRI and will be provided as requested.

3.3 Aquifer Characteristics

3.3.1 Aquifer Thickness and Hydrostatic Head

Faulting has disrupted the continuity of the ore sands and confining layers throughout the Permit Area. Plate D5-2 shows the locations of the major faults in the Wind River Formation across the Permit Area. The main saturated zone within the Wind River Aquifer in the project area ranges in thickness from approximately 60 feet at the Mine Unit 1 area, where the 70 Sand is confined by substantial shale breaks, to more than 100 feet at the Mine Unit 3 area, where the 30-40-50-60 Sands act as a single hydrostratigraphic unit. The hydrostatic head in the production wells at the Mine Unit 1 area is approximately 230 feet above the screened interval. The static water level in a well completed in an overlying unit (MO-1) is 80 feet higher than the static water level in the adjacent production zone wells.

At the Mine Unit 2 area the majority of the wells are screened across the 70 Sand. The 70 Sand in Wells BSMP-1 and BSMP-2 has been displaced downward by faulting. Despite the faulting, the hydrostatic heads in all the Mine Unit 2 wells appear to be continuous at approximately 6630 feet (Plate D5-6). Downgradient from the Buss Pit in Mine Units 2 and 4, the potentiometric surface is relatively flat due to the lingering effects of dewatering in the East Gas Hills. At the Mine Unit 3 area, the hydrostatic head occurs approximately 50 feet above the top of the screen in each well. The static water level in well PCHMO97-1 which is screened 105 feet higher than the adjacent production zone well is only five feet higher than in the adjacent well.

At the Mine Unit 4 area, the 50-60 Sands interfinger with a portion of the East Canyon Conglomerate, and are confined above and below by continuous claystone horizons. The hydrostatic head in production zone wells south of the Buss Fault is approximately 200 feet above the top of the 60 Sand (Cross Section L-L', Plate D5-13). Hydrostatic head above the 60 Sand increases to 235 feet above the screened interval at well BUMP97-1. Static water levels are 38 feet higher in an adjacent well which is screened in the 90 Sand.

The 50 Sand is the ore bearing zone at the Mine Unit 5 Area. Borehole data indicate that this unit is confined above and below by claystone horizons (Cross Section O-O', Plate D5-16). Well data show the static water levels range from 40 feet to 150 feet above the top of the 50 Sand. The static water level in well PIXMU97-1 is 90 feet lower than the water level in Well PIXMP97-1 completed in the adjacent 50 Sand. Well PIXMU97-1 is screened in the East Canyon Conglomerate.

The ore zone sands are confined above by continuous claystones at Mine Units 1, 2, and 5. At Mine Unit 3 mineralized zones occur in the 30-40-50 Sands which together form a single hydrostratigraphic unit. This unit is semi-confined and may be hydraulically connected with the overlying 60-70 Sands. At Mine Unit 4, ore zones occur in the 50 through 80 Sands, south of the Buss Fault. North of the fault, mineralized zones are present in the 60-70 Sands. The 60 Sand is confined by a continuous claystone layer. The 70 Sand is connected hydraulically with the overlying 80-90 Sands.

With the exception of Mine Unit 4, all the ore sands are confined below by continuous claystone layers or pre-Wind River aquitards. At Mine Unit 4 the 60 Sand is underlain by the 50 Sand, which interfingers with the East Canyon Conglomerate. These underlying units are confined by a continuous claystone layer.

The discontinuous nature of the Wind River sediments has resulted in perched horizons above the main saturated zone of the aquifer at Mine Units 1 and 4. At Mine Unit 1, water levels in Wells MO-1, MO-3, and MO-2 are 40 to 50 feet higher than in adjacent wells completed in lower sand units. At Mine Unit 4, Wells GW-5A, GW-9, TVA MW-1, TVA MW-2, TVA MW-3, and BUMO97-1 which are screened across upper sand zones, exhibit water levels at least 50 feet higher than adjacent wells completed in underlying sands.

3.3.2 Ground Water Flow

Completion information for wells located in and near the project area is summarized in Table D6-3-1. Water-level elevations and static water levels measured in conjunction with water quality sampling are included in the spreadsheets in Addendum D6-7. Based on the fourth quarter 1997 static water level measurements, potentiometric contours for the Wind River Aquifer have been developed and are presented on Plate D6-3. The static water levels on this drawing, include those characteristic of a locally perched horizon. The potentiometric surface contours reflect the main saturated zone of the Wind River Aquifer only. Water levels from wells screened in underlying formations and overlying perched systems are noted on the figure but were not used in the construction of the potentiometric surface map (Plate D6-3).

The potentiometric contours indicate that ground water flow is generally to the southwest. North of Mine Unit 3 and in the East Gas Hills where historic open pit mining and associated dewatering occurred, depressions in the potentiometric surface are evident. In Mine Unit 3 potentiometric contours are deflected north towards the Pathfinder Mining Corporation (PMC) Central Gas Hills Disturbance. In Mine Unit 4, dewatering has ceased and water levels associated with a cone of depression around the Buss Pit are recovering towards pre-mining levels.

The ground water gradient varies across the Permit Area. The gradient across Mine Unit 1 is approximately 0.012 ft/ft towards the southwest. The gradient across Mine Units 2 and 4 downgradient from the Buss Pit is quite flat, 0.0024 ft/ft. Dewatering of open pits and underground mines in the East Gas Hills has resulted in stagnation of ground water flow downgradient from the Buss Area. Water levels are expected to recover between five and 30 feet in this area now that dewatering has ceased. The gradient in Mine Unit 3 is approximately 0.0017 towards the north induced by dewatering of the Pathfinder C-4 Pit. Gradients are higher in the Mine Unit 5 area (0.045 ft/ft). The steeper gradient is due to lower hydraulic conductivities in the formation and adjacent backfilled open pits.

3.3.3 Aquifer Hydraulic Properties

Aquifer tests have been conducted on several wells in and near the project area. Tests conducted on wells in the Mine Unit 1 and 2 areas were analyzed graphically utilizing standard Theis (1935) and Cooper and Jacob (1946) nonequilibrium methods for confined aquifers. These solution methods and the data and graphical solutions are presented in detail in Addendum D6-4. The tests conducted on wells at the Mine Unit 3 and 4 areas were analyzed graphically utilizing AQTESOLV computer software developed by Geraghty & Miller, Inc. (1988,1989). AQTESOLV combines statistical parameter estimation methods with graphical curve matching techniques for analysis of aquifer test data utilizing the Theis and Jacob methods. The Mine Unit 3 and 4 data were analyzed further by AQTESOLV utilizing the nonequilibrium methods of Hantush (1961) which solve for leaky aquifers, and the nonequilibrium method of Moench (1984) for fractured leaky aquifers, assuming both fully and partially penetrating conditions. Aquifer tests conducted in the Fall of 1997 were analyzed utilizing AQTESOLV and AQUIFER TEST computer software developed by Waterloo Hydrogeologic Inc. Historic aquifer test data were obtained for wells in Mine Unit 3 (American Nuclear Permit Application WDEQ/LQD Permit #3/123), for wells in Mine Unit 4 from the PRI Buss Reclamation Plan (WDEQ/LQD Permit to Mine 438-A2) and for wells in Mine Unit 5 from the Veca AML 16-D Reclamation Project report. Well locations are shown on Plate D6-1.

The results of the aquifer testing are summarized in Table D6-3-2. Transmissivity for the Wind River Aquifer within the project area varies from 4.88×10^{-4} ft^2/min to 6.7×10^{-1} ft^2/min. Horizontal hydraulic conductivities ranges from 2.43×10^{-5} ft/min to 6.7×10^{-3} ft/min. In Mine Unit 3 where the highest hydraulic conductivities were reported, the values are believed to be influenced by proximity to faults which were acting as recharge boundaries. The representative horizontal hydraulic conductivities by Mine Unit areas are:

Area	Average Hydraulic Conductivity (ft/min)	Minimum (ft/min)	Maximum (ft/min)
Mine Unit 1	1.62×10^{-3}	9.67×10^{-4}	2.83×10^{-3}
Mine Unit 2	1.33×10^{-3}	6.52×10^{-4}	4.65×10^{-3}
Mine Unit 3	2.94×10^{-3}	5.35×10^{-5}	6.7×10^{-3}
Mine Unit 4	8.40×10^{-4}	2.43×10^{-5}	2.76×10^{-3}
Mine Unit 5	2.46×10^{-4}	2.87×10^{-6}	7.16×10^{-4}

Hydraulic conductivities generally increase from east to west across the Permit Area corresponding to coarsening texture of the Wind River sediments. Calculated storage coefficients range from 8.53×10^{-5} in Mine Unit 4 to 1.28×10^{-3} in Mine Unit 2. The average storage coefficient for the Wind River Aquifer throughout the Permit Area is 3.10×10^{-4}.

3.3.4 Boundary Conditions

Low permeability confining units (aquitards) are present between the various sandstone aquifers and typically consist of claystones or siltstones of the Wind River Formation. These units are usually laterally extensive except where displaced by faults or where sandstone units coalesce.

The aquifer tests which were conducted in Mine Unit 2 were designed to evaluate the effects of faulting on the hydraulic properties of the ore sands and displaced confining units at this location. The relative locations of the wells are shown on Plate D6-1. Nearby faults are shown on Plate D5-2. Plate D5-6 (Mine Unit 2) is a cross-section showing the completion depths of the wells and the hydrogeologic succession. Wells BSP-1, BSMP-1, BSMP-2 and BSMP-3 are screened in the lower half of the 70 Sand and BSMU-1 (not shown in the cross section) is screened in the 50 Sand. A "north fault" separates BSMP-1 from the pumping well (BSP-1) and a "south fault" separates BSMP-3 from BSP-1.

The "north fault" has caused the 70 Sand on the BSMP-1 side to be up thrown by 24 feet with respect to the BSP-1 side. This movement has led to a decreased aquifer thickness from 70 feet to 45 feet. Displacement of the 70 Sand has caused an effective reduction in the transmissivity across the fault. The effect of the "north fault" is best demonstrated by comparing the drawdowns in BSMP-1 and BSMP-2. The maximum drawdown in each of the wells after 40 hours of pumping was 6.67 feet and 14.91 feet, respectively. BSMP-1 is over twice as far from BSP-1 than BSMP-2, and the relative drawdown appears reasonable. Although there is an overall decrease in effective transmissivity, the drawdown data indicate that the fault is not constricting flow greatly and did not significantly affect the pump test results.

Similarly the "south fault" has led to a decreased aquifer thickness along the fault plane from 65 feet to 30 feet. This has also decreased the effective transmissivity across the fault. The effect of the "south fault" on the drawdown in the pumping well and on water level changes in BSMP-3 are greater than the effect of the "north fault", because of the closer proximity to the pumping well. Both of the faults act as constrictions to ground water flow and cause increased drawdown relative to those predicted by type curve matching in BSP-1 and BSMP-2, and decreased drawdowns in BSMP-1 and BSMP-3.

The effect of the "south fault" is best observed by comparing the drawdown in BSMP-3 with that in BSMP-1 and BSMP-2. BSMP-3 has far less drawdown even though it is 130 feet closer to BSP-1 than BSMP-1. This suggests that the fault is constricting and reducing flow between BSMP-3 and BSMP-1. However it is not acting as an impermeable barrier.

Aquifer testing from the Mine Unit 1, Mine Unit 3 and Mine Unit 5 areas also indicate boundary conditions in the vicinity of the pumping wells. At Mine Unit 4 curve matching for both wells WSL96MP-1 and WSL96M-1 indicate a source of leakage either from the confining units or from the adjacent Buss Fault. These conditions will be investigated in

greater detail utilizing long-term pump tests in the Hydrologic Unit Testing Phase prior to mining at these locations.

3.3.5 Confining Unit Characteristics

Drawdown in the overlying unit (Well MO-1) was monitored during the long-term pump test conducted in Mine Unit 1, and during the short-term pump tests conducted in Mine Units 3 (Well PCHMO97-1), 4 (Well BUMO97-1), and 5 (Well PIXMO97-1). Data and drawdown curves from these observation wells are included in Addendum D6-6. At every location except Mine Unit 5, water level changes recorded in the overlying observation well were in a positive direction most likely due to the effects of barometric pressure changes rather than hydraulic communication through the confining unit with the underlying production zone. To document the effects of barometric pressure changes PRI will monitor barometric pressure during all subsequent aquifer testing at the Gas Hills.

At Mine Unit 5, drawdown was observed in the overlying observation well in response to pumping in the production well. These data qualitatively show hydraulic communication between the production zone and the next overlying sand unit at this location. These conditions will be further investigated and quantified during the Hydrologic Unit Testing of Mine Unit 5.

Drawdown in the underlying unit was monitored during the short-term pump testing conducted in Mine Units 4 (Well BUMU97-1) and 5 (Well PIXMU97-1). Drawdown was observed in Well BUMU97-1 indicating hydraulic communication between the underlying East Canyon Conglomerate, and the 60 Sand at this location. At well PIXMU97-1 water levels increased in the observation well over the duration of the aquifer test again indicating the effects of barometric pressure.

Actual vertical permeabilities of the confining units will be determined prior to mining for each mine unit area by laboratory testing of cored material, or from long-term pump test results utilizing appropriate analytical procedures. Core samples have been collected from the overlying confining unit at Mine Unit 1. Laboratory vertical permeabilities obtained from these core samples are low, ranging from 1×10^{-8} cm/sec to 1×10^{-10} cm/sec. Typical permeabilities for unweathered claystones and siltstones range from 1×10^{-7} cm/sec to 1×10^{-9} cm/sec (Freeze and Cherry, 1979).

3.4 Regional Ground Water Quality

The ground water quality of the eastern and central portions of the Gas Hills Uranium Mining District has been characterized in mine permits prepared by Power Resources, Inc. (Buss Reclamation Project: Permit No.438-A2), Umetco (Permit No.349C), Pathfinder Mining Corporation (Permit No.356C) and reclamation studies completed by the Wyoming Department of Environmental Quality, Abandoned Mined Land Division (AML 16E: Lidstone & Anderson, Inc., 1989; AML 16E: Lidstone & Anderson, Inc., 1994; AML 16D:

Hydro-Engineering, 1989). Data from these permit documents and reports of investigation (ROI) are on file with the Wyoming DEQ in Cheyenne.

On a regional basis, ground water flow is from northeast to southwest. In the vicinity of Mine Unit 3, flow is to the north and is locally influenced by the cone of depression surrounding Pathfinder's Central Gas Hills disturbances, in particular the Area 4 mine pit. Recharge of the Wind River Aquifer occurs within the project area from precipitation where the formation crops out. Recharge along the Beaver Divide and from the south occurs by vertical migration through younger sediments. Recharge may also occur where subcropping pre-Wind River aquifers discharge into the Wind River Formation.

The chemistry of the Wind River Aquifer is typically dominated by the sulfate anion, both within and upgradient of the PRI Permit Area. The mineralogy of the Wind River Formation includes gypsum ($CaSO_4$), other primary and secondary sulfate minerals, as well as various sulfide minerals. The Wind River sands are progressively more sulfate-rich in a downgradient direction, typically more calcium sulfate-rich to the east and sodium sulfate-rich to the west. Ion exchange processes within the Wind River clays and claystones may explain the local increase in sodium within the ground water.

Where recharge to the Wind River Aquifer occurs via strata of the Oligocene White River, Wagon Bed and Split Rock Formations, local enrichment to upper Wind River sands by bicarbonate waters may occur. Leakage and hydrologic communication from these upper formations can influence the chemistry of discrete sand units within the Wind River. The carbonate chemistry of the White River, Wagon Bed and Split Rock Formation aquifers is not only characteristic of the mineralogic assemblages within these formations (calcite and dolomite), but is also influenced by the downward migration of meteoric waters through the near surface carbonate-rich soil zones.

The surface water or alluvial system, where sustained by White River or Wagon Bed-derived springs is a distinctly bicarbonate system, as presented on Figure D6-2-4. Water samples collected in the vicinity of West Canyon Creek and Cameron Spring reflect this high bicarbonate composition. West Canyon Creek water is dominated by the calcium cation whereas Cameron Spring is dominated by the sodium cation. Sulfate-rich surface waters appear to originate from previously mined and reclaimed lands as a byproduct of the dissolution of gypsum and the oxidation of sulfide minerals. The East Fork of West Canyon Creek, where it contributes to the Veca Pit Impoundment, is an example of this condition.

In the eastern portion of the PRI Permit Area, the impacts of surface mine pit reclamation on the Wind River Aquifer is documented in the AML 16E ground water studies (1989; 1994; and 1996, in press). In this area, pre-reclamation ground water quality was predominantly calcium-sulfate type water with minor amounts of sodium, magnesium and bicarbonate. Reclamation in this area commenced in 1988 and intermittently continued through 1995, following the reclamation of the Buss Pit. Current water quality in the East Gas Hills disturbance area north and east of the Buss Pit (Plates D6-1 and D6-3) remains a calcium-sulfate type water. The concentration of total dissolved solids (TDS), specifically,

major anions and cations has increased in response to reclamation of the historic uranium mine pits. The basic mechanism of this increase is directly related to the backfilling of oxidized and weathered mine spoils into the water table. As ground water recovers in the backfilled mine pits, increased mineralization of the ground water occurs. Wells which are located downgradient from this "reclaimed" disturbance exhibit an increase in TDS, sulfate, bicarbonate and other chemical constituents.

In summary, regional ground water quality of the eastern and central portions of the Gas Hills Uranium Mining District transitions from a calcium sulfate to a calcium-sodium bicarbonate-sulfate-type water in an upgradient to downgradient direction. In general the regional water quality ranges in: pH from 6.5 to 8.4 s.u.; total dissolved solids (TDS) from 264 to 1100 ppm with minor amounts of trace metals, including iron, manganese, arsenic, selenium, radium and uranium. The water from the Wind River Aquifer in the Gas Hills is Class III suitable for livestock use in accordance with Wyoming DEQ/WQD Chapter VIII regulations. In the vicinity of uranium ore zones and rollfront deposits elevated concentrations of radionuclides may occur. PRI has identified baseline concentrations of uranium (U_{nat}) ranging from below detection to 0.30 mg/L and radium (Ra^{226}) ranging from below detection to 1840 pCi/L. Such concentrations of radionuclides would make these waters exceed Class III Standards, rendering them unsuitable even for livestock use.

PRI has collated historical ground water quality data and presented it in tabular form in Addendum D6-7. These data are used to supplement the extensive monitoring and background water quality data collection program initiated by PRI in the Fall of 1996. PRI has inspected, verified well completion and integrity, and continued to sample a number of pre-existing TVA and Pathfinder wells within and adjacent to their Permit Area. These recent data are presented along with the historic information in Addendum D6-7. As the sampling program progressed, PRI has made certain decisions to abandon some monitor wells and construct new and additional wells. Well locations, springs, and pit sample sites are presented on Plate D6-1.

3.5 Permit Area Water Quality

Through the Fall of 1997, Power Resources Inc. (PRI) has drilled and completed 34 monitoring wells within the Permit Area and inspected well integrity and confirmed well completion for 16 other non-PRI wells. Water levels were measured and water samples were collected from 47 of these wells. Three wells were not sampled because of well integrity problems. The two wells owned by PRI, GW-10 and M3C were abandoned. GW-10 was later replaced as a new well, GW-10A. The third unsampled well, Veca MW2, is owned by the Wyoming AML Division and they have been notified of the integrity problems. In addition to these wells, Pathfinder has eliminated access to two additional wells (4-1 and 7-1A) and has requested that they be eliminated from the PRI network. These two wells were not sampled in November, 1997. PRI has also requested and received LQD approval to eliminate certain wells from quarterly monitoring. Well completion information and sampling status is presented in Table D6-3-1. Water quality results are presented in Addendum D6-7. The monitoring wellfields were designed to provide adequate spatial and

stratigraphic distribution within the proposed affected area. PRI recognizes that as wellfields are developed within a specific unit, additional water quality and aquifer characterization data will be collected and presented to DEQ/LQD within the framework of their mine unit hydrologic testing program, permitting and annual reports. The monitoring wells and water quality sample sites are presented on Plate D6-1. Plate D6-3 presents the regional potentiometric surface map. Table D6-3-3 presents the average background concentrations of selected ions on a mine unit by mine unit basis.

3.5.1 Total Dissolved Solids (TDS) and Major Ions

Upgradient background total dissolved solids (TDS) concentrations within the Wind River Aquifer water typically range from 245 to 645 mg/L. Within the Permit Area, baseline TDS concentrations average from 623 mg/L in Mine Unit 1 to 1887 mg/L in Mine Unit 5. Exclusive of the previously disturbed area in Mine Unit 5, typical values within the Permit Area fall between 623 and 863 mg/L. Similar to the regional ground water quality, the Permit Area water quality is dominated by calcium sulfate water in the east transitioning to calcium-sodium bicarbonate-sulfate water in the west. In areas affected by past mining and reclamation activities and where ground water has flowed through spoils, or where open pits have become ground water depressions and concentration of salts through evaporation has occurred, TDS can range between 1,000 to 3070 mg/l. Downgradient from these locations, calcium sulfate type water predominates.

West of the East Gas Hills area, Mine Unit 2 is located in relatively undisturbed lands downgradient from the Beaver Divide. Waters from many of the Mine Unit 2 wells (single completion into the 70 Ore Sand) average 573 mg/L TDS. The major cations contributing to TDS are bicarbonate (primarily) and sulfate (secondarily). As the ground water moves downgradient from the Divide and into the vicinity of Mine Units 1 and 3, average TDS increases from 623 to 863 mg/L and sulfate content also increases.

3.5.2 Radionuclides

Uranium concentrations are relatively low in all monitoring wells including the ore zone wells. Maximum uranium concentrations were identified at Well BSMP-1 (0.320 mg/L), Peach MP-1 (0.307 mg/L) and Veca MW3A (0.209 mg/L). The BSMP and Peach wells were completed in the ore zone within Mine Unit 2 and 3, respectively. The Veca well is completed downgradient from extensive AML reclamation and reflects an anomalously high and presumably temporal (short term) increase in dissolved uranium.

Radium-226 concentrations in the ground water are variable. Radium is in equilibrium with uranium in the aquifer, and higher concentrations are found near existing and mined out uranium deposits. For example, Peach MP-1 (540 pCi/L) and MUMP 97-1 (898 pCi/L) are completed in ore bodies (Mine Units 3 and 1 respectively). These values exceed the Class IV standard by 100 to 180 times. Outside the ore bodies, radium levels are significantly lower. Upgradient from these deposits, Radium 226 is typically less than 5 pCi/L. Downgradient values are higher, but still less than 50 pCi/L. Mean values of radium 226 per

Mine Unit are presented on Table D6-3-3. These mean values are skewed on the high end of the spectrum, based on the influence of the ore zone wells. Nevertheless radionuclide levels within the mine units generally make these waters unsuitable for Class III (livestock use).

3.5.3 Trace Metals

The baseline ground water within the Permit Area and within the mine units is typically low in trace metals. Most constituents are below Method Detection Limits. Occasionally undisturbed ground water will exhibit minor concentrations of manganese, arsenic, boron, selenium, iron and zinc. However, typically these concentrations are well below Class III water quality standards.

In the ground water affected by historical mining and reclamation activities, certain trace metals including iron, manganese and arsenic are routinely elevated. The increase in iron and manganese can be attributed to the oxidation and dissolution of iron-bearing minerals (pyroxenes, amphiboles, phyllosilicates and sulfides) and the local reduction in pH and increase in Eh.

3.5.4 pH

The natural pH of the ground water in the Gas Hills is slightly greater than 8, although values ranging from 6.5 to 8.5 are common. In some of the northern portions of the Gas Hills, and in the vicinity of Iron Springs, natural pH values below 4.0 were recorded in the 1950's. Within the mine units, ground water pH typically ranges from 6.3 to 9.7. In two cases (MO-1 and Peach M-2) anomalous laboratory pH values greater than 11 were recorded during the third quarter, 1996. Field pH values, which were measured at these two sample sites, were in excess of 10. Subsequent sampling suggests that the Peach M-2 initial sample value was an outlier and that the well completion and cementing process may have skewed its pH. Subsequent measurements at Muskrat MO-1 indicates that the pH value at this site is anomalous.

Near the historical mining disturbances, pH values are generally lower than those measured in the typical Permit Area ground water. Based on sample data collected for this permit, ground water pH ranges from 6.3 to 7.9 within or immediately adjacent to historical mining disturbances. Studies in adjacent areas have documented a similar range in pH values immediately following reclamation. As ground water continues to recover in the backfilled pits, pH values are predicted to increase towards background or upgradient conditions.

3.6 Spatial Characterization of Ground Water Quality (Mine Units 1,2 and 3)

The PRI field effort characterized the baseline water quality of the individual mine units. Historically the majority of the monitoring wells within the project area were completed in multiple sands within the Wind River Aquifer. The data presented in Addendum D6-7 includes the results of the 1996-1997 project-specific baseline data collected from wells

completed in the production zone and overlying and underlying sands in each mine unit. Figures D6-3-2 through D6-3-5 are Trilinear Diagrams which summarize the major cation/anion chemistry of the ore sand waters within the various mine units.

The 70 Sand is stratigraphically isolated within Mine Units 1 and 2. PRI has installed a number of single completion wells within that sand and the chemistry of water collected from these wells is plotted on Figure D6-3-2. The waters from each well, completed in the 70 Sand within these two mine units is nearly identical in chemical quality character. Although not plotted, the recently completed MUMP97-1 well is also nearly identical in chemical character. The ground water in the 70 Sand in Mine Units 1 and 2 can be characterized as calcium-sodium bicarbonate-sulfate type water.

Figure D6-3-3 presents the major cation/anion chemistry of the 40-50-60 Ore Sands in the vicinity of Mine Unit 3. In Mine Unit 3, these three sand bodies are in hydraulic communication with each other. Again and as discussed above (Mine Units 1 and 2) the waters from each well plot in the same field on Figure D6-3-3 and are nearly identical in chemical quality character. Ground water from the 40-50-60 Sands within Mine Unit 3 is slightly higher in sodium sulfate than the ground water in Mine Units 1 and 2. This minor character change may be a reflection of the increased dissolution of gypsum within the aquifer and ion exchange of calcium for sodium within the clays. In addition to this natural increase in sulfate concentration within Mine Unit 3, a secondary source for sulfate mineralization may be the historical mining disturbances at the Atlas Shaft (Plate D6-1).
A review of these Trilinear Diagrams (Figures D6-3-2 and D6-3-3) demonstrates that the water quality within an individual mine unit is similar and predictable. In other words, the major cation/anion chemistry of individual wells singularly completed in an ore sand aquifer within a mine unit is similar and can be predicted. Samples collected from ground waters in Mine Units 1 and 2 (70 Sand) are remarkably similar to ground waters sampled in Mine Unit 3 (40-50-60 Sand). The small geochemical differences are a function of the Mine Unit's position within the ground water flow regime (i.e. upgradient versus downgradient) and the amount of time (chemical kinetics) that the ground waters are in contact with the mineralogic assemblages within the formation.

3.7 Stratigraphic Characterization of Ground Water Quality (Mine Units 1,2 and 3)

The PRI field effort also characterized the baseline water quality of the ore sands compared to the overlying and underlying sands in Mine Units 1, 2 and 3. The majority of the historical Gas Hills ground water quality data were collected from multiple completion wells, penetrating more than one individual sand (e.g. Wells 4-1, 7-1A, Mine Unit 1; PC, PD, PE and PF, Mine Unit 3). PRI's 1996 and 1997 field drilling and well completion program concentrated on single completion wells both within and surrounding the ore zone. The statistical results of the PRI field water quality effort are presented in Table D6-3-4 (Mine Units 1 and 2) and D6-9 (Mine Unit 3). The laboratory data in Addendum D6-7 present the complete chemical analysis of each sample collected.

Tables D6-3-4 and D6-3-5 group the laboratory data by stratigraphic interval. These tables directly compare select water quality parameters for single completion wells in the respective ore zone to wells screened in the overlying and underlying strata and multiple completion wells. The ore sand wells are nearly identical to or within one standard deviation of the non-ore zone wells for all parameters except radionuclides. One can conclude from these data that water from wells completed in the discrete Mine Unit ore sands has the same chemical characteristic as water from wells completed in multiple sands within the Wind River Aquifer. The historic data from the older TVA and Pathfinder wells provide a long-term record of water quality within the mine units and confirm these findings. The principal water quality difference between wells completed in the mine unit sands and the overlying and underlying strata is the presence or absence of radionuclides. The same relationship holds between wells completed in the mine unit mineralized zone and wells completed in the same sand, upgradient and downgradient from the mineralized zone.

3.8 Characterization of Ground Water Quality (Mine Units 4 and 5)

Figures D6-3-4 and D6-3-5 presents the major cation/anion ground water chemistry of the Wind River Aquifer (East Canyon Conglomerate, 50-60-70 Sands) in the vicinity of Mine Units 4 and 5, located in the eastern portion of the PRI Permit Area. The data points on these trilinear diagrams include single completion wells, a limited number of historic multiple completion wells and the Buss Pit, a partially penetrating ground water-fed impoundment. The chemical character of the single completion wells compares favorably with that of the multiple completion wells (e.g. GW-5A on Figure D6-3-4; and GW-11 on Figure D6-3-5). Hydraulic (pump test), geologic and geochemical evidence suggest that there is leakage between discrete sands within Mine Unit 4. Faulting and the extensive historic open pit mining in the area may have resulted in hydraulic communication between the sands.

The calcium sulfate concentrations combined with high TDS is a distinguishing characteristic of the water quality in the Wind River Aquifer of Mine Units 4 and 5. This chemical characterization is more a reflection of the upgradient mining disturbances in the area than the natural water quality of the area. Baseline data collection in these mine units reflects the current disturbed condition. In the vicinity of Mine Unit 5, the chemical characteristics of the local ground water will continue to change with time.

An example of the effects of past mining can be seen in a review of the historic data associated with Well GW-11 (Addendum D6-7). This well, a historic FAP monitoring well, is an example of a multiple completion well. Although PRI was unable to verify the exact completion of the GW-11 Well, one can assume that it is screened in the same manner as the majority of the similar vintage (pre-1981) monitor wells. Because of its age and location within a previously mined area, long-term trends and the impacts of pit backfill on adjacent ground water quality can be evaluated.

Well GW-11 is located in the East Gas Hills Mining District, immediately downgradient from Umetco's backfilled and reclaimed C3/C4 mine pits. This location falls within Mine

Unit 5 and upgradient from the Pix ore trend. Within one-half mile of the well, up, down, and cross-gradient, are several historic mining disturbances, all of which are now reclaimed. The historic mine pits in the general area, which include TVA's Bengal Pit, FAP's Tee Pit, Umetco's B2/B3 and Umetco's C3/C4 Pit intercepted ground water from the 40-50-60-70 Sands.

1981 and 1982 historic water quality data suggest that the waters from Well GW-11 were relatively low in TDS (501-532 mg/L) with relatively low concentrations of the major anions and cations. It was primarily a calcium-sulfate type water with calcium concentrations ranging from 58 to 61 mg/L and sulfate ranging from 276 to 308 mg/L. PRI first sampled the well in September of 1996 and has continued to sample the well through November, 1997. PRI's recent water quality data indicate that the ground water chemistry in the area has significantly changed since 1982. During the PRI sampling period, GW-11 has maintained relatively consistent characteristics: TDS concentration ranging from 1350 to 1450 mg/L; calcium concentration ranging from 286 to 339 mg/L; and sulfate concentration ranging from 650 to 741 mg/L.

Between the 1982 and 1996 sampling period, several hundred acres of ground water-fed mine pits were backfilled and reclaimed by the various mining companies and the State of Wyoming Abandoned Mined Land Division. Several million cubic yards of oxidized mine spoils were backfilled into the water table, thereby impacting the ground water quality of this area. As native, undersaturated, upgradient ground water passes through mine spoils, mineral dissolution, and in particular gypsum dissolution ($CaSO_4$) occurs. Sulfide oxidation and bicarbonate consumption occur as part of this process, resulting in an increase in TDS, major anions and cations, and a decrease in pH. AML data suggest that this effect (increase in TDS, major anion/cation concentrations) will continue for some time and that the ground water chemistry in the East Gas Hills will reflect this dynamic condition. Wyoming AML has continued to study the change in water quality within the backfilled and reclaimed areas. Their work includes a long-term monitoring program and comparison of the recently collected ground water data to pre-reclamation laboratory and computer model predictions. This on-going study is documented in the previously referenced reports (Lidstone & Anderson, 1989; 1994), which are on file with the Wyoming AML.

Finally, Figure D6-3-6 illustrates the potential mixing of ground and surface and/or White River waters within Mine Unit 4. It presents both sulfate-rich and bicarbonate-rich waters of this mine unit. The sulfate waters (BUMP, BUMO and BUMU97-1, GW5A) are characteristic of wells completed in the deeper sand units of the Wind River Aquifer (e.g. East Canyon Conglomerate, 40, 50, 60 and 70 Sands). The waters in these sands are in equilibrium with the gypsum-rich formation and may reflect increased ground water residence time within the aquifer.

The bicarbonate-rich waters on this figure include surface water samples from West Canyon Creek (WCC-1 and WCC-2: base flow derived from springs originating in the Wagon Bed Formation), two single completion (50-60 Sand and 40-50, respectively) ground water wells (i.e. WSL96MP-1 and WSL 96M-1), and multiple completion wells such as TVA MW-3

and GW-9. Each of these ground water sample sites may be in communication with either the upper, more bicarbonate-rich sands (80 or 90 Sands) or the near surface alluvial aquifer (West Canyon Creek). The mechanism of this hydraulic communication may be vertical leakage between strata or a more direct communication via geological structure. The Buss Fault, which is located adjacent to this wellfield (Plate D5-2) may act as a recharge boundary and provide a near surface connection between the underlying Wind River sands and the alluvium of West Canyon Creek.

The presence of bicarbonate waters within the Wind River Aquifer appears to be unique to Mine Unit 4. PRI's Hydrologic Unit Testing Program in Mine Unit 4 will provide additional and more detailed information in the evaluation of the near surface bicarbonate and the deep, sulfate-rich ground water conditions. Additional hydrologic unit testing program data collection in this area, prior to implementation of PRI's ISL mining in these mine units will fully characterize the ore zone chemistry.

3.9 Water Rights

3.9.1 Surface Water Rights

A preliminary computer search of all water rights within the project area and to a distance of one-half mile outside the Permit Area was conducted by the Wyoming State Engineer's Office in the Spring of 1996. This search was updated in the Fall of 1996 and again in September 1997. A list of all surface water rights, is presented in Addendum D6-8. Locations of the surface water rights are shown on Plate D6-4. The only surface water permit within one-half mile of the project area that is not related to mining is Reservoir Permit P9573R. This Bureau of Land Management reservoir was developed in a depression resulting from previous mining activities. It is not anticipated that the proposed ISL activities will have any significant impact on surface waters or surface water rights.

3.9.2 Ground Water Rights

The 1996 and 1997 water rights searches included ground water rights within the project area. All ground water rights located within the project area and to a distance of one-half mile outside the Permit Area are also presented in Addendum D6-8. Locations of ground water rights within one-half mile of the project area are shown on Plate D6-4. There are two non-mining ground water permits in or within one-half mile of the project area. They are P44457W and P71766W.

Due to previous mining operations in the Gas Hills and associated pit dewatering, cones of depression currently exist in and adjacent to the project area. Based on pre-mining water level elevations developed for Pathfinder's and UMETCO's mining operations, and reported in their respective permit documents, it is estimated that the Wind River aquifer water levels

within the project area are presently lowered from five feet to greater than 50 feet depending on proximity to the pits. The proposed ISL operation will have a relatively small bleed rate resulting in minimal additional water level elevation depression. It is anticipated that no additional water level lowering of non-mining ground water rights from the ISL operations will occur. A slight decrease in the rate of recovery from previous mining activities will be the most likely impact.

Cameron Spring (permit number P44457W) is located within the project area. Discharge originates from the Wagon Bed Formation, which is stratigraphically above the Wind River Formation. Because no ISL mining activities will occur in areas where the Wagon Bed Formation crops out, no impact to Cameron Spring will occur.

Spring P71766W discharges from the upper stratigraphic units of the Wind River Formation within the project area. The elevation of this spring is approximately 200 feet higher than the Wind River Aquifer water level elevation in the project area. The spring discharges from a perched ground water system in the Wind River Formation and is located a minimum of one half mile from any proposed disturbances. Surface disturbance of the spring area will not occur. ISL mining will take place in stratigraphically lower, hydrologically isolated units. Therefore, proposed ISL mining activities will not affect the water level or quality of this spring.

COMPLETION AND RECOMPLETION REPORT

WELL NUMBER _____
LEASE _____
AREA _____
HOLE DIAMETER _____
CASING DIAMETER _____
REAMED DIAMETER _____

DATE _____
FIELD SUPV. _____
CONTRACTOR _____

LINER DATA

PACKER TYPE _____ NUMBER _____
LINER DIAMETER _____
SCREEN TYPE _____ SLOT _____

GRAVEL

SIZE _____
SACKS CALCULATED _____ TAKEN _____

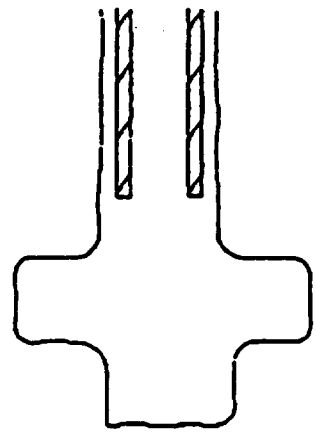
COMMENTS _____

TAGGED TOP OF J _____

USEFUL DATA

HOLE MEASUREMENTS

REAMER:
CONE _____
BLADE _____



CASING T.D. _____ FT.

UNDER-REAMED INTERVAL _____ FT.

_____ FT.

DRILLED T.D. _____ FT.

LINER MEASUREMENTS

	FEET	FROM	TO
TOP ASSY			
BLANK			
SCREEN			
SAND TRAP			
VALVE ASSY			

Figure D6-3-1. Typical Monitoring Well Completion Form, PRI Gas Hills Project.

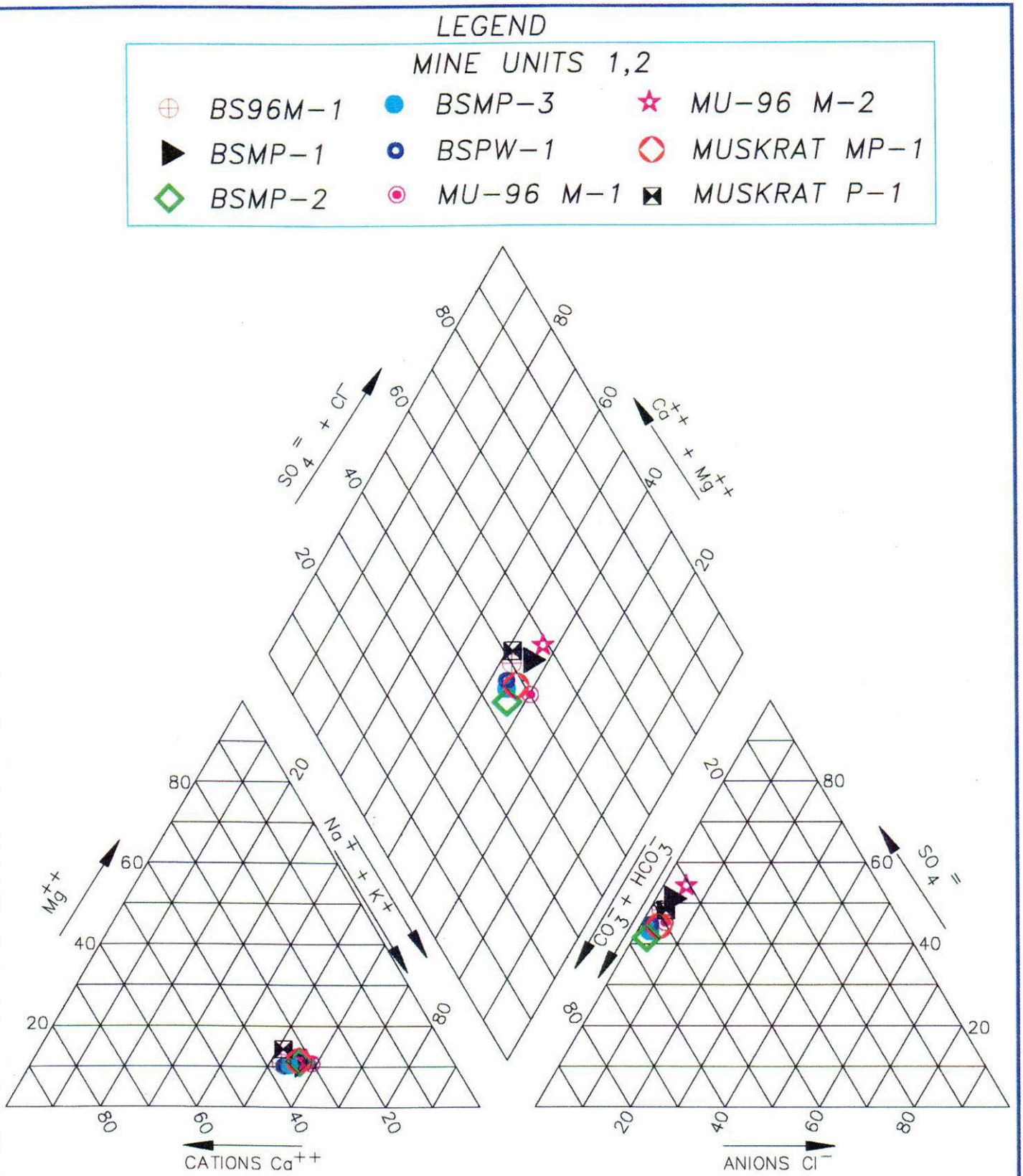


Figure D6-3-2.

Trilinear Diagram - Ground Water Quality Characterization of 70 Sand, Vicinity of Mine Units 1 and 2, PRI Gas Hills Project.

C-02

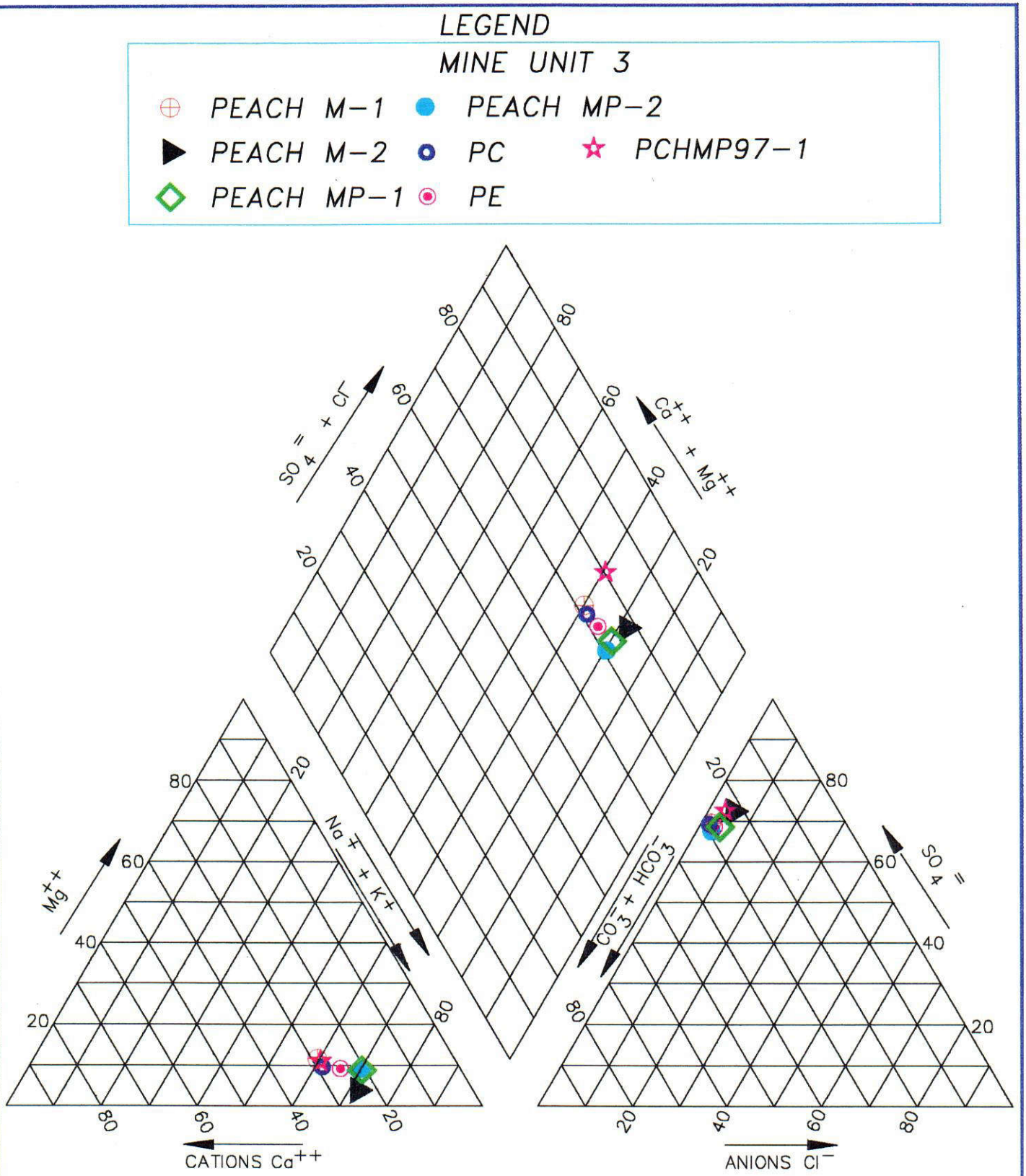


Figure D6-3-3.

Trilinear Diagram - Ground Water Quality Characterization of 40-50-60 Sands, Vicinity of Mine Unit 3. PRI Gas Hills Project.

C-03

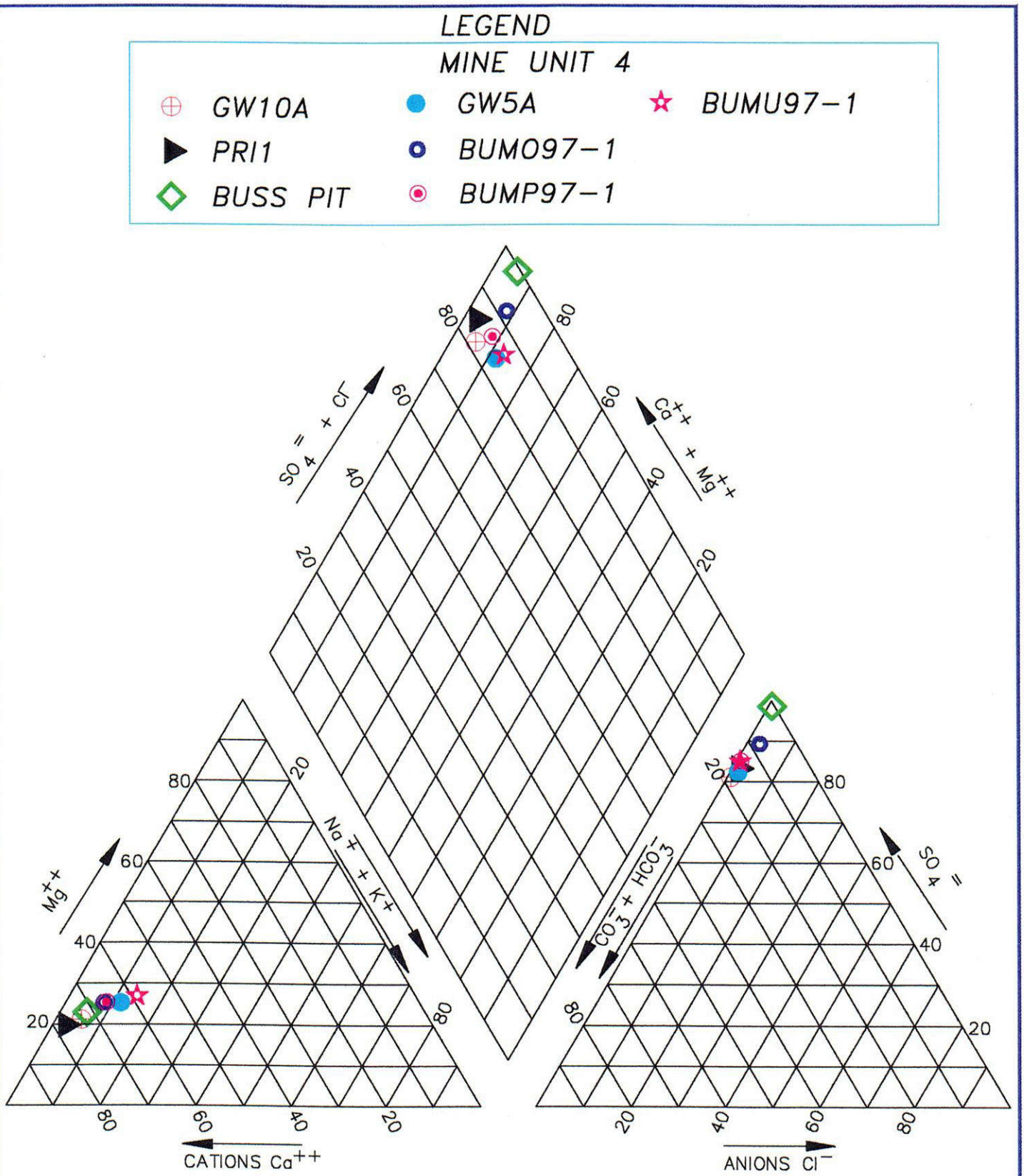


Figure D6-3-4.

Trilinear Diagram
Characterization of Sulfate Rich
and Disturbed Ground Water Quality
Mine Unit 4

C-04

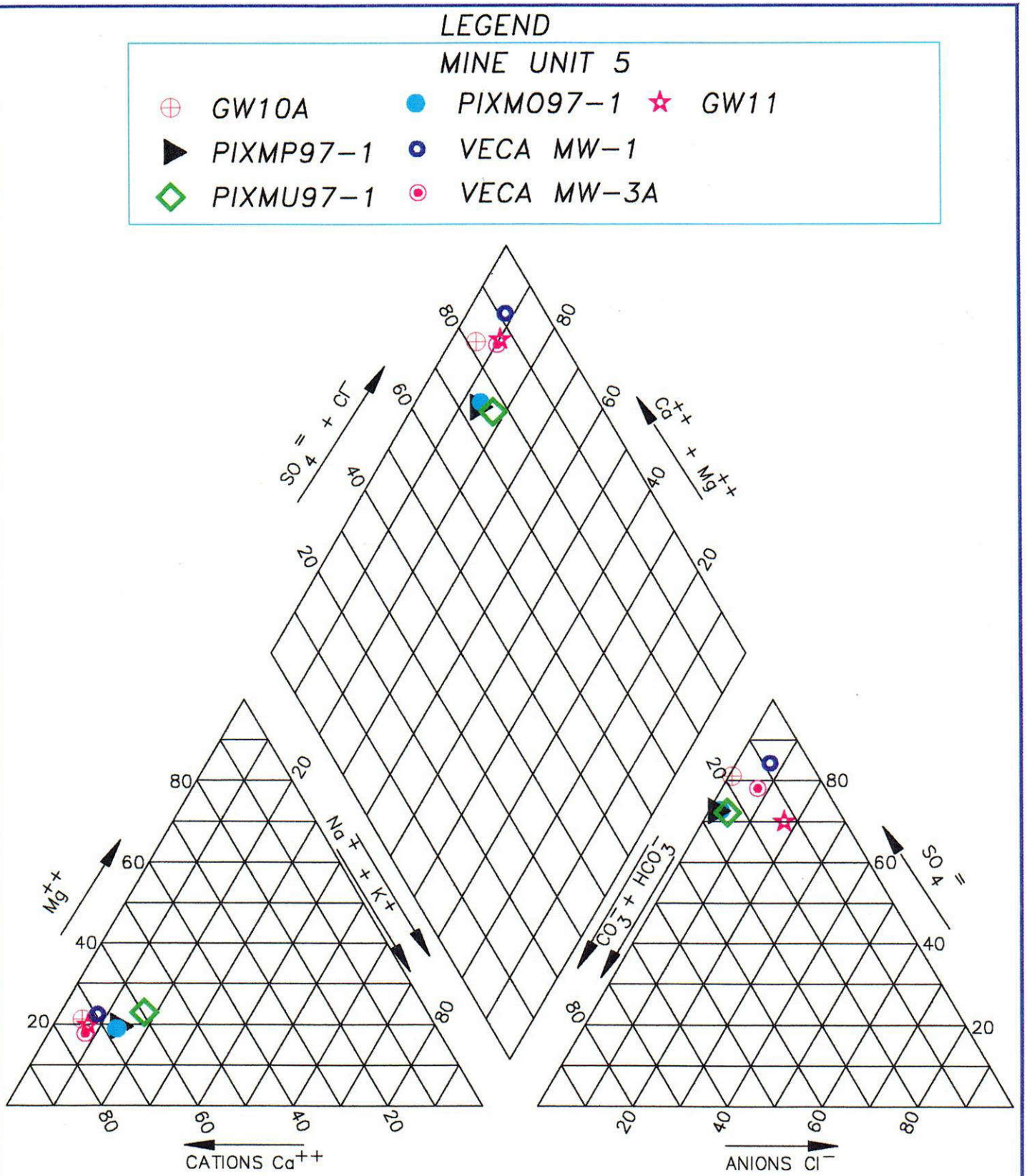


Figure D6-3-5.

Trilinear Diagram - Ground Water Quality Characterization of Calcium Sulfate Water of Mine Unit 5

C-05

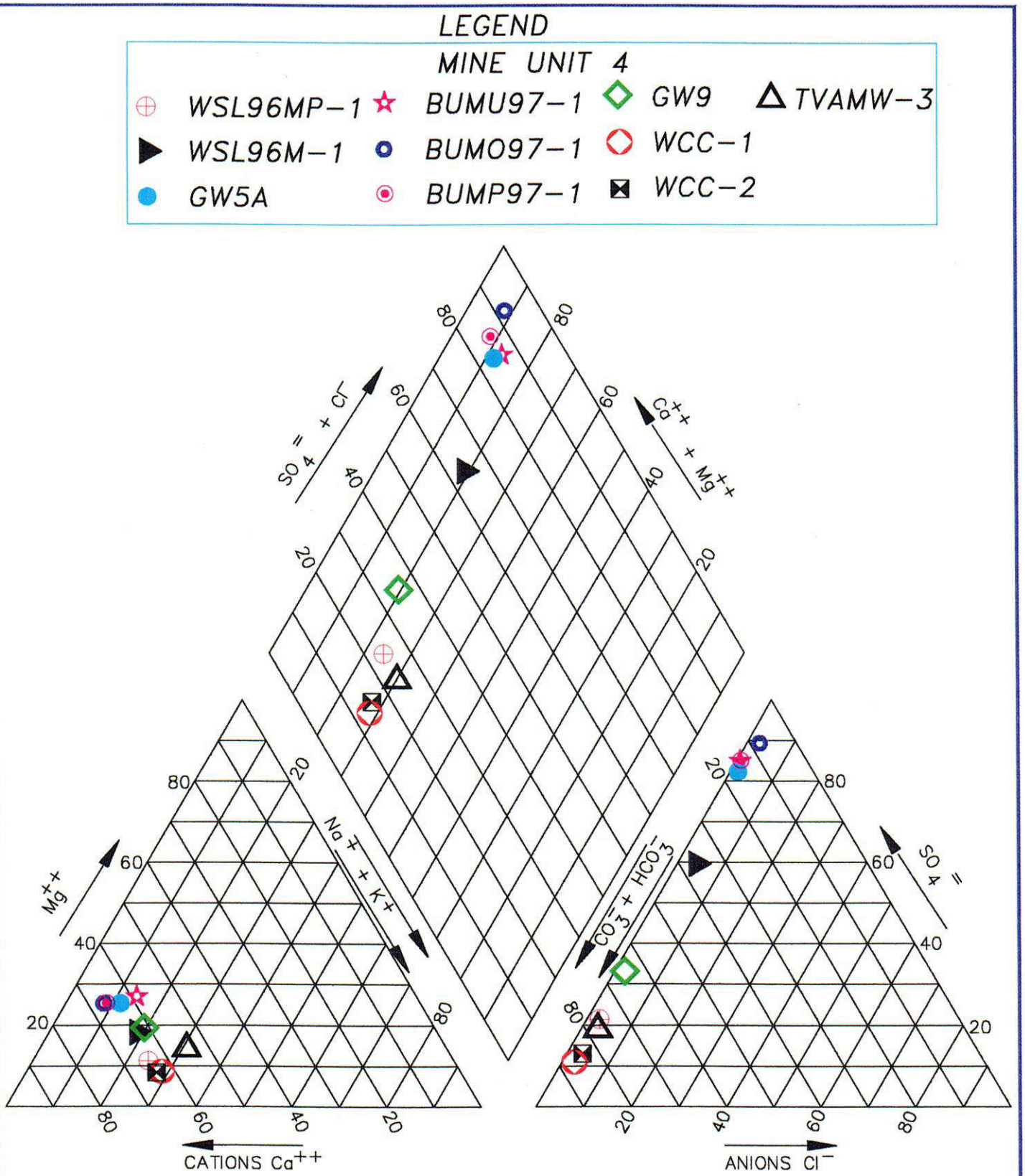


Figure D6-3-6.

Trilinear Diagram - Ground Water Quality Comparison of the Sulfate and Bicarbonate Waters of Mine Unit 4

C-06

Table D6-3-1. Well Completion Summary PRI Gas Hills Project.

Well #	Location 1/4, Sec, T, R	Ground Elev (ft msl)	Elev. Top of Casing (ft msl)	Total Depth Drilled (feet)*	Completion Interval (feet)*	Stratigraphic Description of Completion Interval	Monitoring Status January 1998
Mine Unit 1							
MU96 M-1	SW,31, 33N,89W	6822.6	6824.6	480	420 - 465	70 Sand, no ore in screened interval	Annual indicator parameters
MU96 M-2	SW,31 33N,89W	6835.0	6837.1	480	435 - 475	70 Sand, no ore in screened interval	Annual static water level
MO-1	SE,31 33N,89W	6846.0	6846.5	400	376 - 380.3	Sand unit above production zone	Annual indicator parameters
P-1	SE,31 33N,89W	6845.0	6845.8	500	435 - 454.3	70 Sand, ore bearing	Annual indicator parameters
MP-1	SE,31 33N,89W	6849.0	6849.4	460	433 - 452.3	70 Sand unit, ore bearing	Annual indicator parameters
MUMP 97-1	SE,31 33N,89W	6856.6	6857.3	440	390 - 410	70 Sand unit	Quarterly baseline through third quarter 1998
MU-1	NE, 2 32N,90W	6815.0	6815.7	600	574 - 594	Underlying Cloverly Formation	Annual indicator parameters
M-4	NE, 2 32N,90W	6781.9	6782.2	400	359 - 379	70 ore bearing sand, on altered side of roll, weak mineralization on margins	Annual indicator parameters
MO-3	NE,2 32N,90W	6779.2	6780.1	345	310 - 330	Arkosic sandstone, above lower production zone, mineralization	Annual indicator parameters

* Feet below ground [b] Interpreted from gamma logs NS - Not Surveyed

Table D6-3-1. Well Completion Summary PRI Gas Hills Project (Continued).

Well #	Location 1/4, Sec, T, R	Ground Elev (ft msl)	Elev. Top of Casing (ft msl)	Total Depth Drilled (feet)*	Completion Interval (feet)*	Stratigraphic Description of Completion Interval	Monitoring Status January 1998
P-2C	NE,2 32N,90W	6820.4	6820.9	400	350 - 380	70 ore bearing sand	Abandoned due to excessive sediment and poor water level recovery
M-3C	NE,2 32N,90W	6815.9	6816.4	380	347 - 377	70 ore bearing sand	Abandon due to no water in well
MO-2	NE,2 32N,90W	6821.3	6821.4	325	303 - 318	Arkosic sandstone, above lower production zone, mineralization in interval	Annual indicator parameters
7-1 (A)	SW,36 33N,90W	6748.1	6748.7	446	165 - 425[b]	Upper Wind River Aquifer, perched sand	Abandoned by Pathfinder
Mine Unit 2							
BS96 M-1	NW,32 33N,89W	6825.0	6825.1	320	255 - 305	70 sand, non-ore bearing	Annual indicator parameters
BSMP-1	NW,32 33N,89W	6843.4	6844.2	376	335 - 354.6	70 ore bearing sand	Annual indicator parameters
BSMP-2	NW,32 33N,89W	6860.8	6861.8	410	383 - 407.4	70 ore bearing sand,	Annual static water level
BSMP-3	NW,32 33N,89W	6847.8	6849.1	390	348 - 367.4	70 ore bearing sand just beyond south fault	Annual indicator parameters
BSPW-1	NW,32 33N,89W	6886.0	6887.9	440	405.6 - 425	70 ore bearing sand	Annual static water level

* Feet below ground [b] Interpreted from gamma logs NS - Not Surveyed

Table D6-3-1. Well Completion Summary PRI Gas Hills Project (Continued).

Well #	Location 1/4, Sec, T, R	Ground Elev (ft msl)	Elev. Top of Casing (ft msl)	Total Depth Drilled (feet)*	Completion Interval (feet)*	Stratigraphic Description of Completion Interval	Monitoring Status January 1998
BSMU-1	NW,32 33N,89W	6888.6	6890.1	485	455 - 485	50 sand zone below confining zone underlying ore sand	Annual indicator parameters
Mine Unit 3							
4-1A	NW, 2 32N,90W	NS	6772.7	500	350 - 507[b]	Wind River Aquifer	Abandoned by Pathfinder
Peach M-1	NE,3 32N,90W	6707.0	6708.2	340	260 - 320	30-40 Sand, no ore in screened interval	Annual indicator parameters
Peach M-2	SE,3 32N,90W	6753.4	6755.8	420	325 - 395	40-50 Sand, no ore in screened interval	Annual indicator parameters
Peach MP-1	SE,3 32N,90W	6740.5	6742.7	400	290 - 310	50 Sand, ore zone	Annual indicator parameters
Peach MP-2	SE,3 32N,90W	6734.1	6736.1	400	320 - 340	40 Sand, no ore in screened interval	Annual indicator parameters
PC	SE,3 32N,90W	6799.2	6799.9	432.1	300 - 420	30-40-50-60 Sand, interbedded with clay, shale, silty clay	Annual indicator parameters
PE	SE,3 32N,90W	6798.6	6799.5	410.5	314 - 410	40-50-60-70 Sand, interbedded with siltstone, clay	Annual indicator parameters
PF	SW,10 32N,90W	6718.9	6719.3	397.9	297 - 397	Wind River, medium grained sandstone with clay units above and below	Annual static water level
PD (PO)	NE,10 32N,90W	6918.7	6919.6	540	430 - 540	50-60-70 Sand, interbedded with clay and shale	Annual indicator parameters

* Feet below ground [b] Interpreted from gamma logs NS - Not Surveyed

Table D6-3-1. Well Completion Summary PRI Gas Hills Project (Continued).

Well #	Location 1/4, Sec, T, R	Ground Elev (ft msl)	Elev. Top of Casing (ft msl)	Total Depth Drilled (feet)*	Completion Interval (feet)*	Stratigraphic Description of Completion Interval	Monitoring Status January 1998
PCHMP 97-1	NE,10 32N,90W	6936.7	6937.7	802	615 - 635	30-40 Sand	Quarterly baseline through third quarter 1998
PCHMO 97-1	NE,10 32N,90W	6935.8	6936.7	513	490 - 510	70 Sand	Quarterly baseline through third quarter 1998
Mine Unit 4							
GW-5A	SW,27 33N,89W	6940.1	6944.8	485	249 - 485	50-60-70-80 Sand, Interbedded sandstone, shale, clay	Annual indicator parameters
GW-9	SE,28 33N,89W	6826.3	6830.0	318.4	145 - 318	60-70-80-90 Sands, interbedded sandstone and clay	Annual indicator parameters
WSL96 M-1	SE,28 33N,89W	6825.3	6826.5	380	305 - 365	East Canyon Conglomerate, 50-60 Sand, no ore in screened interval	Annual indicator parameters
WSL96 MP-1	SW,28 33N,89W	6795.0	6797.0	300	260 - 275	60 Sand, ore zone	Annual indicator parameters
TVA MW-1	SW,34 33N,89W	7005.0	7008.0	592.7	160 - TD	60-70-80-90 Wind River Formation Sands; Lower Wagon Bed Formation interbedded sandstone, siltstone, mudstone, gravel, conglomerate	Abandon due to integrity of surface seal

* Feet below ground

[b] Interpreted from gamma logs

NS - Not Surveyed

Table D6-3-1. Well Completion Summary PRI Gas Hills Project (Continued).

Well #	Location 1/4, Sec, T, R	Ground Elev (ft msl)	Elev. Top of Casing (ft msl)	Total Depth Drilled (feet)*	Completion Interval (feet)*	Stratigraphic Description of Completion Interval	Monitoring Status January 1998
TVA MW-2	NW,34 33N,89W	6933.0	6935.0	566	75 - TD	60-70-80-90 Wind River Formation Sands; Lower Wagon Bed Formation interbedded sandstone, siltstone, mudstone, gravel, conglomerate	Abandon due to integrity of surface seal
TVA MW-3	SE,28 33N,89W	6823.0	6825.0	409.6	90 - TD	60-70-80-90 Wind River Formation Sands, interbedded sandstone, siltstone, mudstone, gravel, conglomerate	Abandon due to integrity of surface seal
PRI-1	NW,27 33N,89W	NS	6814.6	289	233 - 278	50 Sand, East Canyon Conglomerate	Annual indicator parameters
BUMU 97-1	NW,34 33N,89W	7001.4	7002.0	720	695 - 715	East Canyon Conglomerate	Quarterly baseline through third quarter 1998
BUMP 97-1	NW,34 33N,89W	7001.4	7002.6	620	585 - 615	60 Sand	Quarterly baseline through third quarter 1998
BUMO 97-1	NW,34 33N,89W	7000.5	7001.3	370	348 - 368	90 Sand (upper split)	Quarterly baseline through third quarter 1998
Mine Unit 5							
GW-10	SE,21 33N,89W	NS	6813.6	331	163 - 331	Wind River Formation	Abandoned due to casing integrity
GW-10A	SE,21 33N,89W	6810.5	6811.3	312	245-295	50 Sand	Quarterly baseline through third quarter 1998

* Feet below ground

[b] Interpreted from gamma logs

NS - Not Surveyed

Table D6-3-1. Well Completion Summary PRI Gas Hills Project (Continued).

Well #	Location 1/4, Sec, T, R	Ground Elev (ft msl)	Elev. Top of Casing (ft msl)	Total Depth Drilled (feet)*	Completion Interval (feet)*	Stratigraphic Description of Completion Interval	Monitoring Status January 1998
GW-11	NE,22 33N,89W	6902.0	6903.1	329.9	Not Known	Wind River Formation	Annual indicator parameters
VECA MW-1	SW,22 33N,89W	6886.0	6888.1	180.7	122 - 142 162 - 180	50-60 Sands, medium to coarse grained sandstone	Annual indicator parameters
VECA MW-2	SW,22 33N,89W	6845.3	6848.3	162	122 - 162	50 Sand, sandstone and silt	Abandoned due to casing integrity
VECA MW-3A	NW,22 33N,89W	6847.1	6851.2	153.3	135 - 153	70 Sand and interbedded siltstone, sandstone and silt	Annual indicator parameters
PIXMP 97-1	NE,22 33N,89W	6874.4	6875.4	245	215 - 235	50 Sand	Quarterly baseline through third quarter 1998
PIXMO 97-1	NE,22 33N,89W	6875.3	6876.1	185	150 - 180	60 Sand	Quarterly baseline through third quarter 1998
PIXMU 97-1	NE,22 33N,89W	6874.7	6876.0	310	265 - 295	East Canyon Conglomerate (40 Sand)	Quarterly baseline through third quarter 1998

* Feet below ground [b] Interpreted from gamma logs NS - Not Surveyed

Table D6-3-2. Aquifer Hydraulic Properties PRI Gas Hills Project.

Well #	Mine Unit	Method of Analysis	Transmissivity (ft^2/min)	Storage Coefficient	Aquifer Thickness (ft)	Hydraulic Conductivity (ft/min)	Comments
P-1	1	Cooper Jacob Early Time	1.36×10^{-1}	NC	60	2.27×10^{-3}	Late time data indicate boundary condition
P-1	1	Cooper Jacob Late Time	6.62×10^{-2}	NC	60	1.10×10^{-3}	Late time data indicate boundary condition
MP-1	1	Cooper Jacob Early Time	1.84×10^{-1}	9.9×10^{-5}	65	2.83×10^{-3}	
MP-1	1	Cooper Jacob Late Time	1.02×10^{-1}	NC	65	1.57×10^{-3}	
MUMP97-1	1	Theis	5.51×10^{-2}	NC	57	9.67×10^{-4}	Late time data indicate boundary condition
MUMP97-1	1	Theis Recovery	5.78×10^{-2}	NC	57	1.01×10^{-3}	
BSPW-1	2	Cooper Jacob	3.61×10^{-2}	NC	48	7.52×10^{-4}	Increased drawdown due to proximity to faults
BSPW-1	2	Theis Recovery	3.13×10^{-2}	NC	48	6.52×10^{-4}	Increased drawdown due to proximity to faults
BSMP-1	2	Theis	3.34×10^{-2}	2.1×10^{-4}	48	6.96×10^{-4}	
BSMP-1	2	Theis Recovery	3.7×10^{-2}	NC	48	7.71×10^{-4}	Computer re-analysis agrees with early graphical analysis

[a] Historic Data
NC - not calculated by method indicated

Table D6-3-2. Aquifer Hydraulic Properties PRI Gas Hills Project (Continued).

Well #	Mine Unit	Method of Analysis	Transmissivity (ft^2/min)	Storage Coefficient	Aquifer Thickness (ft)	Hydraulic Conductivity (ft/min)	Comments
BSMP-2	2	Cooper Jacob	$3.57x10^{-2}$	$9.1x10^{-5}$	48	$7.44x10^{-4}$	Increased drawdown due to proximity to faults
BSMP-2	2	Theis Recovery	$3.53x10^{-2}$	NC	48	$7.35x10^{-4}$	Increased drawdown due to proximity to faults
BSMP-3	2	Theis	$8.05x10^{-2}$	$1.28x10^{-3}$	48	$1.68x10^{-3}$	
BSMP-3	2	Theis Recovery	$2.23x10^{-1}$	NC	48	$4.65x10^{-3}$	Based on limited number of points
PCHMP97-1	3	Variable Rate Theis	$2.03x10^{-1}$	NC	50	$4.06x10^{-3}$	
PCHMP97-1	3	Theis Recovery	$2.74x10^{-1}$	NC	50	$5.48x10^{-3}$	Mid-time recovery data indicate source of recharge
PCHMO97-1	3	Theis	$2.13x10^{-1}$	NC	170	$1.25x10^{-3}$	
PCHMO97-1	3	Hantush No Storage	$9.10x10^{-3}$	NC	170	$5.35x10^{-5}$	Boundary conditions indicated
PEACHMP-1	3	Theis	$1.15x10^{-1}$	NC	30	$3.8x10^{-3}$	
PEACHMP-1	3	Theis Recovery	$1.60x10^{-2}$	NC	30	$5.33x10^{-4}$	
PEACHMP-1	3	Cooper Jacob Parially Penetrating	$1.23x10^{-1}$	NC	30	$4.10x10^{-3}$	

[a] Historic Data
NC - not calculated by method indicated

Table D6-3-2. Aquifer Hydraulic Properties PRI Gas Hills Project (Continued).

Well #	Mine Unit	Method of Analysis	Transmissivity (ft^2/min)	Storage Coefficient	Aquifer Thickness (ft)	Hydraulic Conductivity (ft/min)	Comments
PF[a]	3	Cooper Jacob	$6.7x10^{-1}$	NC	100	$6.7x10^{-3}$	
PC[a]	3	Cooper Jacob	$1.9x10^{-1}$	NC	100	$1.9x10^{-3}$	
Pe[a]	3	Hantush Leaky	$1.5x10^{-1}$	NC	100	$1.50x10^{-3}$	
BUMP97-1	4	Theis Variable Discharge	$1.26x10^{-2}$	NC	70	$1.80x10^{-4}$	
BUMP97-1	4	Theis Recovery	$2.67x10^{-2}$	NC	70	$3.81x10^{-4}$	
BUMP97-1	4	Hantush No Storage	$1.70x10^{-3}$	NC	70	$2.43x10^{-5}$	
BUMO97-1	4	Theis Late Time	$1.17x10^{-1}$	NC	67	$1.79x10^{-3}$	
BUMO97-1	4	Cooper Jacob Late Time	$1.22x10^{-1}$	NC	67	$1.82x10^{-3}$	
BUMU97-1	4	Theis Recovery	$1.39x10^{-1}$	NC	250	$5.56x10^{-4}$	
WSL96MP-1	4	Recovery, Partially Penetrating	$5.74x10^{-2}$	NC	95	$6.04x10^{-4}$	
WSL96MP-1	4	Theis Recovery	$4.91x10^{-2}$	NC	95	$5.17x10^{-4}$	
WSL96MP-1	4	Moench Leaky, Partially Penetrating	$2.98x10^{-2}$	NC	95	$3.14x10^{-4}$	Source of leakance may be Buss Fault
WSL96M-1	4	Recovery, Partially Penetrating	$2.48x10^{-1}$	NC	90	$2.76x10^{-3}$	

[a] Historic Data
NC - not calculated by method indicated

Table D6-3-2. Aquifer Hydraulic Properties PRI Gas Hills Project (Continued).

Well #	Mine Unit	Method of Analysis	Transmissivity (ft^2/min)	Storage Coefficient	Aquifer Thickness (ft)	Hydraulic Conductivity (ft/min)	Comments
WSL96M-1	4	Hantush Leaky, Partially Penetrating	$1.25x10^{-1}$	$8.53x10^{-5}$	90	$1.39x10^{-3}$	Source of leakance may be Buss Fault
WSL96M-1	4	Moench Leaky, Partially Penetrating	$1.19x10^{-1}$	$9.4x10^{-5}$	90	$1.32x10^{-3}$	Source of leakance may be Buss Fault
WSL96M-1	4	Theis, Partially Penetrating	$1.15x10^{-1}$	$9.3x10^{-5}$	90	$1.28x10^{-3}$	
GW-5A	4	Hvorslev[a]	NC	NC	237	$1.0x10^{-4}$	
GW-9	4	Hvorslev[a]	NC	NC	188	$2.0x10^{-4}$	
GW-10	4	Hvorslev[a]	NC	NC	287	$9.2x10^{-6}$	Anomalously low value
PRI-1	4	Hvorslev[a]	NC	NC	45	$2.0x10^{-4}$	
PIXMP97-1	5	Theis	$1.00x10^{-2}$	NC	24	$4.17x10^{-4}$	Late time data indicate boundary effect
PIXMP97-1	5	Theis Recovery	$7.66x10^{-3}$	NC	24	$3.19x10^{-4}$	Late time data indicate boundary effect
PIXMO97-1	5	Theis Late Time	$3.79x10^{-3}$	NC	46	$8.24x10^{-5}$	
PIXMO97-1	5	Theis Recovery	$3.88x10^{-3}$	NC	46	$8.44x10^{-5}$	
PIXMU97-1	5	Theis	$5.61x10^{-4}$	NC	170	$3.30x10^{-6}$	
PIXMU97-1	5	Theis Recovery	$4.88x10^{-4}$	NC	170	$2.87x10^{-6}$	

[a] Historic Data
NC - not calculated by method indicated

Table D6-3-2. Aquifer Hydraulic Properties PRI Gas Hills Project (Continued).

Well #	Mine Unit	Method of Analysis	Transmissivity (ft^2/min)	Storage Coefficient	Aquifer Thickness (ft)	Hydraulic Conductivity (ft/min)	Comments
GW-10A	5	Hantush	$3.36x10^{-2}$	NC	75	$4.48x10^{-4}$	
GW-10A	5	Theis	$4.37x10^{-2}$	NC	75	$5.83x10^{-4}$	
GW-10A	5	Theis Recovery	$5.37x10^{-2}$	NC	75	$7.16x10^{-4}$	
Veca MW-1	5	Jacob[a]	$2.4x10^{-3}$	NC	42	$5.8x10^{-5}$	
Veca MW-2	5	Jacob[a]	$8.0x10^{-3}$	NC	42	$1.9x10^{-4}$	
Veca MW-3A	5	Jacob[a]	$1.2x10^{-3}$	NC	23	$5.3x10^{-5}$	

[a] Historic Data
NC - not calculated by method indicated

Table D6-3-3. Average Concentrations in Background Ground Water by Mining Unit, Upper Wind River Aquifer, Fall 1996-Fall 1997.

Constituent	Units	Mine Unit 1[a]	Mine Unit 2[b]	Mine Unit 3[c]	Mine Unit 4[d]	Mine Unit 5[e]
Calcium	mg/L	69	69	64	129	408
Conductivity	μmhos/cm	943	881	1278	879	2088
Magnesium	mg/L	15	13	14	25	74
Sodium	mg/L	116	114	194	31	40
Potassium	mg/L	16	12	16	17	26
Carbonate	mg/L	0.1	3.8	5.1	0.1	0.1
Bicarbonate	mg/L	282	293	197	225	228
Sulfate	mg/L	236	219	451	298	1102
Chloride	mg/L	18	11	20	7	61
Ammonium	mg/L	0.2	0.2	0.3	0.1	0.1
Fluoride	mg/L	1.0	1.1	0.8	1.0	1.0
Silica	mg/L	17	17	13	34	21
Total Dissolved Solids	mg/L	623	573	863	660	1887
Alkalinity	mg/L	231	245	172	184	187
pH	s.u.	8.1	8.1	8.4	7.9	7.7
Manganese	mg/L	0.06	0.10	0.02	0.07	0.40
Zinc	mg/L	0.01	0.01	0.01	0.01	0.02
Uranium	mg/L	0.01	0.05	0.04	0.01	0.09
Radium	pCi/L	705	114	136	304	65
Ore Zone Uranium[f]	mg/L	0.02	0.06	0.11	0.01	0.01
Ore Zone Radium[f]	pCi/L	1277	136	434	939	333

[a] Mine Unit 1: average of wells MU96M-1, MU96M-2, P-1*, MP-1*, and MUMP97-1*.
[b] Mine Unit 2: average of wells BS96M-1, BSMP-1*, BSMP-2*, BSMP-3*, BSPW-1*.
[c] Mine Unit 3: average of wells PC, PCHMP97-1*, PEACHM-1, PEACHMP-1*, PEACHMP-2, PEACHM-2.
[d] Mine Unit 4: average of wells GW-9, WSL96M-1, WSL96MP-1*,GW5A, BUMP97-1*, BUMU97-1*.
[e] Mine Unit 5: average of wells Veca MW-1, VECAMW-3A, PIXMO97-1, PIXMP97-1*, GW10A, PIXMU97-1*.
[f] Average ore zone radionuclide concentrations are derived from (*) wells, as defined above (footnotes a through e).

Table D6-3-4. Comparison of 70 Ore Sand Water to Overlying, Underlying and Multiple Screened Wells.
(Sampled: September 1996 to December 1997, PRI Gas Hills Project Mine Units 1 and 2)

Constituent	70 Ore Sand Wells					Non-Ore Sand Wells				
	Mean	SDev	Min	Max	Pop	Mean	SDev	Min	Max	Pop
Bicarbonate - mg/L (HCO_3)	**269**	57.5	22	328	72	**231**	141.5	6	403	44
Sulfate - mg/L (SO_4)	**248**	58	169	431	72	**295**	100	142	462	44
Chloride - mg/L (Cl)	**13.3**	6.5	7.7	50.9	72	**19.0**	11.7	9.1	39.0	44
TDS - mg/L	**624**	82	459	814	72	**708**	120	442	897	44
pH - s.u.	**8.3**	0.6	7.8	10.9	72	**8.9**	1.2	7.1	11.1	44
Arsenic - mg/L (As)	**0.015**	0.0172	0.001	0.056	72	**0.001**	0.0010	0.001	0.006	44
Selenium - mg/L (Se)	**0.002**	0.0060	0.001	0.052	72	**0.001**	0.0004	0.001	0.003	44
Uranium - mg/L (U_{nat})	**0.040**	0.053	0	0.320	72	**0.013**	0.022	0.000	0.075	44
Radium 226 - pCi/L (Ra^{226})	**307**	531	2.0	2059	72	**13**	17	1.1	79	44

Table D6-3-5. Comparison of 40 Ore Sand Water to Overlying, Underlying and Multiple Screened Wells.
(Sampled: September 1996 through December 1997, PRI Gas Hills Project Mine Unit 3)

Constituent	40 Ore Sand Wells					Non-Ore Sand Wells				
	Mean	SDev	Min	Max	Pop	Mean	SDev	Min	Max	Pop
Bicarbonate - mg/L (HCO_3)	**203**	40.5	90	248	26	**232**	19.5	182	265	20
Sulfate - mg/L (SO_4)	**450**	27	403	504	26	**471**	114	268	634	20
Chloride - mg/L (Cl)	**17.6**	7.2	4.0	37.9	26	**11.9**	2.8	5.5	16.9	20
TDS - mg/L	**855**	30	805	908	26	**899**	185	561	1170	20
pH - s.u.	**8.4**	0.5	7.4	9.5	26	**8.0**	0.4	6.9	8.4	20
Arsenic - mg/L (As)	**0.002**	0.0019	0.001	0.01	26	**0.001**	0.0009	0.001	0.004	20
Selenium - mg/L (Se)	**0.001**	0.0007	0.001	0.004	26	**0.001**	0.0004	0.001	0.003	20
Uranium - mg/L (U_{nat})	**0.045**	0.063	0.002	0.307	26	**0.005**	0.005	0.000	0.025	20
Radium 226 - pCi/L (Ra^{226})	**151**	208.1	11.2	540.0	26	**10**	8.9	2.0	45.9	20

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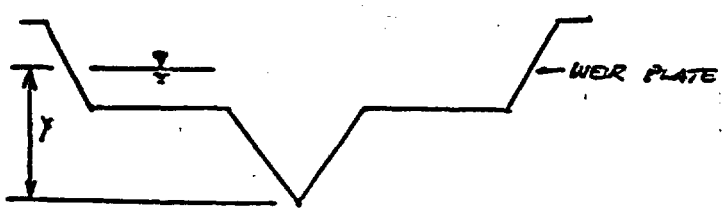
ADDENDUM D6-1

RATING TABLE FOR
WEST CANYON CREEK MONITORING SITES

Addendum D6-1
Rating Tables for West Canyon Creek Surface Water Monitoring Sites (WCC-1 and WCC-2)

Flow Depth y (ft)	Discharge Q (V-notch)	Discharge Q (Cipolleti)	Discharge Q total (cfs)	Q (gpm)
0	0	0	0	0
0.15	0.013	0	0.013	5.8
0.20	0.027	0	0.027	12
0.25	0.05	0	0.05	21
0.30	0.07	0	0.07	33
0.35	0.11	0	0.11	48
0.40	0.15	0	0.15	67
0.45	0.20	0	0.20	90
0.50	0.26	0	0.26	118
0.55	0.26	0.06	0.32	144
0.60	0.26	0.17	0.43	193
0.65	0.26	0.31	0.57	256
0.70	0.26	0.48	0.74	331
0.75	0.26	0.67	0.93	416
0.80	0.26	0.87	1.14	509
0.85	0.26	1.10	1.36	611
0.90	0.26	1.35	1.61	721
0.95	0.26	1.61	1.87	838
1.00	0.26	1.88	2.14	961
1.05	0.26	2.17	2.43	1091
1.10	0.26	2.47	2.73	1226
1.15	0.26	2.79	3.05	1368
1.20	0.26	3.12	3.38	1515
1.25	0.26	3.46	3.72	1667
1.30	0.26	3.81	4.07	1825
1.35	0.26	4.17	4.43	1987
1.40	0.26	4.54	4.80	2154



ADDENDUM D6-2

SURFACE WATER QUALITY DATA

ADDENDUM D6-2-1

1996-1997 SURFACE WATER QUALITY DATA

SC[illegible] SAMPLES
Through 4th Quarter 1997

LABORATORY ANALYSIS REPORT - PRI GAS HILLS PROJECT

	WCC-1				WCC-2					
Sample ID:	WCC 96-1	WCC 96-1	WCC-1	SWSCC01	WCC 96-2	WCC-96I	WCC-2 S.W.	WCC-2	WCC-2	SWSCC02
Laboratory ID #:	96-53901	96-64847	97-12861	97-64835	96-53902	96-64255	97-17835	97-26812	97-48823	97-64842
Sample Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Date:	19-Sep-96	19-Nov-96	04-25-97	10-29-97	19-Sep-96	13-Nov-96	03-18-97	05-05-97	25-Aug-97	10-30-97
Report Date:	26-Oct-96	Dec-96	May 16, 1997	December 6, 1997	26-Oct-96	Dec-96	April 1, 1997	May 27, 1997	Sept. 22, 1997	December 6, 1997

Major Ions		Units	Detection Limit	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Calcium	Ca	mg/L	1.0	50.4	51.7	52.4	57.0	64.0	81.2	27.4	53.3	61.6	58.5
Magnesium	Mg	mg/L	1.0	3.4	3.6	3.80	3.8	5.1	6.5	2.30	4.2	5.1	4.9
Sodium	Na	mg/L	1.0	25.6	26.3	23.50	27.4	24.6	29.4	9.60	20.4	24.9	24.7
Potassium	K	mg/L	1.0	7.3	7.0	8.20	6.8	13.4	9.9	7.10	8.7	12.8	9.3
Carbonate	CO3	mg/L	0.10	2.5	< 0.10	2.30	< 0.10	< 0.10	< 0.10	2.40	3.7	2.9	2.7
Bicarbonate	HCO3	mg/L	0.10	201	203	200	244	240	288	118	191	227	237
Sulfate	SO4	mg/L	1.0	23.9	22.2	20.0	19.3	33.1	37.3	10.0	23.1	29.5	24.0
Chloride	Cl	mg/L	0.10	2.6	4.4	2.10	3.7	8.1	6.9	2.00	< 1	4.7	3.5
Ammonium as N	NH4	mg/L	0.05	< 0.05	< 0.05	0.1	< 0.05	0.27	< 0.05	0.08	< 0.05	< 0.05	< 0.05
Nitrite as N	NO2	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.1	< 0.10	< 0.10
Nitrite + Nitrate as N	NO2+NO3	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.1	< 0.10	< 0.10
Fluoride	F	mg/L	0.10	0.32	0.33	0.31	0.35	0.36	0.40	0.17	0.31	0.37	0.33
Silica	SiO2	mg/L	1.0	53.3	51.0	53.5	51.4	44.1	57.0	23.9	47	45.7	46.8
Non-Metals													
Total Dissolved Solids @ 180°C	TDS	mg/L	1.0	261	270	240	292	325	337	158	249	308	285
Conductivity	Cond.	µmhos/cm	1.0	367	354	352	419	455	503	203	357	434	442
Alkalinity as CaCO3	Alk	mg/L	1.0	168	166	167	200	197	236	100	162	191	198
pH	-	std units	0.10	8.34	8.28	8.11	8.21	7.99	8.19	8.55	8.34	8.36	8.31
Trace Metals													
Aluminum	Al	mg/L	0.10	< 0.10	0.11	0.33	< 0.10	< 0.10	< 0.10	0.42	0.49	0.32	< 0.10
Arsenic	As	mg/L	0.001	0.011	0.007	0.011	0.011	0.015	0.015	0.007	0.010	0.016	0.014
Barium	Ba	mg/L	0.10	0.14	0.13	0.15	0.15	0.23	0.22	< 0.10	0.16	0.25	0.18
Boron	B	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cadmium	Cd	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.005
Chromium	Cr	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Copper	Cu	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Iron	Fe	mg/L	0.05	< 0.05	0.07	0.20	< 0.05	< 0.05	< 0.05	0.27	0.29	0.19	0.05
Lead	Pb	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	Mn	mg/L	0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01
Mercury	Hg	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Molybdenum	Mo	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	Ni	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Selenium	Se	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Vanadium	V	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Zinc	Zn	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Radiometric													
Uranium	NatU	mg/L	0.0003	0.0169	0.011	0.0150	0.015	0.0151	0.025	0.0110	0.0210	0.020	0.021
226Radium	226Ra	pCi/L	0.2	< 0.2	17.1	0.8	< 0.2	< 0.2	0.4	< 0.2	0.9	0.8	1.8
Radium Precision ±	-				1.0	0.200			0.1		0.300	0.2	0.3
222Radon	222Rn	pCi/L	1.0										
Radon Precision ±	-												
Quality Assurance Data			Target Range										
Anion	-	meq		3.96	3.93	3.84	4.53	4.88	5.72	2.28	3.77	4.59	4.58
Cation	-	meq		4.12	4.23	4.22	4.55	5.05	6.15	2.22	4.20	4.96	4.66
WYDEQ A/C Balance	-	%	-5 - +5	2.02	3.65	4.69	0.21	1.70	3.60	-1.27	5.31	3.86	0.87
Calc TDS	-	mg/L		270	268	266	292	313	373	144	258	302	293
TDS A/C Balance	-	dec. %	0.80 - 1.20	0.97	1.01	0.90	1.00	1.04	0.90	1.10	0.97	1.02	0.97

SU[illegible] AMPLES
Throu[illegible] uarter 1997

LABORATORY ANALYSIS REPORT - PRI GAS HILLS PROJECT

	PC PIT						VECA PIT			
Sample ID:	PC PIT	PC PIT	PC PIT S.W.	PC Pit	PC Pit Surf. Samp.	PC Pit	VECA PIT	VECA PIT	VECA PIT S.W.	VECA Pit Surf. Samp
Laboratory ID #:	96-53903	96-64034	97-17038	97-26595	97-45017	97-65135	96-53900	96-64035	97-17036	97-22860
Sample Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Date:	20-Sep-96	12-Nov-96	03-18-97	04-29-97	25-Aug-97	11-05-97	20-Sep-96	12-Nov-96	03-18-97	04-25-97
Report Date:	26-Oct-96	4-Dec-96	April 1, 1997	May 22, 1997	Sept. 22, 1997	December 8, 1997	26-Oct-96	4-Dec-96	April 1, 1997	May 16, 1997

Major Ions		Units	Detection Limit	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Calcium	Ca	mg/L	1.0	534	530	252	552	510	582	279	275	172	242.0
Magnesium	Mg	mg/L	1.0	101	97.0	42.1	98.5	92.0	104	35.0	34.9	19.4	28.40
Sodium	Na	mg/L	1.0	91.0	95.0	41.0	96.1	95.0	100	11.4	12.7	6.6	9.8
Potassium	K	mg/L	1.0	33.0	33.9	16.0	35.7	35.2	36.1	18.5	19.8	13.7	17.60
Carbonate	CO3	mg/L	0.10	< 0.10	< 0.10	0	0	0	< 0.10	< 0.10	< 0.10	0	0
Bicarbonate	HCO3	mg/L	0.10	50.5	53.1	32.2	65.1	43.9	49.7	56.1	55.9	56.4	60
Sulfate	SO4	mg/L	1.0	1980	1910	919	1844	1800	1900	793	808	466	659.0
Chloride	Cl	mg/L	0.10	30.0	26.7	14.0	28.1	31.7	34.0	2.6	2.4	1.6	1.80
Ammonium as N	NH4	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	0.16	< 0.05	< 0.05	0.05	0.81
Nitrite as N	NO2	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.1	< 0.10
Nitrite + Nitrate as N	NO2 + NO3	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10
Fluoride	F	mg/L	0.10	0.49	0.54	0.30	0.5	0.57	0.63	0.48	0.54	0.36	0.42
Silica	SiO2	mg/L	1.0	0.6	0.6	1.5	1.3	< 1.0	< 1.0	3.0	3.3	5.6	4.0

Non-Metals													
Total Dissolved Solids @ 180°C	TDS	mg/L	1.0	2920	2850	1280	2814	2950	2940	1190	1150	745	983
Conductivity	Cond.	µmhos/cm	1.0	2710	2530	1650	2784	3000	3060	1100	1250	989	1152
Alkalinity as CaCO3	Alk.	mg/L	1.0	41.4	43.5	26.4	53.4	36.0	40.7	46.0	45.8	46.2	49
pH	-	std. units	0.10	7.65	7.82	7.62	7.86	7.71	7.64	7.66	7.99	7.84	7.93

Trace Metals													
Aluminum	Al	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10
Arsenic	As	mg/L	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.001	< 0.001
Barium	Ba	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Boron	B	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cadmium	Cd	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01
Chromium	Cr	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Copper	Cu	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Iron	Fe	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	0.11
Lead	Pb	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	Mn	mg/L	0.01	< 0.01	0.03	0.06	0.03	0.05	0.01	< 0.01	< 0.01	0.05	0.04
Mercury	Hg	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Molybdenum	Mo	mg/L	0.10	0.35	0.35	0.14	0.30	0.31	0.36	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	Ni	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Selenium	Se	mg/L	0.001	0.005	0.005	0.002	0.001	0.006	0.002	0.004	< 0.001	0.015	0.002
Vanadium	V	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Zinc	Zn	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Radiometric													
Uranium	NatU	mg/L	0.0003	0.493	0.470	0.2090	0.5220	0.434	0.500	0.219	0.193	0.1760	0.221
226Radium	226Ra	pCi/L	0.2	0.9	1.1	1.7	1.3	2.1	1.2	2.1	1.8	1.7	2.2
Radium Precision ±	-			0.3	0.2	0.500	0.200	0.3	0.2	0.2	0.3	0.400	0.300
222Radon	222Rn	pCi/L	1.0										
Radon Precision ±	-												

Quality Assurance Data			Target Range											
Anion	-	meq		42.96	41.45	20.09	40.31	39.15	41.40	17.55	17.85	10.70	14.79
Cation	-	meq		39.93	39.60	18.32	40.92	38.22	43.07	17.85	17.73	10.88	15.37
WYDEQ A/C Balance	-	%	-5 - +5	-3.65	-2.78	-4.61	0.75	-1.21	1.98	0.86	-0.34	0.80	1.92
Calc TDS	-	mg/L		2796	2721	1303	2689	2588	2783	1172	1185	714	993
TDS A/C Balance	-	dec. %	0.80 - 1.20	1.04	1.05	0.98	1.05	1.14	1.06	1.02	0.97	1.04	0.99

LABORATORY ANALYSIS REPORT - FRI GAS HILLS PROJECT

Sample ID:	YECA FR
Laboratory ID #:	97-6483
Sample Matrix:	Water
Sample Date:	10-29-97
Report Date:	December 6, 1997

Major Ions		Units	Detection Limit	Results
Calcium	Ca	mg/L	1.0	243
Magnesium	Mg	mg/L	1.0	29.4
Sodium	Na	mg/L	1.0	11.3
Potassium	K	mg/L	1.0	21.3
Carbonate	CO3	mg/L	0.10	< 0.10
Bicarbonate	HCO3	mg/L	0.10	73.4
Sulfate	SO4	mg/L	1.0	693
Chloride	Cl	mg/L	0.10	2.8
Ammonium as N	NH4	mg/L	0.05	< 0.05
Nitrite as N	NO2	mg/L	0.10	< 0.10
Nitrite + Nitrate as N	NO2 + NO3	mg/L	0.10	< 0.10
Fluoride	F	mg/L	0.10	0.57
Silica	SiO2	mg/L	1.0	1.4

Non-Metals				
Total Dissolved Solids @ 180°C	TDS	mg/L	1.0	1110
Conductivity	Cond.	µmhos/cm	1.0	1320
Alkalinity as CaCO3	Alk.	mg/L	1.0	60.2
pH	-	std. units	0.10	7.86

Trace Metals				
Aluminum	Al	mg/L	0.10	< 0.10
Arsenic	As	mg/L	0.001	< 0.001
Barium	Ba	mg/L	0.10	< 0.10
Boron	B	mg/L	0.10	< 0.10
Cadmium	Cd	mg/L	0.01	< 0.005
Chromium	Cr	mg/L	0.05	< 0.05
Copper	Cu	mg/L	0.01	< 0.01
Iron	Fe	mg/L	0.05	< 0.05
Lead	Pb	mg/L	0.05	< 0.05
Manganese	Mn	mg/L	0.01	< 0.01
Mercury	Hg	mg/L	0.001	< 0.001
Molybdenum	Mo	mg/L	0.10	< 0.10
Nickel	Ni	mg/L	0.05	< 0.05
Selenium	Se	mg/L	0.001	< 0.001
Vanadium	V	mg/L	0.10	< 0.10
Zinc	Zn	mg/L	0.01	< 0.01

Radiometric				
Uranium	NatU	mg/L	0.0003	0.192
226Radium	226Ra	pCi/L	0.2	2.6
Radium Precision ±	-			0.4
222Radon	222Rn	pCi/L	1.0	
Radon Precision ±	-			

Quality Assurance Data			Target Range	
Anion	-	meq		15.76
Cation	-	meq		15.66
WYDEQ A/C Balance	-	%	-5 - +5	-0.32
Calc TDS	-	mg/L		1040
TDS A/C Balance	-	dec. %	0.80 - 1.20	1.07

ADDENDUM D6-2-2

HISTORIC SURFACE WATER QUALITY DATA

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SW1

DATE	811001	820101	820401	820701	821001	830401	830701
TEMP	2	0	6	23	4	3.5	
TDS	221	245	235	213	240	242	
COND	475	390	240	335	214	235	368
Na	25	26	27	25	26	26	
K	9	10	8	11	9	9	
Ca	49	49	52	43	57	55	
Mg	5	9	7	5	9	5	
SO4	28	30	26	30	32	25	
Cl	10	7	5	8	8	6	
CO3	0	10	0	5	10	0	
HCO3	195	212	224	176	181	234	
pH	7.7	8.5	7.7	8.5	7.7	7.7	7.9
ALK	160	190	184	152	172	192	
Al	-0.05	-0.05	-0.05	-0.05	-0.05		
NH3	-0.05	-0.05	-0.05	0.07	0.06	-0.05	
As	0.02	0.02	0.02	0.02	0.02	0.02	
Ba	-0.02	-0.02	-0.02	-0.02	-0.02		
B	-0.1	-0.1	-0.1	-0.1	-0.1		
Cd	-0.005	-0.005	-0.005	-0.005	-0.005		
Cr	-0.01	-0.01	-0.01	-0.01	-0.01		
Cu	-0.01	-0.01	-0.01	-0.01	-0.01		
F	0.58	0.37	0.31	0.26	0.11		
Fe	-0.05	-0.05	-0.05	0.1	0.09	-0.05	
HARD	143	159	159	128	179	158	
Pb	-0.05	-0.05	-0.05	-0.05	-0.05		
Mn	-0.01	-0.01	-0.01	-0.01	0.04		
Hg	-0.001	-0.001	-0.001	-0.001	-0.001		
Mo	-0.05	-0.05	-0.05	-0.05	-0.05		
Ni	-0.01	-0.01	-0.01	-0.01	-0.01		
NO3	0.33	1.3	0.38	1.3	0.23	1.4	
NO2	-0.01	-0.01	-0.01	-0.01	0.04	-0.01	
Se	-0.002	-0.002	-0.002	-0.002	-0.002		
U	0.02	0.03	0.03	0.03	0.03	0.03	
V	-0.05	-0.05	-0.05	-0.05	-0.05		
Zn	-0.005	-0.005	0.01	-0.005	-0.005	-0.005	
Ra226	-0.39	0.65	0.77	0.48	0.32		
TSS							
BALNC							

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SW1 (cont'd)

DATE	831001	840501	841001	850401	850701	851001
TEMP	12	8	12	0.3	25	0.2
TDS	250	218	259			232
COND	390	337	375	132	256	152
Na	29	21	30			26
K	10	7	8			10
Ca	55	55	53			55
Mg	7	4	7			5
SO4	25	28	27			32
Cl	8	8	8			8
CO3	5	0	12			0
HCO3	229	195	226			207
pH	8.3	8.2	8.3	7.7	8.7	7.1
ALK	196	160	205			170
Al						
NH3	0.07	-0.05	-0.05			-0.05
As	0.02	0.01	0.02			0.02
Ba						
B						
Cd						
Cr						
Cu						
F						
Fe	-0.05	-0.05	-0.05			-0.05
HARD	166	154	161			158
Pb						
Mn						
Hg						
Mo						
Ni						
NO3	4.5	0.92	-0.05			2.2
NO2	-0.01	-0.01	-0.01			-0.01
Se						
U	0.02	0.03	0.04			
V						-0.05
Zn	-0.005	0.01	-0.005			0.02
Ra226	1.8	5.5	3.7			0.5
TSS						
BALNC						

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SW2

DATE	811001	820401	830401	830701	831001	840501	841001
TEMP	13	22	7.8		14	6.5	9
TDS	216	229	186		255	200	252
COND	460	343	295	400	380	389	380
Na	26	29	5		27	19	30
K	10	11	3		10	6	8
Ca	44	48	45		58	48	54
Mg	7	6	5		6	6	10
SO4	27	26	99		46	31	29
Cl	6	6	5		7	6	7
CO3	0	0	0		0	3	12
HCO3	195	210	49		205	165	207
pH	7.8	8.3	7.7	8.3	8.1	8.3	8.6
ALK	160	172	40		168	140	190
Al	0.21	0.4					
NH3	-0.05	0.06	0.3		-0.05	-0.05	-0.05
As	0.02	0.01	0.004		0.02	0.02	0.02
Ba	-0.02	-0.02					
B	-0.1	-0.1					
Cd	-0.005	-0.005					
Cr	-0.01	-0.01					
Cu	-0.01	-0.01					
F	0.51	0.35					
Fe	-0.05	0.23	0.11		-0.05	-0.05	-0.05
HARD	139	145	133		170	145	176
Pb	-0.05	-0.05					
Mn	0.04	0.04					
Hg	-0.001	-0.001					
Mo	-0.05	-0.05					
Ni	-0.01	-0.01					
NO3	0.71	0.5	1.4		4	1	-0.05
NO2	-0.01	0.02	0.02		-0.01	-0.01	-0.01
Se	-0.002	-0.002					
U	0.03	0.03	0.08		0.04	0.04	0.04
V	-0.05	-0.05					
Zn	0.01	0.01	0.02		-0.005	0.008	-0.005
Ra226	0.76	0.73			7.3	2.2	1.1
TSS							
BALNC							

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SW2 (cont'd)

DATE	850401	851001				
TEMP	8	4				
TDS		183				
COND	229	160				
Na		21				
K		8				
Ca		37				
Mg		4				
SO4		32				
Cl		12				
CO3		0				
HCO3		140				
pH	8.7	6.9				
ALK		115				
Al						
NH3		0.14				
As		0.02				
Ba						
B						
Cd						
Cr						
Cu						
F						
Fe		-0.05				
HARD		109				
Pb						
Mn						
Hg						
Mo						
Ni						
NO3		-0.05				
NO2		-0.01				
Se						
U						
V		-0.05				
Zn		0.02				
Ra226		0.5				
TSS						
BALNC						

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SW3

DATE	811001	820101	820401	820701	830401	830701	831001
TEMP	9	0	10	22	8		11
TDS	1011	2096	665	2839	155		575
COND	1650	2500	700	2750	770	650	740
Na	51	107	35	117	4		24
K	29	54	19	74	5		15
Ca	192	420	145	515	34		129
Mg	35	66	24	125	5		21
SO4	675	1370	415	1960	92		329
Cl	18	30	10	36	3		11
CO3	0	0	0	0	0		0
HCO3	24	98	34	24	24		93
pH	7	8.2	7.2	7.7	6.7	7.4	7.4
ALK	20	80	23	20	20		76
Al	-0.05	-0.05	-0.05	-0.05			
NH3	0.06	-0.05	-0.05	-0.05	0.06		-0.05
As	-0.002	0.003	-0.002	-0.002	-0.002		-0.002
Ba	-0.02	-0.02	-0.02	-0.02			
B	-0.1	-0.1	-0.1	-0.1			
Cd	0.01	0.007	-0.005	0.02			
Cr	-0.01	-0.01	-0.01	0.03			
Cu	-0.01	0.02	-0.01	0.02			
F	1.6	2.2	0.72	0.94			
Fe	-0.05	-0.05	-0.05	-0.05	-0.05		-0.05
HARD	623	1321	461	1800	105		409
Pb	-0.05	0.11	-0.05	0.11			
Mn	-0.01	-0.01	-0.01	-0.01			
Hg	-0.001	-0.001	-0.001	-0.001			
Mo	-0.05	-0.05	-0.05	-0.05			
Ni	-0.01	0.04	-0.01	0.06			
NO3	0.18	0.71	0.3	0.54	0.5		3.1
NO2	-0.01	-0.01	-0.01	-0.01	-0.01		0.05
Se	-0.002	-0.002	-0.002	-0.002			
U	0.02	0.03	0.01	-0.005	-0.005		0.07
V	-0.05	-0.05	-0.05	-0.05			
Zn	0.02	0.01	-0.005	-0.005	0.01		-0.005
Ra226	1.5	1.8	1.3	1.6			6.6
TSS							
BALNC							

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SW3 (cont'd)

DATE	840501	841001	850401	850701	851001
TEMP	14	10	7.2	20	4.3
TDS	568	674			583
COND	701	780	420	600	405
Na	22	28			30
K	12	12			13
Ca	121	135			121
Mg	17	21			17
SO4	360	436			352
Cl	11	12			13
CO3	0	0			0
HCO3	49	61			79
pH	8	7.8	7.2	7.4	6.7
ALK	40	50			65
Al					
NH3	-0.05	-0.05			-0.05
As	-0.002	-0.002			-0.002
Ba					
B					
Cd					
Cr					
Cu					
F					
Fe	-0.05	-0.05			-0.05
HARD	372	424			372
Pb					
Mn					
Hg					
Mo					
Ni					
NO3	0.69	-0.05			-0.05
NO2	-0.01	-0.01			-0.01
Se					
U	0.05	0.06			
V					-0.05
Zn	0.02	-0.005			0.02
Ra226	3.8	5.6			1
TSS					
BALNC					

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SM-5

DATE	840525	840724	870520	890513
TEMP				
TDS	1043	130	168	72
COND	1180	260	326	85
Na	71	7	-0.5	
K	17	3	5.4	
Ca	155	28	37	
Mg	38	4	5.5	
SO4	675	62	99	
Cl	18	6	1.3	
CO3	0	0	0	
HCO3	140	39	21	
pH	7.1	7.2	7.6	6.5
ALK				
Al	-0.05	-0.05	-0.1	
NH3	0.06	-0.05	0.09	
As	-0.002	-0.002	0.003	
Ba	-0.02	-0.02	-0.1	
B	-0.1	-0.1	-0.1	
Cd	-0.005	-0.005	-0.01	
Cr	-0.01	-0.01	0.05	
Cu	-0.01	-0.01	-0.01	
F	0.26	0.11	0.11	
Fe	-0.05	-0.05	0.05	
HARD				
Pb	-0.05	-0.05	0.05	
Mn	0.06	-0.01	0.25	
Hg	-0.001	-0.001	-0.001	
Mo	-0.05	-0.05	-0.1	
Ni	0.02	-0.01	-0.05	
NO3	0.73	0.12	0.09	
NO2				
Se	0.009	-0.002	0.009	
U	0.55	0.07	0.04	0.02
V	-0.05	-0.05	-0.1	
Zn	0.02	0.02	0.01	
Ra226	1.2	3.4	5.1	2.9
TSS	731	-4	1.8	4
BALNC	7.9	0.21	0.42	

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SM-6

DATE	860910	870520	870617	870824	890513
TEMP					
TDS	270	360	520	2694	38
COND	395	109	700	2413	66
Na	6	2.6	3.9	7.9	
K	6.6	7.3	10	18	
Ca	57	8.3	115	498	
Mg	9.1	1.4	14	97	
SO4	187	27	346	1844	
Cl	4	0.3	0.6	7.8	
CO3	0	0	0	0	
HCO3	1.8	17	2.4	0	
pH	4.4	6.5	4.8	3.3	5.7
ALK					
Al	0.22	-0.1	0.5	37	
NH3	1.2	-0.05	0.67	3.2	
As	0.001	0.008	-0.001	-0.001	
Ba	-0.1	-0.1	0.2	-0.1	
B	-0.1	-0.1	-0.1	-0.1	
Cd	-0.01	-0.01	-0.01	0.01	
Cr	-0.05	-0.05	-0.05	-0.05	
Cu	-0.01	-0.01	-0.01	0.1	
F	0.15	-0.1	0.24	-0.1	
Fe	-0.05	0.28	0.08	3.5	
HARD					
Pb	-0.05	-0.05	-0.05	-0.05	
Mn	0.7	0.09	1.6	11	
Hg	-0.001	-0.001	-0.001	-0.001	
Mo	-0.1	-0.1	-0.1	-0.1	
Ni	0.06	-0.05	0.12	1.3	
NO3	1.5	0.01	0.12	0.06	
NO2					
Se	0.001	0.003	0.001	-0.001	
U	0.02	0.03	0.06	3.2	0.006
V	-0.1	-0.1	-0.1	-0.1	
Zn	0.05	0.05	0.13	1	
Ra226	7.6	1.9	18	15	4.3
TSS	20	8.4	-4	39	5.2
BALNC	1.3	0.07	1.4	0.03	

ADDENDUM D6-2-2
HISTORIC SURFACE WATER QUALITY DATA

SAMPLE NO.: SM-7

DATE	840724	850627	870617	890513	900427	910517	910607
TEMP							
TDS	171	786	174	92	155	112	349
COND	307	354	250	138	184	206	218
Na	38	73	37				
K	3	10	6				
Ca	22	145	13				
Mg	3	17	3				
SO4	37	490	38				
Cl	8	5	0.4				
CO3	0	0	0				
HCO3	122	93	110				
pH	7.9	7.5	7.69	7.04	7.96	6.79	7.24
ALK							
Al	0.12	0.08	5.3				
NH3	0.1	-0.05	0.51				
As	0.017	0.008	0.013				
Ba	-0.02	-0.02	0.3				
B	-0.1	-0.1	-0.1				
Cd	-0.005	-0.005	-0.01				
Cr	-0.01	-0.01	-0.05				
Cu	-0.01	-0.01	-0.01				
F	0.39	0.44	0.61				
Fe	0.18	-0.05	3.55				
HARD							
Pb	-0.05	-0.05	-0.05				
Mn	-0.01	0.05	0.06				
Hg	-0.001	-0.001	-0.001				
Mo	-0.05	-0.05	-0.1				
Ni	-0.01	0.02	-0.05				
NO3	-0.01	0.41	0.42				
NO2							
Se	0.01	0	-0.000				
U	0.15	0.22	0.02	0	0.01	0.01	0.01
V	-0.05	-0.05	-0.1				
Zn	0.01	0.028	0.04				
Ra226	5.47	1.3	1.7	0.3	2	0.6	372
TSS	22	34		14	1375	4	2792
BALNC							

ADDENDUM D6-3

MONITORING WELL PERMITS
WYOMING STATE ENGINEER'S OFFICE

FORM U W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No. U.W. _____
NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING MU 96 M - 1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____ .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____ .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SW 1/4 of Sec. 31, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming If located in a platted subdivision, also provide Lot ____ Block ____ of the _____
Subdivision (or Add'n) of _____ Resurvey Location: Tract _____, (or Lot) _____ .

6. Estimated depth of the well or spring is 500 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No. U.W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING MU 96 M - 1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SW 1/4 of Sec. 31, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 500 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE. If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____.

11. The well or spring is to be constructed on lands owned by BLM.
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS. Well to be used for water quality analysis and aquifer testing

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent — Date Aug 24 1996

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)
This instrument was received and filed for record on the _____ day of _____, A.D. 19 _____, at _____ o'clock _____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 _____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

State Engineer

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No. U.W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING MU 96 M-2

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SW 1/4 of Sec. 31, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming If located in a platted subdivision, also provide Lot ____ Block ____ of the _____
Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 500 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute.
NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent — Date: August 24 1996 Aug 24, 19 96

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 ____, at _____ o'clock ____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 ____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 ____.

State Engineer

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No. U.W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING BS 96 M - 1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230 Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 NW 1/4 of Sec. 32, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming If located in a platted subdivision, also provide Lot ___ Block ___ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 380 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Aug. 24 1996

Signature of Applicant or Authorized Agent — Date: Aug 24, 1996

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 _____, at _____ o'clock _____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 _____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

State Engineer

FORM U.W. 5
Rev 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No. U.W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING Peach M1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035
2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)
3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230 Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)
4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, SW 1/4 NE 1/4 of Sec. 3, T. 32 N., R. 90 W. of the 6th P.M. (or W.R.M.).
Wyoming If located in a platted subdivision, also provide Lot ____ Block ____ of the _____
Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 440 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute.
NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent — Date: Aug 26 1996 (Aug 26, 1996)

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 _____, at _____ o'clock _____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 _____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

State Engineer

FORM U.W 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ____ DISTRICT _____
U.W DISTRICT _____

Temporary Filing No. U.W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING Peach M-2

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SE 1/4 of Sec. 3, T. 32 N., R. 90 W. of the 6th P.M. (or W.R.M.).
Wyoming If located in a platted subdivision, also provide Lot ____ Block ____ of the _____
Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 440 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute.
NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9 If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent — Date: Aug 24 1996 Aug 24, 19 96

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 ____, at _____ o'clock ____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 ____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

State Engineer

FORM U W. 5
Rev 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U W _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No. U.W _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING Peach MP - 1

1. Name of applicant(s) Power Resources, Inc. Phone: (307)472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone: (307)472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SE 1/4 of Sec. 3, T. 32 N., R. 90 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 440 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0. Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Aug 24 1996

Signature of Applicant or Authorized Agent — Date Aug 24, 1996

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 ____, at _____ o'clock ____ M.

Permit No. U.W. _____

_____
for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 ____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

_____
State Engineer

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS MICRO FILMED JAN 30 1997

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 104391
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Fremont Co.

Temporary Filing No. U.W. 25-2-115
NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING Peach MP-2

1. Name of applicant(s) Power Resources, Inc. Phone: 307-472-2035
2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)
3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Ct., Suite 230, Casper WY 82601 Phone: 307-472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)
4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SE 1/4 of Sec. 3, T. 32 N., R. 90 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 350 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0. Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
								N/A											

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

D6-3-14

104391 802

11. The well or spring is to be constructed on lands owned by U.S. BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: This well will be used only for collection of water quality and static water level data. No other use is anticipated for this well.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent — Date 10/29, 1996

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 30th day of October, A.D. 19 96, at 9:30 o'clock A M.

Permit No. U.W. 104391

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

This permit and accompanying notices serve to register an existing well. Time limit for Completion of Construction waived. No final Proof of Appropriation of Ground Water is required under this permit. This permit will be reviewed in two (2) years from the date of approval.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19___.~~

~~The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.~~

Witness my hand this 6 day of Nov., A.D. 19 96.

State Engineer

October 30, 1996 - Statement of Completion on September 30, 1996 received.

MICRO FILMED JAN 3 - 1997

PCHMP97-1

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 106602
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Fremont Co.

Temporary Filing No. U.W. 25-1-200

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING Peach MP-12-1

1. Name of applicant(s) Geomex Mineral, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, SE 1/4 NE 1/4 of Sec. 12, T. 32 N., R. 90 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 620 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

			NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
TWP	RNG	SEC	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

D6-3-16

106602 017

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[signature] 6/30, 1997
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106602

[signature]
for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

No final Proof of Appropriation is required under this permit. This permit will be reviewed in two (2) years from the date of approval.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, [redacted].

Completion of construction [redacted] for the purposes specified in Item 4 of this application will be made by December 31, 19[redacted].

[redacted]

Witness my hand this 25 day of July, A.D. 19 97.

[signature]
State Engineer
for

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 106601
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Fremont Co.

Temporary Filing No. U.W. 25-12-299

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING Peach MO-12-1

1. Name of applicant(s) Geomex Minerals, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, SE 1/4 NE 1/4 of Sec. 12, T. 32 N., R. 90 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 560 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

11. The well or spring is to be constructed on lands owned by ~~U.S. Department of Interior BLM~~
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] NA
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[signature] 6/30, 19 97
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR *(For water level measurements or chemical quality sampling)* or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106601 [signature] for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

No final Proof of Appropriation is required under this permit. This permit will be reviewed in two (2) years from the date of approval.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, ~~including pump installation~~.

Completion of construction ~~and completion of the beneficial use of water~~ for the purposes specified in Item 4 of this application will be made by December 31, 19 98.

~~The amount of appropriation shall be limited to the quantity which can be put to beneficial use, subject to the maximum stated in the application, if water is put to beneficial use.~~

Witness my hand this 12th day of July, A.D. 19 97.

[signature] for
State Engineer

FORM U W 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note. Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. _____
WATER DIVISION NO. ___ DISTRICT _____
U.W. DISTRICT _____

Temporary Filing No U W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING WSL96M-1

1. Name of applicant(s) Power Resources, Inc., Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____ .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____ .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing animal waste management, etc. Describe miscellaneous use completely: _____

☐ Monitor, Observation or ☒ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NE 1/4 SE 1/4 of Sec. 28, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____ (or Lot) _____.

6. Estimated depth of the well or spring is 380 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute
NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units. (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

August 28 1996

Signature of Applicant or Authorized Agent — Date: August 28, 19 96.

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 ____, at _____ o'clock ____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 ____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

State Engineer

FORM U W 5
Rev. 4-93
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U W. _____
WATER DIVISION NO. ___ DISTRICT _____
U W DISTRICT _____

Temporary Filing No. U W. _____

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING WSL96MP1

1. Name of applicant(s) Power Resources, Inc., Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 230, Casper WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul Hildenbrand
800 Werner Court, Suite 230, Casper, WY 82601 Phone (307) 472-2035.
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

- [ ] Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.
- [ ] Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.
- [ ] Irrigation: Watering of commercially grown crops (large scale lawn watering of golf courses, cemeteries, recreation areas etc., is miscellaneous use).
- [ ] Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).
- [ ] Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)
- [ ] Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

[ ] Monitor, Observation or [X] Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, NW 1/4 SE 1/4 of Sec. 28, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____ Resurvey Location: Tract _____ (or Lot) _____

6. Estimated depth of the well or spring is 300 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute
NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

			NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
TWP	RNG	SEC	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. [ ] Land will be irrigated from this well only.
c. [ ] Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood etc. _____

11. The well or spring is to be constructed on lands owned by BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: Well to be used for water quality analysis and aquifer testing.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

August 28 1996

Signature of Applicant or Authorized Agent — Date: Aug 28, 1996

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the _____ day of _____, A.D. 19 ___, at _____ o'clock _____ M.

Permit No. U.W. _____

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 _____.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this _____ day of _____, A.D. 19 _____.

State Engineer

BUMU 7 1-1

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 106689
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Natrona Co.

Temporary Filing No. U.W. 25-9-299
NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING So. Buss-MU-34-1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Natrona County, NE 1/4 NW 1/4 of Sec. 34, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 720 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] NA
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[signature] 6/30, 19 97
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106689

[signature] for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

~~No final Proof of Appropriation is required under this permit. This permit will be reviewed in two years from the date of approval.~~

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, ~~including pump installation.~~

Completion of construction ~~and completion of the beneficial use of water~~ for the purposes specified in Item 4 of this application will be made by December 31, 19 98.

~~The amount of appropriation shall be limited to the quantity that this permit is entitled as determined by the proof of application of water to beneficial use.~~

Witness my hand this 17th day of July, A.D. 19 97.

[signature]
State Engineer
for

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 106687
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Natrona Co.

Temporary Filing No. U.W. 25-7-299

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING So. Buss-MP-34-1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Natrona County, NE 1/4 NW 1/4 of Sec. 34, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 640 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

106687 D6-3-26 817 99

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] NA
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[signature] 6/30, 19 97
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106687 [signature] for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

No final Proof of Appropriation is required under this permit. This permit will be reviewed in two years from the date of approval.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, [redacted]

Completion of construction [redacted] for the purposes specified in Item 4 of this application will be made by December 31, 19 98

[redacted]

Witness my hand this 17 day of July A.D. 19 97.

[signature]
State Engineer

BUM097-1

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 106688
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Natrona Co.

Temporary Filing No. U.W. 25-8-299

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING So. Buss-MO-34-1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Natrona County, NE 1/4 NW 1/4 of Sec. 34, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 300 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

D6-3-28

106688 817 89

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 106690
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Fremont Co.

Temporary Filing No. U.W. 25-10-299

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING No. Buss- GW 10 Replacement 5' Offset

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Fremont County, SE 1/4 SE 1/4 of Sec. 21, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 360 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0.
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

D6-3-29

106690

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] NA
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[signature] 6/30, 19 97
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106690

[signature]
for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

No final Proof of Appropriation is required under this permit. This permit will be reviewed in two years from the date of approval.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, [redacted]

Completion of construction [redacted] for the purposes specified in Item 4 of this application will be made by December 31, 19 98.

[redacted].

Witness my hand this 17th day of July, A.D. 19 97

[signature]
State Engineer

for

PIX97MP-1

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 106686
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Natrona Co.

Temporary Filing No. U.W. 25-6-299

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING PIX/VECA-MP-22-1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: _____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Natrona County, NE 1/4 SW 1/4 of Sec. 22, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____
Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 260 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute.
NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

D6-3-31

106686

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] N/A
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS:-

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent — Date 6/30, 19 97

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106684

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

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No final Proof of Appropriation is required under this permit. This permit will be reviewed in two years from the date of approval.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, [redacted]

Completion of construction [redacted] for the purposes specified in Item 4 of this application will be made by December 31, 1998.

[redacted]

Witness my hand this 17th day of July, A.D. 19 97.

State Engineer

for

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 106684
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Natrona Co.

Temporary Filing No. U.W. 25-4-295
NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING PIX/VECA NO-22-1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, Wyoming 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Natrona County. NE 1/4 SW 1/4 of Sec. 22, T. 33 N., R. 89 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 120 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] NA
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[signature] 6/30, 19 97
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106686 — [signature] for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

No final Proof of Appropriation is required under this permit. This permit will be reviewed ~~in two years from the date of approval.~~

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, [redacted].

Completion of construction [redacted] for the purposes specified in Item 4 of this application will be made by December 31, 19 [illegible].

[redacted]

Witness my hand this 17th day of July, A.D. 19 97.

[signature]
State Engineer

PIX97MU-1

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 106685
WATER DIVISION NO. 3 DISTRICT 11
U.W. DISTRICT Natrona Co

Temporary Filing No. U.W. 25-5-299

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING PIX/VECA MU-22-1

1. Name of applicant(s) Power Resources, Inc. Phone: (307) 472-2035

2. Address of applicant(s) 800 Werner Court, Suite 352 Casper, WY 82601
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Paul R. Hildenbrand
800 Werner Court, Suite 352 Casper, Wyoming 82601 Phone: (307) 472-2035
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? ____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? ____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: ____

☒ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Natrona County, NE 1/4 SW 1/4 of Sec. 22, T. 33 N., R. 85 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the ____ Subdivision (or Add'n) of ____. Resurvey Location: Tract ____, (or Lot) ____.

6. Estimated depth of the well or spring is 300 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX Not Applicable

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ____

106685 D6-3-35

11. The well or spring is to be constructed on lands owned by U.S. Department of Interior-BLM
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by [redacted] NA
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: _____

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

_____ Signature of Applicant or Authorized Agent 6/30 Date, 19 97

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR *(For water level measurements or chemical quality sampling)* or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 1st day of July, A.D. 19 97, at 8:40 o'clock A M.

Permit No. U.W. 106685

_____ for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

~~No final Proof of Appropriation is required under this permit. This permit will be reviewed in two years from the date of approval.~~

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, ~~including pump installation~~.

Completion of construction ~~and application of the beneficial use of water~~ for the purposes specified in Item 4 of this application will be made by December 31, 19 98

~~The amount of appropriation shall be limited to the quantity to which permit is entitled as determined at time of proof of application of water to beneficial use.~~

Witness my hand this 17th day of July, A.D. 19 97.

_____ State Engineer