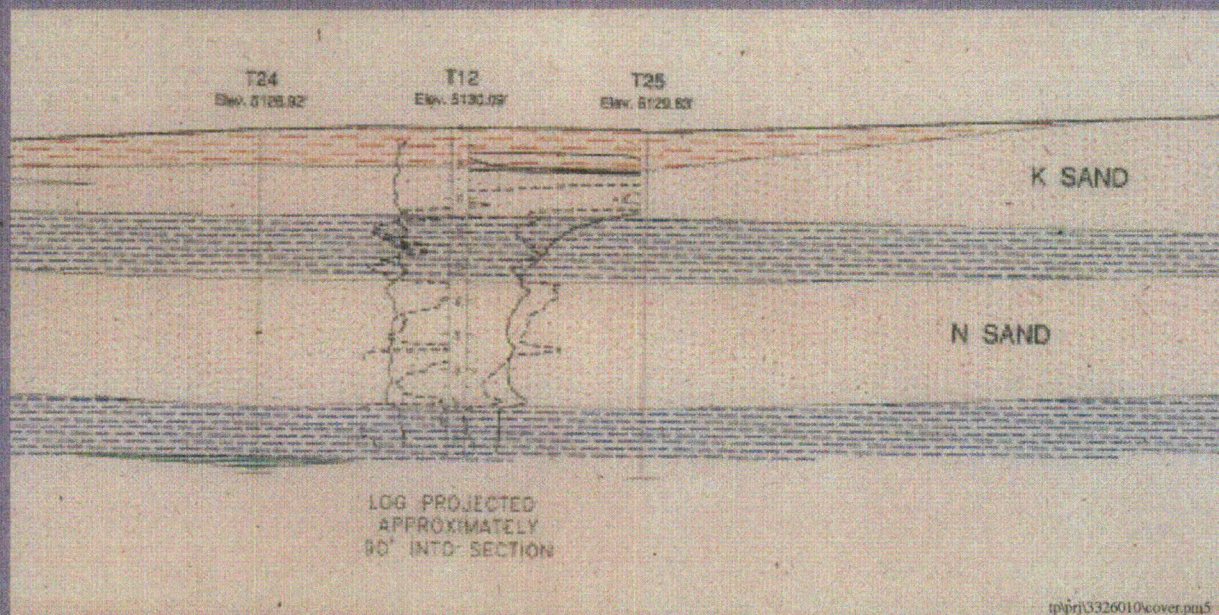


DELINEATION OF N-SAND AND LANG DRAW ALLUVIUM BEAR CREEK URANIUM TAILINGS AREA



Prepared for:
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1. Introduction

The S. M. Stoller Corporation (Stoller) was contracted by Bear Creek Uranium to collect and evaluate data which would help determine the nature and extent of the N-sand and Lang Draw Alluvium to the north and northeast of the tailings facility. The goal of this study was to determine if the N-sand and/or Lang Draw Alluvium satisfies the Nuclear Regulatory Commission's (NRC) definition of an aquifer. The NRC defines an aquifer as "a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs. Any saturated zone created by uranium or thorium recovery operations would not be considered an aquifer unless the zone is, or potentially is:

- hydraulically interconnected to a natural aquifer;
- capable of discharge to surface water; or
- reasonably accessible because of migration beyond the vertical projection of the boundary of the land transferred for long term government ownership and care."

Field activities included: 1.) drilling and lithologic logging of 20 new borings; 2.) converting 2 of the new borings into piezometers; 3.) geophysical logging of 16 of the new borings; 4.) and collection of groundwater level information from the borings and piezometers. Figure 1 shows the locations of the borings. The field work was completed from January 27, 1997, to January 31, 1997.

This study is an extension of an evaluation of the Lang Draw Alluvium and the K- and N-sands which was completed by Bear Creek Uranium in the mid-1980s. In addition to the soil borings drilled during the January program, information from six borings drilled and logged in 1986 was incorporated into this evaluation.

2. Field Activities

The field activities performed during the investigation included:

- Borehole installations;
- Soil sampling;
- Water level measurements;
- Geophysical log surveys;
- Piezometer installations;
- Borehole abandonment and
- Surveying.

A summary of each activity follows.

2.1 Borehole Installations

Twenty boreholes ranging in total depth from 40 feet to 120 feet below ground surface (BGS) were installed using an air-rotary drill rig. K. E. Taylor, Drilling, Inc., of Douglas, Wyoming, provided and operated the rig under the direction of S. M. Stoller geologists. Care was taken to avoid the introduction of water into the borings during drilling operations. With the exception of borings immediately adjacent to Lang Draw, all water noted in the lithologic logs and subsequently measured in the open boreholes resulted from natural groundwater present at the time. The boreholes were consecutively numbered beginning with T06 and ending with T25. The borings are located to the north and northeast of the tailings pond in areas not previously drilled or where additional lithologic information was desirable.

As seen on Figure 1, boreholes T18 through T23 are located north of the tailings pond in Lang Draw. These borings were completed to a depth of 40 feet BGS after intersecting a distinctive lignite marker bed associated with the base of the N-sand. All of the boreholes in Lang Draw were drilled on Wednesday, January 29, 1997.

Boreholes T06 through T17, T24, and T25 are located northeast of the tailings pond along three sub-parallel lines striking about north 50 degrees west (Figure 1). These borings were completed to depths ranging from 60 feet to 120 feet BGS, terminating below the base of the N-sand. Table 1 summarizes the initial borehole data.

Borehole locations were chosen based on previous geologic work. The boreholes facilitated collection of subsurface soil samples and groundwater data. Soil samples were used to define the lithology of the Lang Draw Alluvium, the K-sand, and the N-sand.

Table 1
Initial Borehole Data

Borehole ID	Date	Depth (ft)	Top of Borehole (ft)	Bottom of Borehole (ft)	Volume (cu ft)
T06	1-27-97	80	5146.27	951627.19	377131.70
T07	1-27-97	70	5126.14	951956.87	376735.36
T08	1-27-97	75	5101.05	952367.99	376269.87
T09	1-27-97	65	5086.84	952643.21	375927.12
T10	1-27-97	80	5109.30	952787.89	376707.11
T11	1-27-97	60	5090.85	953054.66	376487.27
T12	1-28-97	95	5130.09	952142.76	377343.98
T13	1-28-97	95	5137.39	951847.95	377782.78
T14	1-28-97	110	5127.76	952511.88	377774.06
T15	1-28-97	80	5092.54	952926.54	377324.86
T16	1-28-97	120	5149.68	951456.86	378228.98
T17	1-29-97	120	5160.62	951232.25	377572.69
T18	1-29-97	40	5085.26	951775.93	375231.35
T19	1-29-97	40	5085.49	951856.02	375436.33
T20	1-29-97	40	5080.54	952547.98	375402.76
T21	1-29-97	40	5078.28	952545.86	375178.25
T22	1-29-97	40	5077.57	952546.09	374971.89
T23	1-29-97	40	5084.46	951698.27	375033.05
T24	1-30-97	100	5128.92	952217.27	377252.78
T25	1-30-97	100	5129.63	952077.25	377427.44

BGS = Below Ground Surface

MSL = Mean Sea Level

2.2 Soil Sampling

Soil cuttings were collected and described at five foot intervals as the boreholes were drilled. The cuttings were logged in general accordance with the Unified Soil Classification System. Soil type, color, grain size and shape, moisture content, and other lithologic characteristics were noted. A Munsell soil color chart and a Soiltest A-17 sand grading chart were used as reference standards for basic soil descriptions. Completed logs for all soil boring locations are attached in Appendix A. Soil samples were collected from selected boreholes for future reference.

If groundwater was encountered in a borehole, the depth to the first encountered saturated zone was recorded. If significant groundwater was encountered in a boring, the water was allowed to stabilize before final gauging was performed.

2.3 Water Level Measurements

After drilling activities, the water levels in most boreholes were allowed to stabilize overnight before being measured. Water levels were measured using a Solinst water level gauge. Measurements were made from ground surface in the case of open boreholes and from the top of the well casings in the piezometers. All boreholes were measured for total depth regardless of the amount of water they contained.

In many boreholes the sand units sloughed, filling the lower few feet of the hole. In boreholes T17, T18, and T23 accurate water levels could not be measured because of excessive slough. In borehole T13 a blockage of the borehole prevented the Solinst probe from reaching groundwater. Borehole T08 was dry and the water level in T16 was not gauged prior to geophysical logging. However, observations during the drilling of T16 indicated that groundwater was not present.

Water had to be introduced into open boreholes to facilitate geophysical logging. Therefore, formation water levels were measured prior to geophysical logging whenever possible. In some cases, the geophysical logging process conflicted with the measurement of water levels.

Geophysical logging of the Lang Draw boreholes occurred shortly after drilling was completed. Significant water was not encountered in any of the boreholes along Lang Draw at the time of drilling. Only boreholes T18 and T23 were found to contain wet sands. As previously discussed, water was introduced into a borehole prior to geophysical logging. This can cause misleading water level measurements unless introduced water is allowed to stabilize. The water levels measured in the Lang Draw boreholes may have been influenced by this process. However, final gauging of the Lang Draw boreholes occurred about 36 hours after geophysical logging. The final

measurements are therefore considered by Stoller to accurately reflect the stabilized elevation of formation water. Table 2 summarizes the borehole water level data.

Table 2
Borehole Water Level Data

Well ID	Date	Water Level (ft)	Water Level (ft)	Water Level (ft)	Notes
T06	1-29-97	61.50	5084.77	73.20	dry
T07	1-29-97	42.52	5083.62	73.40	moist 40-45
T08	1-29-97	Dry	NA	71.70	dry
T09	1-29-97	30.56	5056.28	64.30	dry
T10	1-29-97	37.32	5071.98	73.50	dry
T11	1-29-97	30.16	5060.69	59.20	dry
T12	1-31-97	49.70	5080.39	90.00	saturated 60
T13	1-29-97	blocked	NA	87.10	saturated 75
T14	1-31-97	51.02*	5077.64	69.30*	saturated 60
T15	1-31-97	20.45*	5073.65	43.24*	saturated 40
T16	1-29-97**	NA	NA	117	dry
T17	1-29-97**	NA	NA	119	wet 90, saturated 100
T18	1-31-97	20.00	5065.26	18.40	wet 20
T19	1-31-97	20.60	5064.89	30.00	dry
T20	1-31-97	21.90	5058.64	37.50	dry
T21	1-31-97	18.10	5060.18	33.50	dry
T22	1-31-97	18.30	5059.27	36.00	dry
T23	1-31-97	19.20	5065.26	19.50	moist 20-25, wet 25-30
T24	1-31-97	48.80	5080.12	96.00	saturated 60
T25	1-31-97	48.00	5081.63	98.00	saturated 60

NA = Not Available

* = Measured from Top of Well Casing

** = Geophysical Log Survey Only

2.4 Geophysical Log Surveys

Geophysical log surveys were completed on 16 of the 20 boreholes drilled. Borehole T15 was not logged due to soggy ground conditions which prohibited access to that location. Boreholes T24 and T25 were not logged because they had not been completed on the day of logging. Borehole T20 was missed by the logging team. Boreholes T14, T18, and T23 were only partially logged because the borings had sloughed and total depth could not be reached with the logging tools. The geophysical log surveys were conducted by Strata Data, Inc., of Casper, Wyoming, on Wednesday, January 29, 1997.

Geophysical logs included natural gamma ray, spontaneous potential, single point resistance, and 16-inch normal resistivity. The results of the geophysical logs correlate favorably with the lithologic logs indicating a minimum "sample lag". Copies of the final geophysical logs are included on Plate A, Geologic Cross-Sections.

2.5 Piezometer Installations

Two piezometers were installed in the study area northeast of the tailings facility. Borings T14 and T15 were selected by Stoller as the most beneficial piezometer locations. Stoller's decision was based on the following factors, as interpreted during the investigation:

- Both soil borings yielded significant quantities of water from the N-sand during drilling operations and these borings are located near the northern edge of the Bear Creek property holdings.
- Groundwater was inferred to be moving in the direction of the borehole locations. Therefore, piezometers located perpendicular to groundwater flow at these locations would provide valuable water quality and elevation data on formation water exiting the property.

Piezometers T14 and T15 were both constructed using standard 2-inch I.D., Schedule 40, PVC well casing. Twenty feet of 0.020-inch factory slotted PVC well screen was used in each piezometer. The lower portions of both boreholes were plugged with bentonite hole plug to within ten feet of the bottom of the N-sand prior to well construction. Colorado Silica Sand (10/20) was used as the filter pack material and the filter packs extended above the screened intervals. Bentonite hole plug was used to fill the boreholes, above the filter pack and around the well casings, to four feet below surface. A two feet thick cement seal was poured above the bentonite and soil cuttings were used to fill the borehole to grade. Both of the piezometers were above grade completions with the well casings extending above the ground surface 0.90 feet in T14

and 1.56 feet in T15. Piezometer completions details are included on the respective soil boring logs located in Appendix A.

After the piezometers were completed they were allowed to stabilize for about 24 hours before water level measurements were made. The final water level measurements in the piezometers were taken on Friday, January 31, 1997. Table 2 lists the water level elevations as measured in the piezometers.

2.6 Surveying

The location and ground surface elevations of all boreholes and piezometers were surveyed following the completion of the drilling program. The survey data was used to compile the geologic cross-sections and isopach maps included in this report.

2.7 Borehole Abandonment

All boreholes were plugged according to Wyoming's abandonment standards. As seen on the boring logs in Appendix A, the open boreholes were plugged with bentonite hole plug from the total drilled depth of the boring, or the existing bottom of the borehole, to within four feet of the surface. A 1-foot cement cap was poured on top of the bentonite and the hole was filled to grade with soil cuttings.

3. Data Evaluation

Data collected during the field activities were used to geologically and hydrologically evaluate the Lang Draw Alluvium, the K-sand, and the N-sand. These data were used to construct cross-sections (A-A' through F-F') located on Plate A and Figures 1 through 5.

3.1 Lang Draw Alluvium Evaluation

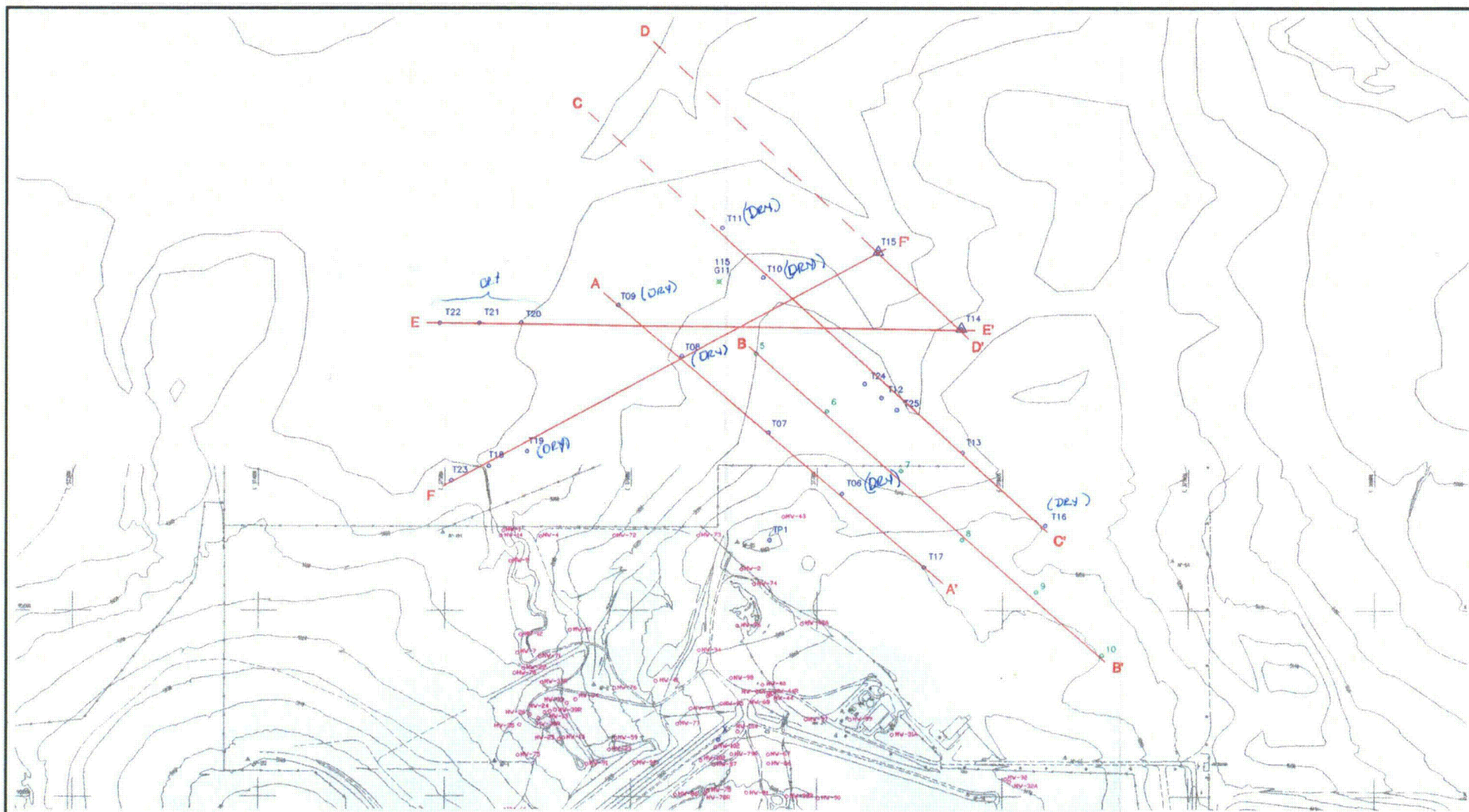
Six borings were drilled (T18 - T23) in the Lang Draw area. The soils encountered in these borings were yellow brown interbedded sands, silts, and clays which decrease in grain size up-section. Sand thickness in these borings ranges from 5 feet in boring T19 to 10 feet in borings T20 and T21. The top of the sands range from 5075.54 feet above mean sea level (MSL) in boring T20 to 5083.49 feet above MSL in boring T19. These sands correlate with thicker N-sand sequences further to the east (see cross-sections E - E' and F - F'). Only minor evidence of ground water was observed along Lang Draw at the time of drilling.

3.2 K-Sand Evaluation

The K-sand was encountered in 9 of the new borings (T06, T07, T12, T13, T16, T17, T24, and T25) and 5 of the historic borings (6, 7, 8, 9, 10). The top of the K-sand ranges from an elevation of approximately 5120 feet above MSL in boring 5 to 5154.62 feet above MSL in boring T17. Elevations for the K-sand are provided in Table 3.

The K-sand was described as a brown to orange-brown to buff colored sand which generally fines upward. The thickness of the K-sand ranges from 3 feet in boring 5 to 44 feet in boring T17. The K-sand was not encountered at the northern extremities of the study area, as shown by the K-sand Isopach Map, Figure 2. The K-sand thickness decreases as surface elevation decreases toward Bear Creek.

Figures



LEGEND

- Existing Monitoring Well
- △ New Piezometer
- Existing Boring
- New Boring
- A-A' Cross Section Identification

*Base map provided by Bear Creek Uranium

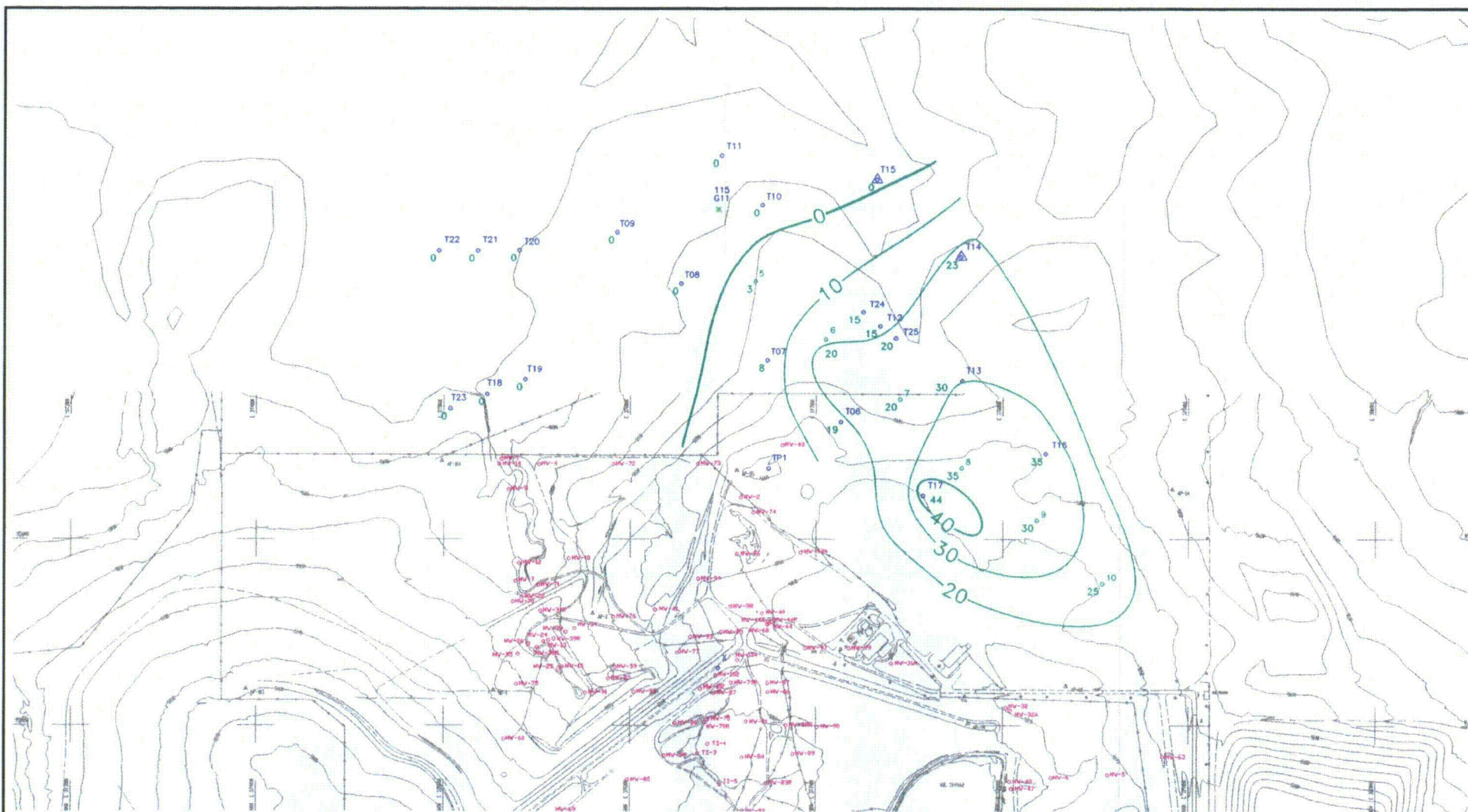
Stoller

REVISION	BY	DATE	APPD.

Bear Creek Uranium

Figure 1
Study Area Site Map and
Geologic Cross Section Identification

DATE	FILE	SCALE
March 19, 1997	E:\DWG\STOLLER\BC91TOP2.DWG	1" = 500'



LEGEND

- Existing Monitoring Well
- △ New Piezometer
- Existing Boring
- New Boring
- 30— Estimated K-Sand Thickness Contour
- 35 T16 K-Sand Thickness Observed In Boring T16

*Base map provided by Bear Creek Uranium

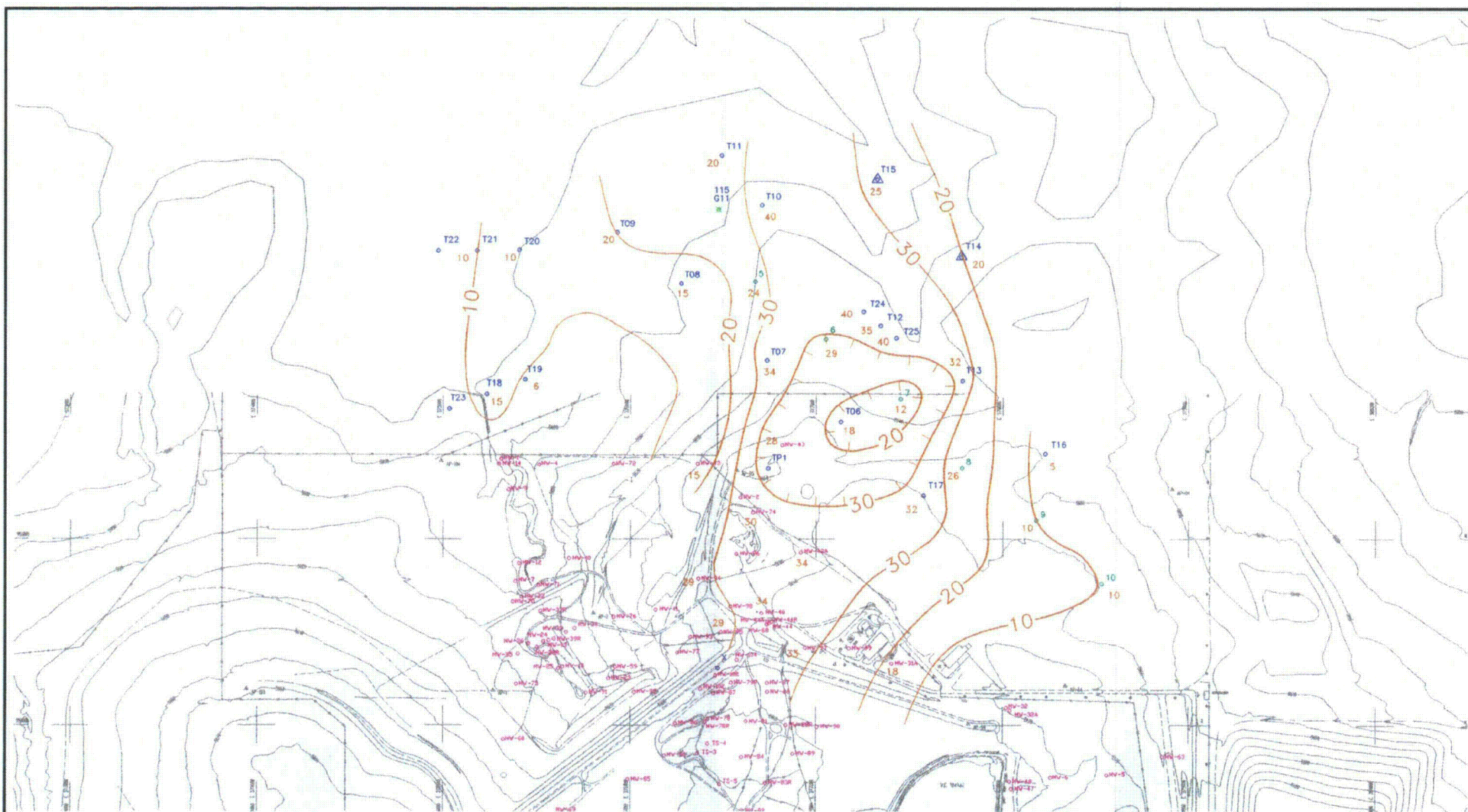
Stoller

REVISION	BY	DATE	APPD

Bear Creek Uranium

Figure 2
K - Sand Isopach Map

DATE	FILE	SCALE
March 19, 1997	E:\DWG\STOLLER\BC91TOP2.DWG	1" = 500'



LEGEND

- Existing Monitoring Well
- △ New Piezometer
- Existing Boring
- New Boring
- 10 — Estimated N-Sand Thickness Contour
- 5 T16 N-Sand Thickness Observed in Boring T16

*Base map provided by Bear Creek Uranium

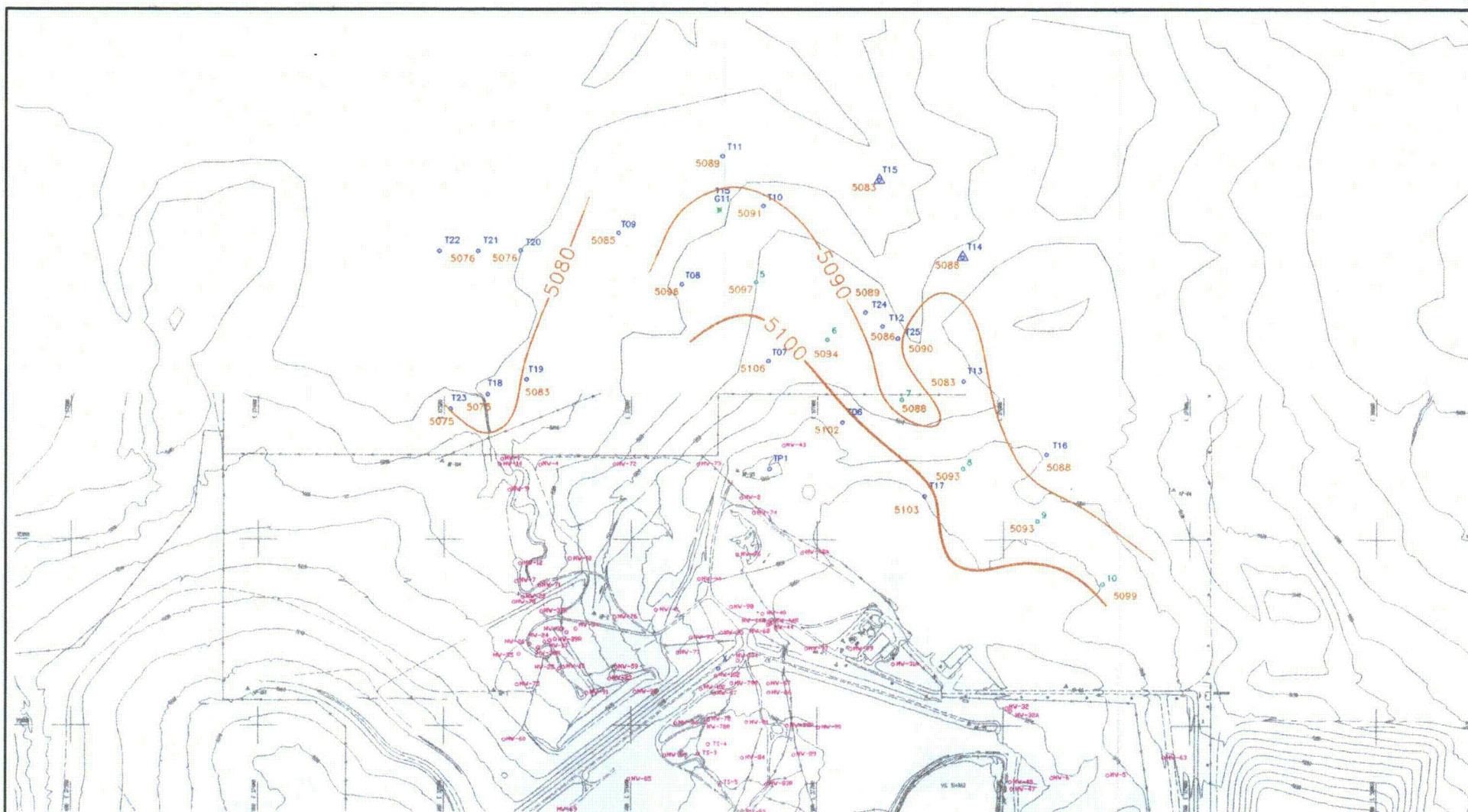
Stoller

REVISION	BY	DATE	APPD.
1	JPS	4/97	

Bear Creek Uranium

Figure 4
N - Sand Isopach Map

DATE	FILE	SCALE
March 19, 1997	E:\N\DWG\STOLLER\BC91TOP2.DWG	1" = 500'



LEGEND

- Existing Monitoring Well
- △ New Piezometer
- Existing Boring
- New Boring
- 5080— Ground Surface Elevation Contour
- 5088 T16 Elevation at Top of N-Sand in Boring T16

*Base map provided by Bear Creek Uranium

Stoller

REVISION	BY	DATE	APPD.

Bear Creek Uranium

Figure 3
Top of N - Sand Contour Map

DATE	FILE	SCALE
March 19, 1997	E:\DWG\STOLLER\EC91TOP2.DWG	1" = 500'

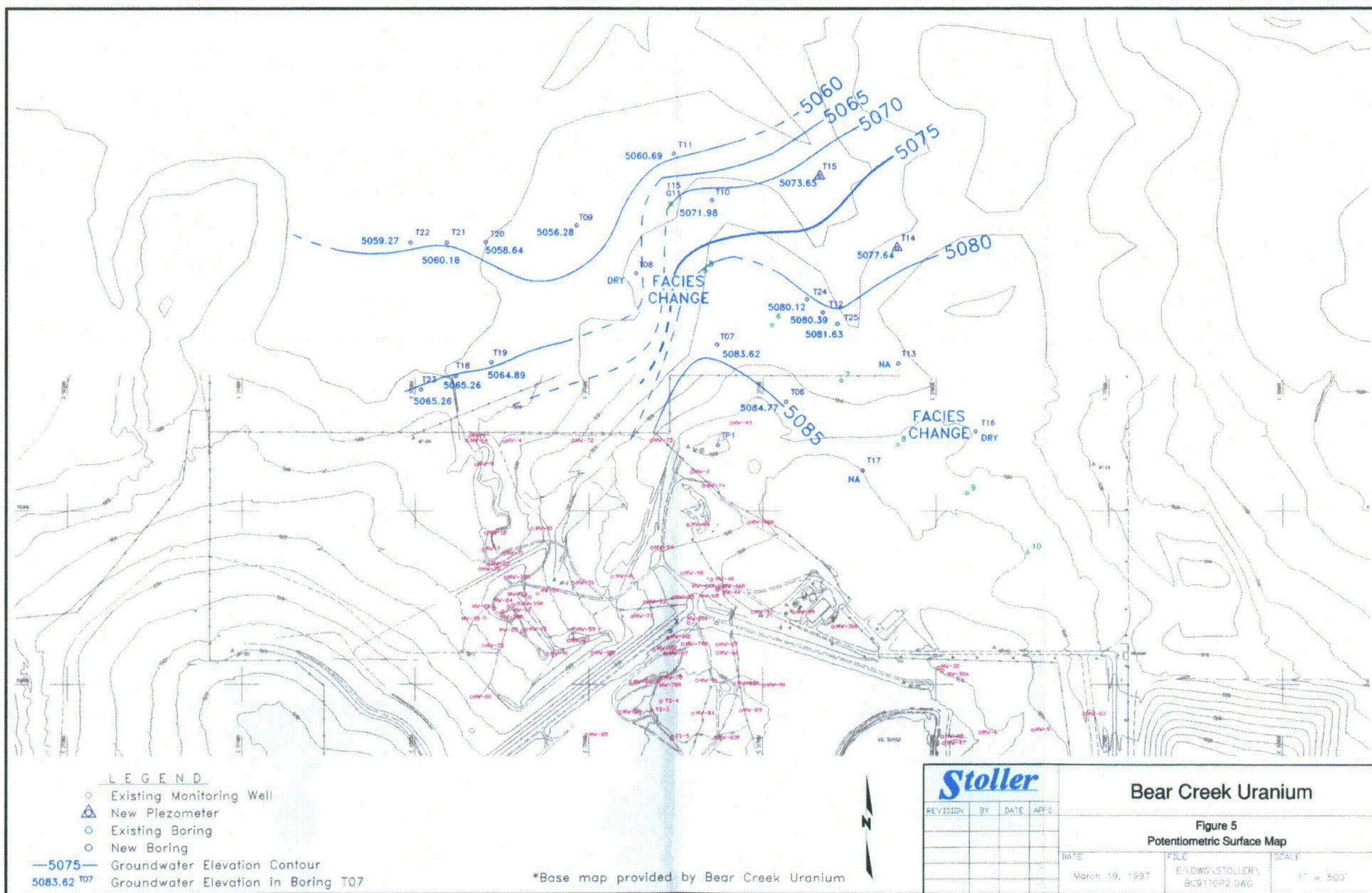


Table 3
Elevation Data — Groundwater, K-Sand, and N-Sand

T06	5146.27	61.50	5084.77	44	5102.27	18	5	5141.27	19
T07	5126.14	42.52	5083.62	20	5106.14	34	6	5120.14	8
T08	5101.05	Dry	NA	5	5096.05	15	NA	NA	NA
T09	5086.84	30.56	5056.28	2	5084.84	20	NA	NA	NA
T10	5109.30	37.32	5071.98	18	5091.30	40	NA	NA	NA
T11	5090.85	30.16	5060.69	2	5088.85	20	NA	NA	NA
T12	5130.09	49.70	5080.39	44	5086.09	35	8	5122.09	15
T13	5137.39	NA	NA	44	5093.39	32	5	5132.39	30
T14	5128.66	51.02	5077.64	40	5088.66	20	7	5121.66	23
T15	5094.10	20.45	5073.65	10	5084.10	25	NA	NA	NA
T16	5149.68	NA	NA	62	5087.68	5	9	5140.68	35
T17	5160.62	NA	NA	58	5102.62	32	6	5154.62	44
T18	5085.26	20.00	5065.26	10	5075.26	15	NA	NA	NA
T19	5085.49	20.60	5064.89	2	5083.49	5	NA	NA	NA
T20	5080.54	21.90	5058.64	5	5075.54	10	NA	NA	NA
T21	5078.28	18.10	5060.18	2	5076.28	10	NA	NA	NA
T22	5077.57	18.30	5059.27	NA	NA	NA	NA	NA	NA
T23	5084.46	19.20	5065.26	NA	NA	NA	NA	NA	NA
T24	5128.92	48.80	5080.12	40	5088.92	40	10	5118.92	15
T25	5129.63	48.00	5081.63	40	5089.63	40	15	5114.63	20
5"	5120	NA	NA	23.00	5097	24	0	5120.00	3
6"	5135	NA	NA	41.00	5094	29	6	5129.00	20
7"	5135	NA	NA	47.00	5088	12	13	5122.00	20
8"	5152	NA	NA	59.00	5093	26	13	5139.00	35
9"	5155	NA	NA	62.00	5093	10	12	5143.00	30
10"	5160	NA	NA	61.00	5099	10	14	5146.00	25

3.3 N-Sand Evaluation

The goal of the drilling program was directed at delineation of the N-sand to the north and east of the drilling area.

The top of the N-sand ranges from an elevation of 5075.54 feet above MSL in boring T20 to an elevation of 5106.14 feet above MSL in boring T07. The highest N-sand tops are aligned northwest-southeast along a ridge in the area of borings T06, T07, and T17. Figure 3 is a top of N-sand contour map. Based upon data presented in cross-section C-C' on Plate A, the N-sand may outcrop at, or just east of, Bear Creek. Elevations for the N-sand are provided in Table 3.

The color of the N-sand ranges from buff to light yellow-brown to olive gray. The thickness of the N-sand ranges from approximately 4 feet in boring T23 to approximately 40 feet in borings T24 and T25. At or near the bottom of the N-sand, a distinctive lignite marker bed generally was observed.

The greatest N-sand thickness' are located north and northeast of tailings basin in borings T07, T10, T11, T12, T13, T14, T15, T17, T24, T25, 5, 6 and 8, as shown in Figure 4, N-sand Isopach Map. The N-sand averages over 30 feet in thickness within these borings. Observations during drilling indicate that the sands encountered near borings T12, T15, T24, and T25 are generally clean, medium to coarse-grained with only minor percentages of silt and clay-sized particles. To the north of these borings in T10, T11, and T15, the N-sand is relatively thick; however, the clean sand observed to the south has been replaced with increased percentages of silt and clay-sized particles. The cross-sections located on Plate A show these trends. The N-sand pinches out northwest of the Lang Draw area (boring locations T21, T22, and T23) and to the northeast (boring locations 9, 10, and T16). As shown in Figure 4, a thick (>30 ft.) sand channel remains between these areas trending to the north-northeast. This is an extension of the N-sand trend delineated in the tailing area in previous evaluations (Moran, 1985). Table 3 lists the N-sand thickness, depth, and elevation in the study area of each boring location.

An exception to the increased thickness to the northeast trend was identified at boring location T08. In the vicinity of T08, the N-sand thickness is approximately 15 feet. This sand unit is described as discontinuous and is separated by interbedded silts and clays. The decreasing sand thickness near T08 and the presence of interbedded silts and clays are due to a change in depositional environments.

3.4 Groundwater Evaluation

As previously described in Section 2.3, groundwater measurements were collected from the open boreholes approximately 24 hours after drilling. Two piezometers were constructed from borings T14 and T15. A potentiometric surface map using these data is shown in Figure 5.

As shown in Figure 5, the potentiometric surface is affected by the increased clay and silt (facies change) in the area of borings OW-73, T8, and 5. The limited flow in this area is illustrated by boring T08 which did not produce groundwater to the open borehole over a 24-hour period. In contrast, borings T12, T24 and T25 produced significant quantities of groundwater during the air rotary drilling operations. On the east side of the trend in the vicinity of T16, the N-sand pinches out and again groundwater is insignificant.

In effect, groundwater flow from the tailing area toward Bear Creek is divided into two distinctive areas. In the vicinity of Lang Draw, the groundwater flows through the sandy alluvium to the north-northwest at a gradient of approximately 0.0066. This data may have been influenced by the introduction of water to facilitate geophysical logging. However, Stoller believes that groundwater levels were allowed sufficient time to stabilize (36 hours) after the introduction of water. To the east and northeast of Lang Draw, the groundwater flow appears to be focused through the thicker, cleaner portions of the N-sand towards T12 and T15 in a north-northeast direction. The gradient ranges from 0.0114 to 0.0333 to the northwest. The groundwater gradient in this area increases toward Bear Creek.

4. Conclusions

The lithologies encountered north of the Bear Creek Tailings Facility are typical of sediments deposited in a fluvial environment. These deposits are characterized by interbedded sand, silt, and clay units which vary in thickness due to different modes of deposition. The geometry of the stream, at the time of deposition, controlled these facies-changes, where sands are typical of stream channel deposits, and silts and clays are typical of over-bank deposition. Facies-changes are evident in fining and thinning N-sand sequences around five new borings (T08, T16, T21, T22, and T23), and 2 historic borings (9 and 10).

The fining and thinning of the N-sand controls groundwater movement through the study area. The facies change near boring T08 restricts groundwater flow across it, and separates the study area into two different groundwater flow environments. It is suspected that these facies changes are reflected in the current division of plume migration evident near the tailings facility. To the east of T08, groundwater gradients are approximately 3-times greater than observed to the west of the facies change. Similarly, a facies change near borings 8, 9, and T16 may retard groundwater flow to the southeast in that area.

The goal of this study was to delineate the N-sand north and east of the tailings area and determine if the N-sand or Lang Draw Alluvium satisfied the NRC's definition of an aquifer. The NRC defines an aquifer using several key elements:

- Is the water-bearing formation hydraulically interconnected to a natural aquifer?;
- Is the water-bearing formation capable of discharge to surface water?; or
- Is the water bearing formation reasonably accessible because of migration beyond the vertical projection of the boundary of the land transferred for long term government ownership and care?

Using these elements as a guide, Stoller has determined that:

- As indicated by the cross-sections, the N-sand trends into Lang Draw. However, visual observations indicate it is very unlikely that the Alluvium will produce enough water to satisfy the NCR definition of an aquifer.
- The N-sand extends northward over 2,500 feet from the tailings area. It is projected to outcrop within the Bear Creek drainage north of boring T11;

- Saturated thickness' of the N-sand extend beyond Bear Creek Uranium's property boundary to the north of the tailings facility; and
- The N-sand water production is intermittent and varies with the changing lithologies.

Based on these findings Stoller believes that the N-sand may satisfy the NRC definition for an aquifer in specific locations.

Appendix A

Lithologic Logs

Stoller

SOIL BORING / WELL LOG

T-06

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#:
3326-010LOGGED BY:
J. MoranDATE STARTED:
1/27/97DATE COMP:
1/27/97TOTAL DEPTH:
80' BGSDEPTH TO WATER:
61.5' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING:	EASTING:	ELEVATION:
				951627.19	377131.70	5146.27
	5		SAND, silty, brown			
	10		SAND, white/buff, fine grain, subangular to angular			
	15		SAND, some silt, orange brown, fine to medium grain, subangular to subrounded			
	20		SAND, buff/brown, fine to medium grain, subangular to subrounded			
	25		SAND, brown, medium to coarse grain, subangular to subrounded			
	30		SAND, orange brown, medium to coarse grain, subangular to subrounded			
	35		CLAY, some silt, brown gray			
	40		CLAY, slight silt, blue gray			
	45		SAND, brown to buff, fine grain, subrounded, some clay 45'-50'			
	50					
	55		SAND, buff, fine to medium grain, subangular to subrounded			
	60		SAND, brown-orange brown, medium to coarse grain, subrounded to rounded			
	65		CLAY, blue gray			
	70		CLAYSTONE, blue gray, hard			
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-60'

Native material (slough) 60-80'

Boring plugged 0-80'

Total depth 80' BGS

Stoller

SOIL BORING / WELL LOG

T-07

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3326-010LOGGED BY:
J. MoranDATE STARTED:
1/27/97DATE COMP:
1/27/97TOTAL DEPTH:
70' BGSDEPTH TO WATER:
42.52' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 951956.87	EASTING: 376735.36	ELEVATION: 5126.14
	5		SOIL, sandy, brown			
	10		SAND, silty, buff brown, fine grain			
	15		SILT, sandy/SAND, silty, orange, very fine grain			
	20		CLAY, brown			
	25		SAND, white/buff, very fine grain to fine grain, subrounded			
	30		SAND, yellow-gray/buff, fine grain, subrounded			
	35					
	40		SAND, yellow-brown, medium grain, subangular-subrounded, moist			
	45		SAND, yellow-brown, medium to coarse grain, subrounded			
	50		SAND, brown, coarse-very coarse, subangular-subrounded			
	55		CLAYSTONE, blue gray			
	60		CLAYSTONE, olive gray			
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-60'

Native materials (slough) 60-70'

Boring plugged 0-70'

Total depth 70' BGS

Stoller

SOIL BORING / WELL LOG

T-08

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#:
3326-010LOGGED BY:
J. MoranDATE STARTED:
1/27/97DATE COMP:
1/27/97TOTAL DEPTH:
75' BGSDEPTH TO WATER:
dry

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING:	EASTING:	ELEVATION:
				952367.99	376269.87	5101.05
	5		SOIL, clay/sand, brown			
	10		SAND, light brown, fine to medium grain, subrounded to rounded			
	15					
	20		CLAY, brown			
	25		CLAY, silty/SAND, clayey-silty, yellow brown			
	30		CLAY, silty/SILT, clayey, with very fine grain. Sand			
	35					
	40		SAND, silty, yellow brown, fine grain			
	45		CLAY, silty clay, olive gray			
	50		SAND, brown, very fine to fine grain, lignite			
	55		SAND, silty, blue gray			
	60		SANDSTONE, gray, very fine to fine grain			
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-65'
Native Material (slough) 65-75'
Boring plugged 0-75'

Stoller

SOIL BORING / WELL LOG

T-09

CLIENT:
Union Pacific Resources

PROJECT:
Bear Creek Uranium

LOCATION:
Douglas, WY

DRILLED BY:
K.E. Taylor Drilling

DRILLER:
L. Schmidt

METHOD:
Air Rotary

JOB#
3326-010

LOGGED BY:
J. Moran

DATE STARTED:
1/27/97

DATE COMP:
1/27/97

TOTAL DEPTH:
65' BGS

DEPTH TO WATER:
30.58' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952643.21	EASTING: 375927.12	ELEVATION: 5086.84
	5		SAND, yellow brown, very fine grain, subangular to subrounded			
	10		SAND, yellow brown, fine to medium grain, subrounded			
	15					
	20		SAND, yellow brown, fine to coarse grain, subrounded			
	25		SAND, some clay and silt, orange brown, medium to coarse grain, subrounded			
	30					
	35		SAND, silty with clay, gray brown to brown			
	40		CLAY, blue gray, with lignite			
	45		SAND, olive gray, fine to medium grain, subangular			
	50		SAND, silty, some clay, olive gray, very fine to fine grain			
	55		CLAY, some silt			
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-40'
Native materials (slough) 40-65'
Boring plugged 0-65'
Total Depth 65' BGS

Stoller

SOIL BORING / WELL LOG

T-10

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3328-010LOGGED BY:
J. MoranDATE STARTED:
1/27/97DATE COMP:
1/27/97TOTAL DEPTH:
80' BGSDEPTH TO WATER:
37.32' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952787.89	EASTING: 376707.11	ELEVATION: 5109.30
	5		CLAYEY SOIL, brown			
	10		SAND, some clay, light yellow brown, very fine to fine grain			
	15		SAND, light brown, very fine grain, subrounded			
	20					
	25					
	30		SAND, light brown, fine to medium grain, subrounded			
	35		SAND, yellow brown, medium grain, subrounded			
	40		SAND, orange to yellow brown, medium to coarse grain, subangular to subrounded			
	45					
	50		CLAY/CLAYSTONE, silty, olive gray			
	55					
	60					
	65					
	70		LIGNITE			
	75		CLAY, olive gray			
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-80'

Boring plugged 0-80'

Total depth 80' BGS

Stoller

SOIL BORING / WELL LOG

T-11

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3326-010LOGGED BY:
J. MoranDATE STARTED:
1/27/97DATE COMP:
1/27/97TOTAL DEPTH:
60'BGSDEPTH TO WATER:
30.16'BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 953054.66	EASTING: 376487.27	ELEVATION: 5090.85
	0		CLAY SOIL, silty, brown			
	5		SAND, silty, brown, very fine grain			
	10					
	15		SAND, silty, orange brown, very fine grain			
	20					
	25		CLAY, silty/CLAYSTONE, brown			
	30					
	35		CLAYSTONE, silty, olive gray			
	40		CLAY, silty 45-55', olive gray			
	45					
	50					
	55		CLAY with LIGNITE, olive gray			
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-60'

Boring plugged 0-60'

Total depth 60'

Stoller

SOIL BORING / WELL LOG

T-12

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L.SchmidtMETHOD:
Air RotaryJOB#:
3326-010LOGGED BY:
J.MoranDATE STARTED:
1/27/97DATE COMP:
1/27/97TOTAL DEPTH:
95'BGSDEPTH TO WATER:
49.70'BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952142.76	EASTING: 377343.98	ELEVATION: 5130.09
	0		SOIL, brown			
	5		SAND, silty, brown, very fine grain			
	10					
	15		SAND, orange brown, medium to coarse grain, subrounded to rounded			
	20					
	25		CLAY, silty, brown			
	30					
	35		CLAY, silty/SILT, clayey, light brown			
	40					
	45		SILT, medium brown to olive gray, some clay and trace lignite 45-50'			
	50					
	55		SAND, yellow brown, medium to coarse grain, subangular, moist			
	60		SAND, brown, coarse to very coarse grain, subangular to subrounded, trace lignite, moist			
	65		SAND, fine grain, poor sample recovery - water saturated			
	70		SAND, fine to medium grain, lignite chips, saturated			
	75		SAND, white-buff, medium grain, subrounded, saturated			
	80		SAND, medium to coarse grain, subrounded to rounded, saturated			
	85					
	90		CLAY, blue gray			
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:
Soil cutting 0-3'
Concrete 3-4'
Bentonite hole plug 4-90'
Native material (slough) 90-95'
Boring plugged 0-95'
Total depth 95' BGS

Stoller

SOIL BORING / WELL LOG

T-13

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/28/97DATE COMP:
1/28/97TOTAL DEPTH:
95' BGSDEPTH TO WATER:
75' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING:	EASTING:	ELEVATION:
				951847.95	377782.78	5137.39
	5		SAND, silty, brown, very fine to fine grain, subrounded, dry			
	10					
	15		SAND, silty, light yellowish brown, fine to medium grain, angular to subrounded			
	20		SAND, silty, brownish yellow, fine to medium grain, angular to subrounded			
	25		SILT, sandy, dark yellowish brown, fine to medium grain, lignite fragments			
	30		SILT, minor clay, light brownish gray, clay increasing 35-45'			
	35					
	40					
	45		SAND, slightly silty, light brown, fine to medium grain, subrounded			
	50		SAND, dark yellowish brown, fine grain			
	55		SAND, yellowish brown, medium to very coarse grain, subrounded to rounded, lignite fragments 65-70', moist			
	60					
	65					
	70		SAND, silty, grayish brown, medium grain, subrounded			
	75		SILT, minor clay, gray, moist to wet at 75', saturated 80-85', damp to moist 85-95'			
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-80'

Native material (slough) 80-95'

Boring plugged 0-95'

Stoller

SOIL BORING / WELL LOG

T-14

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#:
3326-010LOGGED BY:
R.RuppDATE STARTED:
1/28/97DATE COMP:
1/30/97TOTAL DEPTH:
110' BGSDEPTH TO WATER:
51.02' FTOC

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952511.88	EASTING: 377774.06	ELEVATION: 5127.76
	0		SAND, silty, brown			
	5		SAND, silty, light yellow brown, decreasing silt with depth			
	10					
	15					
	20		SAND, yellow brown, medium to coarse grain			
	25		SAND, dark yellow brown, coarse to very coarse grain			
	30		SAND, silty, clayey, gray yellow brown			
	35		CLAY, silty, gray			
	40		SAND, silty, yellow brown			
	45		SAND, light yellow gray, fine grain			
	50		SAND, dark yellow brown, coarse to very coarse grain, moist			
	55					
	60		CLAY, silty, yellow brown-gray, saturated			
	65		CLAY, silty, with very fine sand 75-80', blue gray, wet 80-85'			
	70					
	75					
	80					
	85					
	90		CLAY, silty, dark gray, damp			
	95					
	100		CLAY, silty, very dark gray			
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-1.5'

Concrete 1.5-4'

Bentonite hole plug 4-42' and 69'-110'

10/20 Colorado Silica Sand filter pack 42-69'

50 ft. 2" ID Sch. 40 PVC well casing 1' above surface to 49' BGS

20 ft. 0.020 inch Sch. 40 factory slot well screen 49-69' BGS

Stoller

SOIL BORING / WELL LOG

T-15

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3328-010LOGGED BY:
R. RuppDATE STARTED:
1/28/97DATE COMP:
1/30/97TOTAL DEPTH:
80' BGSDEPTH TO WATER:
20.45' FTOC

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952926.54	EASTING: 377324.86	ELEVATION: 5092.54
	5		SAND/SILT, fine to very fine grain, brown			
	10		SAND, yellow brown, fine grain			
	15					
	20		SAND, yellow, medium grain			
	25		SAND, yellow brown, coarse grain			
	30		SAND, yellow brown, coarse to very coarse grain, mixed with gray			
	35		silty clay			
	40		CLAY, silty with scattered sand, gray			
	45		CLAY, silty, gray to very dark gray with depth, saturated at 40-45', dry to damp at 45-50'			
	50					
	55					
	60					
	65		LIGNITE			
	70		CLAY, silty, very dark gray to gray with depth			
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-2'

Concrete 2-4'

Bentonite hole plug 4-20' and 41.5-80'

10/20 Colorado Silica Sand filter pack 20-41.5'

23 ft. 2" ID Sch. 40 PVC well casing 1.56' above surface to 21.5' BGS

20 ft. 0.020 inch Sch. 40 factory slot well screen 21.5-41.5' BGS

Stoller

SOIL BORING / WELL LOG

T-16

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/28/97DATE COMP:
1/28/97TOTAL DEPTH:
120' BGSDEPTH TO WATER:
dry

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 951456.86	EASTING: 378228.98	ELEVATION: 5149.68
	5		SAND, yellowish brown, fine to medium grain, subangular			
	10		SAND, brownish yellow, fine to medium grain with scattered coarse grain, subangular to subrounded			
	15					
	20		SAND, light gray, medium to coarse grain, subangular			
	25					
	30		SAND, light yellowish brown, medium grain, subangular			
	35					
	40		SAND, yellowish brown, medium grain, subrounded			
	45					
	50		CLAY, silty, grayish brown to brown			
	55		CLAY, silty, gray			
	60					
	65		SILT, sandy, dark gray, fine to medium grain, subrounded			
	70		SILT, dark gray			
	75					
	80					
	85					
	90					
	95		SILT, dark gray, with lignite fragments			
	100		SILT, clayey, dark gray			
	105					
	110					
	115		SAND, silty, dark gray, very fine to fine grain, subrounded			

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-85'

Native material (slough) 85-120'

Boring plugged 0-120'

Total depth 120' BGS

Stoller

SOIL BORING / WELL LOG

T-17

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek DrillingLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3328-010LOGGED BY:
R. RuppDATE STARTED:
1/29/97DATE COMP:
1/29/97TOTAL DEPTH:
120' BGSDEPTH TO WATER:
90' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 951232.25	EASTING: 377572.69	ELEVATION: 5160.62
	5		SAND, silty, yellowish brown			
	10					
	15		SAND, silty, brownish yellow, fine to medium grain increasing with depth			
	20					
	25		SAND, light brownish yellow, fine to medium grain, subangular			
	30					
	35					
	40		SAND, brownish yellow, medium to coarse grain			
	45		SAND, orange, coarse to very coarse grain			
	50					
	55		SILT, clayey, dark gray			
	60		SAND, silty, yellow brown, very fine grain			
	65		SAND, dark gray, fine grain			
	70					
	75		SAND, gray, medium grain, subrounded			
	80		SAND, gray, coarse grain			
	85					
	90		SAND, silty, coarse grain, wet			
	95		SILT, clayey, gray, wet			
	100		CLAY, silty, gray to dark gray, saturated, poor recovery 100-105', damp 105-110'			
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'

Concrete 3-4'

Bentonite hole plug 4-65'

Native material 65-120'

Boring plugged 0-120'

Total depth 120' BGS

Stoller

SOIL BORING / WELL LOG

T-18

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/29/97DATE COMP:
1/29/97TOTAL DEPTH:
40' BGSDEPTH TO WATER:
20' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 951775.93	EASTING: 375231.35	ELEVATION: 5085.26
	5		CLAY, silty, dark brown, moist			
	10		SILT, clayey, brown, moist, gaining sand			
	15		SAND, yellowish brown, medium to coarse grain increasing with depth, subangular to subrounded, moist increasing with depth			
	20		SAND, yellowish brown, very coarse to granular, subrounded to rounded, wet			
	25		CLAY, silty, yellow brown, wet, granular sand and pebbles from above			
	30		SILT, clayey, sandy, sand very coarse from above, yellow brown, wet			
	35		LIGNITE with gray silty claystone			
	40					
	45					
	50					
	55					
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-18.4'
Native material 18.4-40'
Boring plugged 0-40'
Total depth 40' BGS

Stoller

SOIL BORING / WELL LOG

T-19

CLIENT:
Union Pacific Resources

PROJECT:
Bear Creek Uranium

LOCATION:
Douglas, WY

DRILLED BY:
K.E. Taylor Drilling

DRILLER:
L. Schmidt

METHOD:
Air Rotary

JOB#
3326-010

LOGGED BY:
R. Rupp

DATE STARTED:
1/29/97

DATE COMP:
1/29/97

TOTAL DEPTH:
40' BGS

DEPTH TO WATER:
20.6' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 951856.02	EASTING: 375436.33	ELEVATION: 5085.49
	5		SILT, sandy, dark yellowish brown, fine grain subangular sand, moist			
	10		CLAY, silty, brown, dry			
	15					
	20		SAND, brownish yellow, very coarse, subrounded, moist			
	25		CLAY, silty, yellowish brown, moist			
	30					
	35		CLAY, silty, gray, damp, minor lignite partings			
	40		LIGNITE			
	45					
	50					
	55					
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-30'
Native materials (slough) 30-40'
Boring plugged 0-40'
Total depth 40' BGS

Stoller

SOIL BORING / WELL LOG

T-20

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#:
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/29/97DATE COMP:
1/29/97TOTAL DEPTH:
40' BGSDEPTH TO WATER:
21.9' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952547.98	EASTING: 375402.76	ELEVATION: 5080.54
	0		SILT, clayey, dark yellowish brown			
	5		SAND, silty, light yellowish brown, fine to medium grain, subangular			
	10					
	15		SAND, clayey/silty, dark yellowish brown, medium to coarse grain, subangular			
	20		CLAY, silty, light yellowish brown, damp			
	25					
	30					
	35		CLAY, silty, gray, damp			
	40		LIGNITE			
	45					
	50					
	55					
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-37.5'
Native material (slough) 37.5-40'
Boring plugged 0-40'
Total depth 40' BGS

Stoller

SOIL BORING / WELL LOG

T-21

CLIENT:
Union Pacific Resources

PROJECT:
Bear Creek Uranium

LOCATION:
Douglas, WY

DRILLED BY:
K.E. Taylor Drilling

DRILLER:
L. Schmidt

METHOD:
Air Rotary

JOB#
3328-010

LOGGED BY:
R. Rupp

DATE STARTED:
1/29/97

DATE COMP:
1/29/97

TOTAL DEPTH:
40' BGS

DEPTH TO WATER:
18.1' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING:	EASTING:	ELEVATION:
				952545.86	375178.25	5078.28
	5		SAND, silty, yellowish brown, fine grain, subrounded			
	10					
	15		CLAY, silty, sandy, strong brown, moist			
	20					
	25		SILT, clayey, increasing clay with depth, very fine sand in minor amounts, light yellowish brown, damp, lignite partings from 25-30'			
	30					
	35		SILT, clayey, gray			
	40		SILT, clayey, gray with lignite			

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-33.5'
Native materials (slough) 33.5-40'
Boring plugged from 0-40'

Stoller

SOIL BORING / WELL LOG

T-22

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/29/97DATE COMP:
1/29/97TOTAL DEPTH:
40' BGSDEPTH TO WATER:
18.3 BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952546.09	EASTING: 374971.89	ELEVATION: 5077.57
	5		SILT, sandy yellowish brown, very fine to fine grain, angular to subangular, damp			
	10		CLAY, silty, light yellowish brown, small % of very fine sand, damp to moist			
	15					
	20					
	25					
	30		SAND, silty, yellowish brown, very fine to fine grain, subangular, high % silt			
	35		CLAY, silty, gray, moist			
	40		CLAY, silty, gray, moist, with dark gray to black lignite			
	45					
	50					
	55					
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-36'
Native materials (slough) 36-40'
Boring plugged from 0-40'

Stoller

SOIL BORING / WELL LOG

T-23

CLIENT:
Union Pacific Resources

PROJECT:
Bear Creek Uranium

LOCATION:
Douglas, WY

DRILLED BY:
K.E. Taylor Drilling

DRILLER:
L. Schmidt

METHOD:
Air Rotary

JOB#:
3326-010

LOGGED BY:
R. Rupp

DATE STARTED:
1/29/97

DATE COMP:
1/29/97

TOTAL DEPTH:
40' BGS

DEPTH TO WATER:
19.2 BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 951698.27	EASTING: 375033.05	ELEVATION: 5084.46
	5		SILT, clayey, sandy, yellow brown, moist, wet 25-30'			
	10					
	15					
	20					
	25					
	30		SILT, clayey, gray			
	35		SILT, sandy, gray, very fine to fine grain, lignite			
	40					
	45					
	50					
	55					
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					
	105					
	110					
	115					

Stoller

SOIL BORING / WELL LOG

T-24

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor Drilling

DRILLER:

METHOD:
Air RotaryJOB#
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/30/97DATE COMP:
1/30/97TOTAL DEPTH:
100' BGSDEPTH TO WATER:
48.8' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952217.27	EASTING: 377252.78	ELEVATION: 5128.92
	5		SILT, sandy, brown, fine grain			
	10		SAND, light brown, medium to coarse grain			
	15					
	20		SAND, orange brown, fine to coarse grain, some silt			
	25		CLAY, silty, sandy (from above to 30'), orange brown to light brown with depth			
	30					
	35					
	40		SAND, silty, light brown, fine grain, with clay fragments from above			
	45		SAND, brownish yellow, fine to coarse grain, poorly graded			
	50					
	55		SAND, yellow brown, coarse to very coarse, subrounded, hematitic lignite fragments			
	60		SAND, poor recovery, heavily saturated			
	65		SAND, some silt, gray, fine to coarse grain, saturated - boring making a lot of water			
	70					
	75					
	80		CLAY, silty, dark gray with lignite fragments to 85', gray 85-95'			
	85					
	90					
	95		SHALE, dark gray to black			
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-95'
Native material (slough) 96-100'
Boring plugged 0-100'
Total depth 100' BGS

Stoller

SOIL BORING / WELL LOG

T-25

CLIENT:
Union Pacific ResourcesPROJECT:
Bear Creek UraniumLOCATION:
Douglas, WYDRILLED BY:
K.E. Taylor DrillingDRILLER:
L. SchmidtMETHOD:
Air RotaryJOB#:
3326-010LOGGED BY:
R. RuppDATE STARTED:
1/30/97DATE COMP:
1/30/97TOTAL DEPTH:
100' BGSDEPTH TO WATER:
48' BGS

COMP	DEPTH	LITH	LITHOLOGIC DESCRIPTION	NORTHING: 952077.25	EASTING: 377427.44	ELEVATION: 5129.63
	5		SILT, brown			
	10		SAND, silty, light brown, fine grain			
	15		SAND, yellow brown, medium to coarse grain, subangular			
	20		SAND, orange brown to yellow, coarse to very coarse grain, subangular, silty clay fragments			
	25		CLAY, silty, dark to light brown, hematitic coal fragments			
	30		CLAY, silty, light brown to gray			
	35					
	40		SAND, yellow brown, very fine to fine grain, some silt			
	45		SAND, dark yellow brown, medium to coarse grain, subrounded			
	50		SAND, yellow brown to orange, medium coarse to coarse grain, subrounded			
	55		SAND, light yellow brown, coarse grain, subrounded, lignite fragments			
	60		SAND, yellow brown, very fine to fine grain, saturated, poor recovery			
	65		SAND, gray, granular, with coal fragments			
	70		SAND, gray, coarse grain			
	75		SAND, gray, medium grain, gaining silty clay with depth			
	80		CLAY, silty, gray, shaley at 100'			
	85					
	90					
	95					
	100					
	105					
	110					
	115					

COMPLETION NOTES:

Soil cuttings 0-3'
Concrete 3-4'
Bentonite hole plug 4-88'
Native material (slough) 98-100'
Boring plugged 0-100'
Total depth 100' BGS

