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NON CONFIDENTIAL

CENTENNIAL PROJECT
WELD COUNTY, COLORADO
Notice of Intent Modification MD-03
File No. P-2008-043

RESPONSE TO DIVISION OF RECLAMATION, MINING, AND SAFETY SEPTEMBER 25, 2009, LETTER

POWERTECH (USA) INC.

5575 DTC Parkway, Suite 140
Greenwood Village, Colorado 80111 USA

28 October 2009

POWERTECH (USA) INC.

October 27, 2009

Allen C. Sorenson
Senior Environmental Protection Specialist
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, Colorado 80203

RE: Request for Additional Information (Notice of Intent (NOI) MD-03, File No. P-2008-043) Centennial Project, Weld County, Colorado

Dear Mr. Sorenson:

In response to your letter dated September 25, 2009, please find enclosed Powertech's responses to the request for additional information received from the Colorado Division of Reclamation Mining and Safety (DRMS). We understand that the requested information is necessary in order for DRMS to complete its review of the Modification (MD-03) to NOI File Number P-2008-043. Below is a list of information and attachments enclosed herewith that are intended to assist DRMS in its review.

- Report prepared by Powertech that responds to NOI MD-03 File Number P-2008-043 Completeness Issue Items 1 through 5; 7 through 10; 15; and 16 a, b, d, e, and f.
- Attachments referenced in the Powertech NOI MD-03 File Number P-2008-043 Completeness Issue Items report.
- Report prepared by Petrotek Engineering Corporation that responds to NOI MD-03 File Number P-2008-043 Completeness Issue Items 6; 11 through 14; and 16 c.

If you have any questions or require additional information, please feel free to contact me at (303)790-7528 or Michael Beshore at (970)556-5988.

Respectfully yours,

Richard E. Blubaugh
Vice President-Environmental Health & Safety Resources

Enclosures
cc: W. Mays
J. Mays
T. Walsh
M. Beshore
E. Ethington, CDPHE
V. Shea, EPA
D. Bauer, Weld County

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POWERTECH (USA) INC.

October 28, 2009

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2008 NOI MD-03 Completeness Issues

Centennial Project, Completeness Issues of Notice of Intent Modification MD-03, File No. P-2008-043

1. ***Provide a plan for cleaning and testing water containment vessels and appurtenances to demonstrate that they will not be a source of contamination.***

Please refer to Completeness Issue Item #1 Attachment for the Powertech (USA) Inc. (Powertech) Produced Water Vessel – Cleaning and Inspection Procedure. All cleaning and inspection procedures outlined in the Powertech Produced Water Vessel – Cleaning and Inspection Procedure will be adhered to and will be certified as complete before water containment vessels are brought on the site. All manifolds, valves, and transfer pumps will be cleaned as described in the attached procedure. Additionally, piping will be new and National Sanitation Foundation or otherwise certified for potable water.

2. ***Provide details on the specific type(s) of water containment vessels to be deployed.***

Water containment vessels will be fully enclosed and obtained through Rain for Rent. Please refer to Completeness Issue Item #2 Attachments for a photograph of the type of water containment vessel to be used and a diagram showing the dimensions of the vessels.

3. ***DRMS will require that all injection wells be specified in MD-03; there will be no latitude to use wells for injection that have not been specifically approved by DRMS for that purpose. At this time, the only potential injection well identified in MD-03 is well IN08-33-PW1.***

Powertech is in agreement and will comply with this completeness item. At this time, only IN08-33-PW1 has the potential to be utilized as an injection well, as has been identified in MD-03.

4. ***DRMS requires the submittal of mechanical integrity test results, electrical resistivity logs, and well completion reports for all injection wells.***

Please refer to Completeness Issue Item #4 Attachments for the results of mechanical integrity testing and well completion details for IN08-33-PW1.

5. ***Provide details on the fence to be installed around the pump test facilities.***

Fencing will be installed around the pump test facilities in such a way to restrict entrance by livestock, and in accordance with the specifications requested by the landowner. Fencing will consist of four-strand barbed wire with the bottom wire located 16 inches from the ground surface and the top wire located 48 inches above the ground surface. The two remaining wires will be evenly spaced between the bottom and top wires. Corner posts will be #1 treated 6" X 8" rail-road ties, and will be planted at least 4 feet into the ground. Gateways will also be strengthened to prevent sagging with rail-road ties mounted at each end. Between the rail-road tie corner posts, steel T-posts that are 6 feet in length will be placed every 16 feet. Additionally, 2 stays will be evenly spaced between all corner posts and T-posts in order to prevent sagging.

6. ***Refer to the attached Petrotek Report.***

7. ***DRMS requires submittal of completion and development reports for all wells. Critical to DRMS review are the geophysical logs, drilling/mud logs, and Powertech's interpretation of their relation to the stratigraphy.***

Please refer to Completeness Issue Item #7 Attachments. Colorado State Engineers Office (SEO) Groundwater Well Construction and Test Reports are included for all recently drilled wells in section 33, and to be monitored during pumping test activities. Additionally, Powertech has included well logs for these groundwater wells which display well construction details, geophysical logs, and Powertech stratigraphic interpretations. Also included in the attachment are groundwater well development field reports for all wells recently constructed and to be monitored during the pump test.

8. ***The pumping well and monitoring wells installed for and used in the previous pumping test need to be shown on the Centennial Pump Test Plan map. Since these wells are going to be monitored in the pumping test proposed in MD-03, the information listed in item #7 above must also be provided for these wells.***

Please refer to the Completeness Issue Item #8 Attachment for an updated Centennial Pumping Test Plan Map (Figure 4 of the Centennial Section 33 Pump Test Plan), which includes the locations of all groundwater wells to be monitored at the pump test location. SEO Well Construction and Test Reports for groundwater wells utilized during the previous pumping test have been submitted to the DRMS in the form of the confidential Surety Reduction Request for NOI P-2007-015. Please refer to that report for well completion details. Development reports and drilling/mud logs were not developed and, thus, are not available for these wells. Information used for completing the screened interval of these wells in the target geologic units was derived from exploration boreholes that were advanced immediately adjacent to the previous pumping test groundwater well locations. It should be pointed out that A2 Sand and WE Sand water levels, and differences in hydrostatic head, in the groundwater wells used in the previous pumping test correlate well with water levels in the same geologic units completed in groundwater wells to be utilized in this proposed pumping test. Powertech's position is that this is adequate evidence that the subsurface geology and hydrogeology at the proposed pumping test site is similar to that at the previous pump test site located about 500 feet away, and that groundwater well screens are completed in the target intervals intended at both pump test locations.

9. ***Provide detailed description of the IN-14-33 core including the results of any geotechnical testing conducted, and provide the plugging and abandonment report for the hole.***

Core hole IN-14-33 was advanced and abandoned on April 28, 2009, and all available and required information is included as Completeness Issue Item #9 Attachments.

10. ***Which aquifer testing software will be utilized to analyze the pump test data?***

The software utilized to analyze the pump test data will be AquiferTest Pro, Version 4.2.

11. ***Refer to the attached Petrotek Report.***

12. ***Refer to the attached Petrotek Report.***

13. ***Refer to the attached Petrotek Report.***

14. ***Refer to the attached Petrotek Report.***

15. ***If and when MD-03 is approved, DRMS must be provided five working days prior notice of commencement of the initial step-rate test so that inspections can be scheduled.***

Powertech is in agreement with this requirement and will provide the DRMS with five working days prior notice of commencement of the initial step-rate test so that inspections can be scheduled.

16. ***What remains to be determined for reclamation bond purposes is the amount to be required if DRMS were to forfeit the bond while the pump test water is still stored in tanks. Powertech must provide rental cost information for the tanks, preferably in the form of bid documents or equivalent. If the transfer pump and other injection appurtenances are to be rented, provide cost documentation for those items as well. In order for DRMS to estimate costs for tanked water disposal, the following issues must first be addressed.***
    a. ***Feasibility of injection.***

As demonstrated in the Petrotek responses to Completeness Issue Items 11, 14, and 16c, Powertech and their expert hydrogeologic consultants are fully confident that the immediate reinjection of all produced pump test water back into the same well from which it was derived is not only feasible, but highly likely.

    b. ***No completeness issue item b was included in the DRMS September 25, 2009 review of P-2008-043 MD-03.***
    c. ***Refer to the attached Petrotek Report.***
    d. ***If additional water containment vessels are to be brought onto the site as discussed on page 7 of the Section 33 Pumping Test Plan, then additional bond for tank rental and tank water disposal would have to be posted and accepted by DRMS prior to deployment of the additional tanks.***

It is proposed that the pumping test will generate about 43,200 gallons of water, not including the small quantity of water that will be generated during the step-rate test. Powertech will have 4 water containment vessels onsite with a total holding capacity of 84,000 gallons, providing ample excess containment. However, in the case that additional water containment vessels are needed to be brought onsite during the pumping test, Powertech will immediately inform the DRMS of this, and appropriate bond will be placed before bringing them onsite. Included in this report as Completeness Issue Item #16

Attachment, please find a bid from Rain for Rent that outlines the cost of water containment vessel rental for the 4 units, and individual units that may be needed. Also included in the bid document are the rental costs for the transfer pump, new piping and fittings, and vessel cleaning.

e. ***In accordance with Rule 4.1.2(7) DRMS will require that the amount of bond required for tanked water disposal be posted in an easily valued and convertible instrument, such as cash for deposit in the State Treasury or a bank certificate of deposit.***

Powertech is in full agreement with this item.

f. ***In addition, DRMS will consider any bonding proposals Powertech may have that are not discussed above.***

Powertech appreciates, and is in full agreement with this item.

Petrotek

CENTENNIAL PROJECT
WELD COUNTY, COLORADO
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RESPONSE TO DIVISION OF RECLAMATION, MINING, AND SAFETY SEPTEMBER 25, 2009, LETTER

Items 6, 11, 12, 13, 14, and 16c.

POWERTECH (USA) INC.

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Greenwood Village, Colorado 80111 USA

October 27, 2009

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RESPONSE TO DRMS SEPTEMBER 25, 2009 LETTER

In its letter dated September 25, 2009, the Division of Reclamation, Mining and Safety (DRMS) requested clarification of a number of items related to Powertech (USA) Inc.'s proposed modification MD-03 to Notice of Intent to Conduct Prospecting P-2008-043. The specific items identified in DRMS's September 25, 2009, letter and addressed in this response are shown below in italics.

6. The Section 33 Pumping Test Plan included with MD-03 states on Page 5 that the monitoring wells will be located spatially in order to define the regional potentiometric gradients in the Laramie Formation, A_2 Sand, and B Sand. Initial measurements for this purpose must be collected and the data provided to the DRMS prior to commencement of the proposed pumping test. These initial measurements, which may be single hand tagged measurements, if not already done should be taken as soon as possible, and are in addition to the baseline groundwater level data to be collected over a 72- to 96-hour period prior to initiation of pump testing as described on page 6 of the Pumping Test Plan.

Response:

The locations of the pumping well (IN08-33-PW-1[PW-1]) and monitoring wells for the Section 33 Pumping Test are shown on Figure 6-1. PW-1 is completed within the A_2 Sand horizon, which is the primary mineralized zone. In aggregate, six monitoring wells in Section 33 are also completed within the A_2 Sand, four monitoring wells are completed in the overlying Laramie Formation, two monitoring wells are completed in the underlying WE Sand, and three monitoring wells are completed within the underlying B Sand.

The static water-level elevations for the pumping and monitoring wells are summarized in Table 6.1. Within the overlying Laramie Formation, groundwater occurs as a series of discontinuous perched lenses, as indicated by the wide variations in observed static water-level elevations. Within the A_2 and B Sand horizons, the regional potentiometric gradients are generally toward the south and southeast. In Section 33, the potentiometric surface elevations within the B Sand are generally 26 to 30 feet higher than those within the A_2 Sand and on the order of 20 feet higher than those within the WE Sand.

Potentiometric levels measured on September 28, 2009, for the Section 33 Laramie monitoring wells are shown on Figure 6.2. Potentiometric contour maps for the A_2 and B Sands are shown on Figures 6.3, and 6.4, respectively.

The Section 33 monitoring wells will be instrumented with pressure transducers (LevelTrolls®) and static water levels monitored prior to and during the pumping test and during reinjection of the produced fluids.

Table 6.1
Powertech (USA) Inc., - Centennial Project
Section 33 Pumping Test - Pre-Test Static Water-Level Elevations

Completion Zone	Location ID	Elevation - Top of Casing (ft amsl)	Elevation - Ground Surface (ft amsl)	8/29/2009	9/17/2009	9/28/2009	10/22/2009
Laramie Fm.	IN08-33-MO1	5569.97	5569.97	5378.65	5378.77	5378.78	5378.95
	IN08-33-MO2	5574.36	5573.30	5397.21	5397.78	5397.93	5398.18
	IN08-33-MO3	5535.89	5534.30	5435.09	5435.26	5428.48	5428.60
	IS-003Ta	5542.36	NM	NM	NM	5419.55	5419.67
A_2 Sand	IN08-33-PW1	5573.34	5572.40	5270.50	5268.79	5268.79	5268.92
	IN08-33-MM1	5554.86	5553.30	5268.07	5268.26	5268.26	5268.47
	IN08-33-MM2	5574.40	5573.20	5266.55	5266.65	5266.72	5266.90
	IN08-33-MM3	5533.90	5532.60	5266.98	5267.28	5267.31	5267.45
	IN08-33-MM4	5613.96	5512.90	5268.84	5269.11	5269.13	5269.32
	IN08-33-MM5	5517.14	5515.50	5265.89	5266.11	5266.20	5266.33
	IS-003T	5541.94	NM	NM	NM	5267.91	5268.10
WE Sand	IN08-33-MU1	5566.11	5565.00	5273.88	5274.04	5274.05	5274.26
	IS-003Tb	5541.24	NM	NM	NM	5272.53	5272.73
B Sand	IN08-33-MUU1	5563.76	5562.60	5296.26	5297.43	5297.43	5297.63
	IN08-33-MUU2	5573.97	5572.60	5302.74	5303.55	5303.64	5304.63
	IN08-33-MUU3	5537.34	5536.00	5297.09	5297.81	5297.90	5298.15

Legend
NM - Not Measured

11. Discussion on page 8 of the Section 33 Pumping Test Plan under the heading "Produced Water Disposal" raises the following issues:

a. The Pumping Test Plan states that Powertech will demonstrate through Mechanical Integrity Testing that there is no potential for injectate to flow from the well into the Laramie Formation where the well passes through that formation. MD-03 lacks discussion of how it will be assured and demonstrated that injectate will not flow into strata above or below the injection well screened strata after it is discharged to that strata, via either natural or manmade (e.g., other wells) pathways.

b. The Pumping Test Plan states that the injection well is not expected to be operated under pressure but allows that the injection might be pressurized as needed. If the injection is pressurized, the potential for injectate to flow into other water bearing strata above or below the screened interval is increased. If the injection proceeds under atmospheric pressure only, it is unlikely that flow paths other than those occurring under natural conditions in the A_2 Sand will develop, but the development of such new paths even under atmospheric pressure alone cannot be ruled-out.

In order to address issues 11.a and b, Powertech may choose to commit to storing the pump test water in Baker Tanks until the pump test data are analyzed and a demonstration can be made that the A_2 Sand is sufficiently contained to allow pressurized injection without migration of injectate into overlying or underlying strata. However, it is possible hydraulic connection between the A_2 Sand and other strata via open or ineffectively plugged wells will not be detected during the pump test. This is particularly true if injectate were to flow along a leaky well and into a lenticular water bearing strata in the Laramie Formation in which none of the pump test monitoring wells have been screened. See item no. 12 below for further discussion of this issue. Another option would be for Powertech to combine existing available information with a commitment to inject at or slightly above ambient A_2 Sand pressure to demonstrate that injectate will not migrate into overlying and underlying strata, at least not any more than A_2 water would migrate under natural conditions. Alternatively, DRMS will review any other proposals Powertech may offer to address these issues.

Response:

Based on previous pumping tests conducted by Powertech in Section 33 and the observed aquifer response during development of pumping well PW-1, it is estimated that PW-1 can be produced at a sustainable rate of 8 to 10 gallons per minute for the planned test duration of 3 to 5 days. Based on the preliminary estimates of transmissivity and storativity for the A_2 Sand, the drawdown in the pumping well at the end of 72 hours of pumping at 10 gallons per minute is estimated to be substantially less than 100 feet.

Given that the potentiometric surface for the A_2 Sand horizon, depending on location, ranges from 250 to more than 300 feet below ground surface, Powertech is proposing to reinject the produced fluid under a vacuum into the same zone from which it was produced.

As noted in the response to Item 6, the Section 33 monitoring well network will be instrumented with pressure transducers (LevelTrolls®) and potentiometric levels in the Laramie and A_2, WE, and B Sands monitored during the pumping test and reinjection of the produced fluids. Observed aquifer responses in each completion zone will be evaluated in order to confirm the preliminary hydrogeological characterization prior to reinjection of the produced fluids.

12. It is necessary to determine if there are any wells or bore holes within the potential zone of flow for the injectate and the status condition of those wells or bore holes. Powertech must provide a report that includes the following:

a. A technical analysis delineating the potential zone of flow for injectate.

b. A map illustrating all wells and boreholes within the potential zone of flow, a discussion of the sources of information for the wells and bore holes, and a description of the efforts put forth to assure that all wells and bore holes within the zone have been identified.

c. A description of the status condition of each well and bore hole including the sources of information for and investigations conducted to determine the status conditions.

d. For any wells or bore holes that are identified as being potential flow pathways for injectate or that cannot be ruled out as potential flow pathways, provide a plan to prevent injectate from traveling along these pathways and entering strata other than the A_2 Sand.

Response:

As noted, Powertech is proposing to reinject the produced fluids from the Section 33 pumping test under vacuum into the same well from which it was produced.

a. Regarding the potential zone of flow for injectate, based on the best estimate of aquifer properties for the A2 Sand, it is proposed that during the planned pumping test, PW-1 will be pumped at a constant rate of approximately 10 gallons per minute for 72 hours, producing in aggregate 43,200 gals. Assuming "piston-like" displacement, the radius of fluid displacement around the injection well for different effective porosities and for assumed aquifer thicknesses (b) of 10 and 20 feet is summarized in the following table. As shown, in the most conservative (worst) case, the radius of fluid displacement would be less than 50 feet. The closest residential well is located more than 3,800 feet from the pumping/injection well PW-1.

		Radius of Fluid Displacement	
Effective Porosity	Aquifer Volume (cubic feet)	b = 10 feet	B = 20 feet
10 %	57,750	42.9	30.3
15 %	38,500	35.0	24.8
20 %	28,875	30.3	21.3
25 %	23,100	27.1	19.2

The actual thickness of the A_2 Sand in the A_2 monitoring wells ranges from 23.5 to 30 feet.

b. The records of the State Engineer's Office (SEO) indicate that there is only one registered well located in Section 33 T10N, R67W, other than the monitoring wells installed by Powertech. According to SEO's records, this well is shallow, 259 feet deep, and therefore, believed to be completed within the Laramie Formation. This well is used for livestock watering. According to the property owner, Mr. Howard Diehl, there are no domestic or other agricultural wells in Section 33.

The locations of the Section 33 monitoring wells are shown on Figure 6.1. In addition, numerous exploration holes dating back to the 1970s and 1980s have been drilled in Section 33 and in adjacent sections. A map showing known exploration holes in Section 33 is presented as Figure 12.1. Also shown on Figure 12.1 are the shallow Laramie well used for watering livestock and the Section 33 monitoring well network.

c. The pumping well PW-1 and the monitoring wells installed as part of the 2009 drilling program were completed by drilling to the top of the proposed screen interval, setting casing, and grouting from total depth to the ground surface. The screen intervals were installed by under-reaming discrete sand intervals based on geology identified from the e-logs. As such, there is a high degree of confidence that these wells will not provide a potential conduit for vertical migration of injectate.

The condition of the exploration boreholes and monitoring wells installed by others is unknown but will be evaluated through ongoing monitoring during the pumping test and reinjection of the produced fluid.

The detailed review of available potentiometric-level data for Section 33 monitoring wells shows the data to be consistent and does not indicate any apparent anomalies, which may be caused by vertical leakage through artificial penetrations.

d. At this time there are no known wells or bore holes that have been identified as being potential flow pathways for injectate. As described, Powertech is proposing to re-inject the produced fluid under vacuum into the same zone from which it was derived, using the pumping well. As noted, the established monitoring well network in Section 33 will be instrumented and monitored during pumping and re-injection of the produced fluids.

13. Item 11 above discusses the DRMS's current position that injectate be contained within the A_2 Sand or be managed such that migration into overlying and underlying strata be no greater than would occur under natural conditions. DRMS will consider modifying this position if Powertech can demonstrate that water quality impacts to the other A Sands and the WE Sand can be minimized even with the introduction of injectate into those strata. Such a determination would be largely dependent on water quality in these other sands compared to the water quality in the A_2 Sand.

Response:

As described in the responses to Items 11 and 12 above, Powertech is proposing to reinject the produced fluid from the Section 33 pumping test under vacuum into the same zone from which it was derived, using the pumping well PW-1.

14. Powertech stated in since withdrawn modification MD-02 to prospecting notice P-2008-043 that it has done preliminary hydrogeologic modeling and water production calculations for the strata to be investigated by the proposed pump test. DMRS has further discussed with Powertech that data collected during development of recently drilled wells in Section 33 has allowed for refinement of the modeling and calculations. This information will be useful in determination of whether or not pump test water can be injected into the A_2 Sand with assurance that impacts to other water bearing strata are sufficiently minimized, and must be provided.

Response:

Powertech has not performed groundwater modeling for the A_2 Sand, but has carried out a series of Theis simulations of the pressure response to pumping to estimate pumping rates and duration for the proposed test. These simulations were performed to match the observed drawdowns during development of the recently completed A_2 wells and the results from the previous Section 33 pumping tests.

The results from the Theis simulations for the well development scenario and from the previous pumping tests are consistent and indicate the order of magnitude of hydraulic conductivity and storativity. The results for the best fit analysis are shown below.

Powertech (USA), Inc. - Centennial Section 33 Pumping Test (Theis Simulations)

Trial #11b		
K =	2.05	ft/day
S =	4.18E-05	
Q =	10.0	gpm
H =	31	ft

Observation Well Distance (feet)

Pump Time (hours)	Pump Time (days)	0.5 Drawdown (ft)	100 Drawdown (ft)	250 Drawdown (ft)	500 Drawdown (ft)	1800 Drawdown (ft)	3600 Drawdown (ft)
1.0	0.0	31.90	6.49	2.54	0.54	--	--
1.5	0.1	32.88	7.43	3.34	0.98	--	--
2.0	0.1	33.57	8.11	3.94	1.37	--	--
6	0.3	36.22	10.72	6.39	3.34	0.10	--
12	0.5	37.89	12.38	8.01	4.82	0.47	--
24	1.0	39.56	14.05	9.66	6.39	1.26	0.10
48	2.0	41.22	15.71	11.31	8.01	2.40	0.47
72	3.0	42.20	16.69	12.28	8.97	3.18	0.88

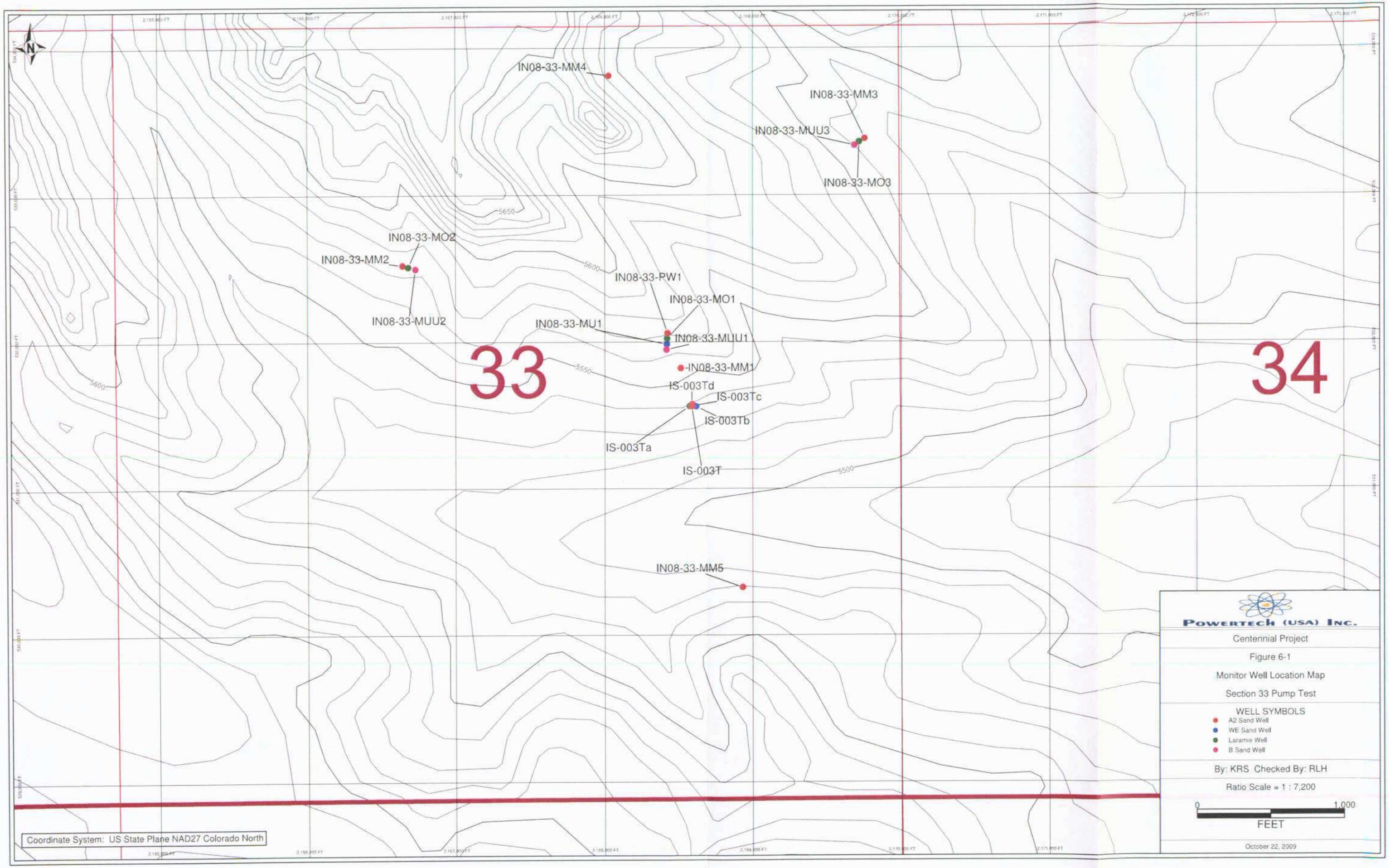
16c. *If Powertech provides an acceptable demonstration that injection at ambient pressure will minimize adverse water quality impacts, as discussed in item 11 above, DRMS can require sufficient bond for this type of injection. For this bonding option, Powertech must provide a technical evaluation of how long it would take to complete injection under ambient pressure.*

Response:

In theory, the rate at which an aquifer can be produced by pumping and the rate of injection at the same head differential are the same but opposite in sign (i.e., positive or negative). In the case of the Section 33 pumping test, if the production well PW-1 is pumped at 10 gallons per minute for 72 hours, under the same head differential, one should be able to reinject the produced water back into the same well at the same rate over the same period, i.e., 72 hours.

In practice, however, there may be other factors such as skin effects that may limit either production from the aquifer or the rate of injection into the aquifer. These factors may act either way, i.e., the rate of injection into the aquifer may be either greater than or less than the rate of production due to pumping. In most situations, the rate of injection is less than the rate of pumping.

At the Centennial pumping test location, there is more available head for reinjection under a vacuum than there is available drawdown above the A_2 Sand during pumping. As noted in the responses to Items 11 and 14, based on the preliminary estimates of transmissivity and storativity for the A_2 Sand, the projected drawdown in the pumping well at the end of 72 hours of pumping at 10 gallons per minute is less than 100 feet.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IN08-33-MO1
IN08-33-MUU2
IN08-33-MU1
IN08-33-MUU1
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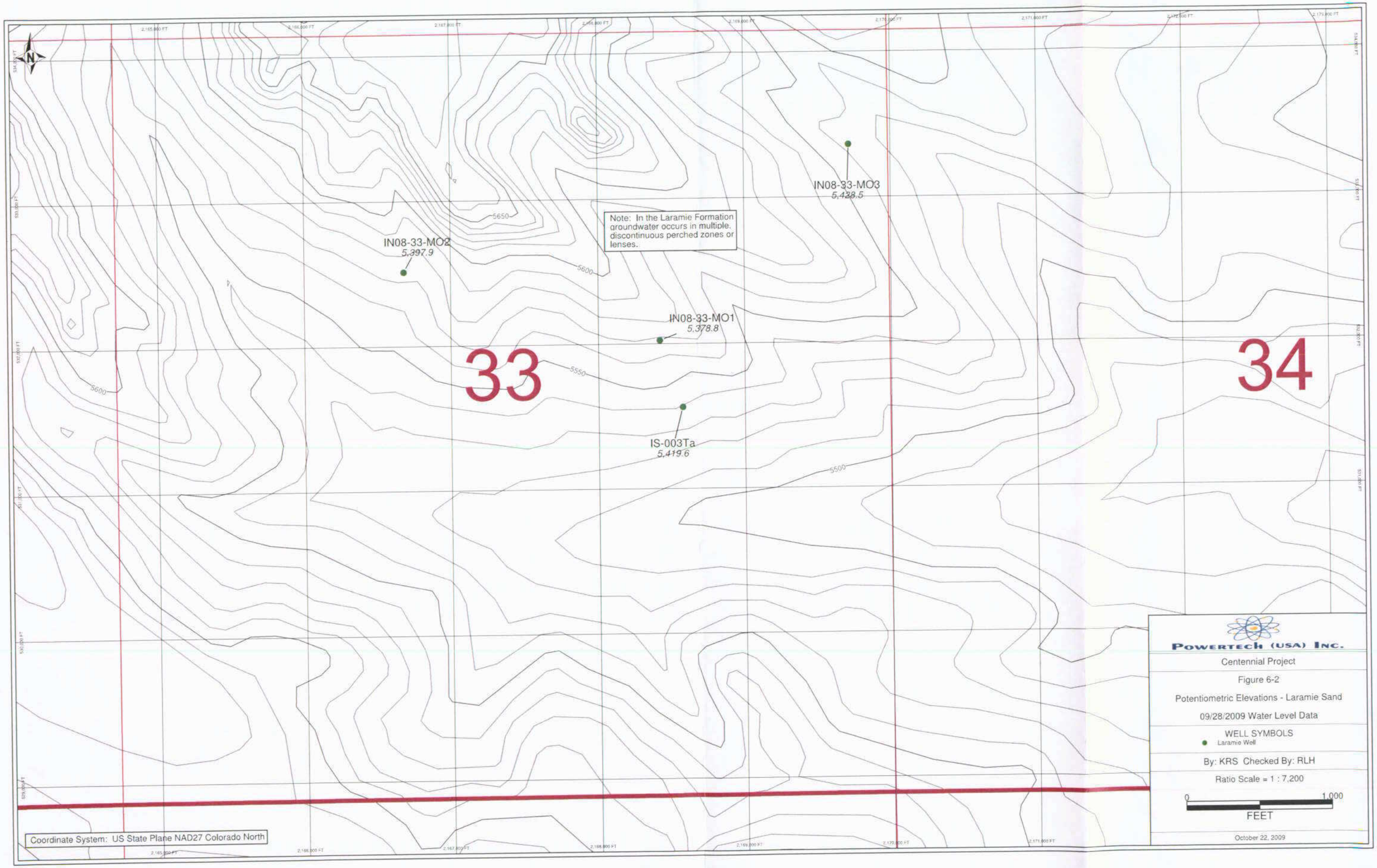
IS-003Tc
IS-003Tb
IS-003Ta
IS-003T
IN08-33-MM5
5650
5600
5550
5500
Coordinate System: US State Plane NAD27 Colorado North
POWERTECH (USA) INC.
Centennial Project
Figure 6-1
Monitor Well Location Map
Section 33 Pump Test
WELL SYMBOLS
A2 Sand Well
WE Sand Well
Laramie Well
B Sand Well
By: KRS Checked By: RLH
Ratio Scale = 1 : 7,200
0
1,000
FEET
October 22, 2009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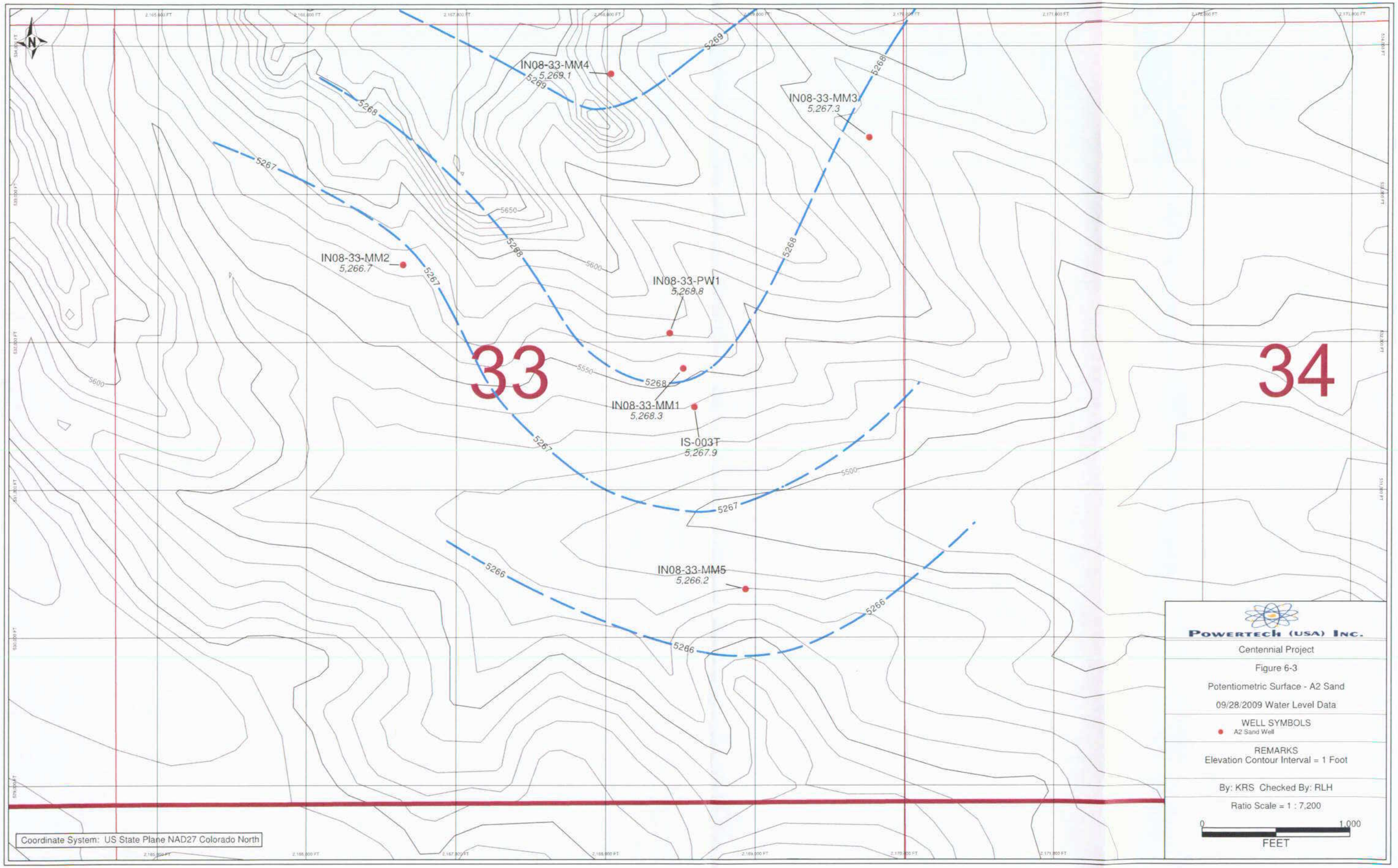
IN08-33-MO1
5,378.8
IN08-33-MO3
5,438.5
IS-003Ta
5,419.6
Note: In the Laramie Formation groundwater occurs in multiple, discontinuous perched zones or lenses.
33
34
Coordinate System: US State Plane NAD27 Colorado North
POWERTECH (USA) INC.
Centennial Project
Figure 6-2
Potentiometric Elevations - Laramie Sand
09/28/2009 Water Level Data
WELL SYMBOLS
Laramie Well
By: KRS Checked By: RLH
Ratio Scale = 1 : 7,200
0
1,000
FEET
October 22, 2009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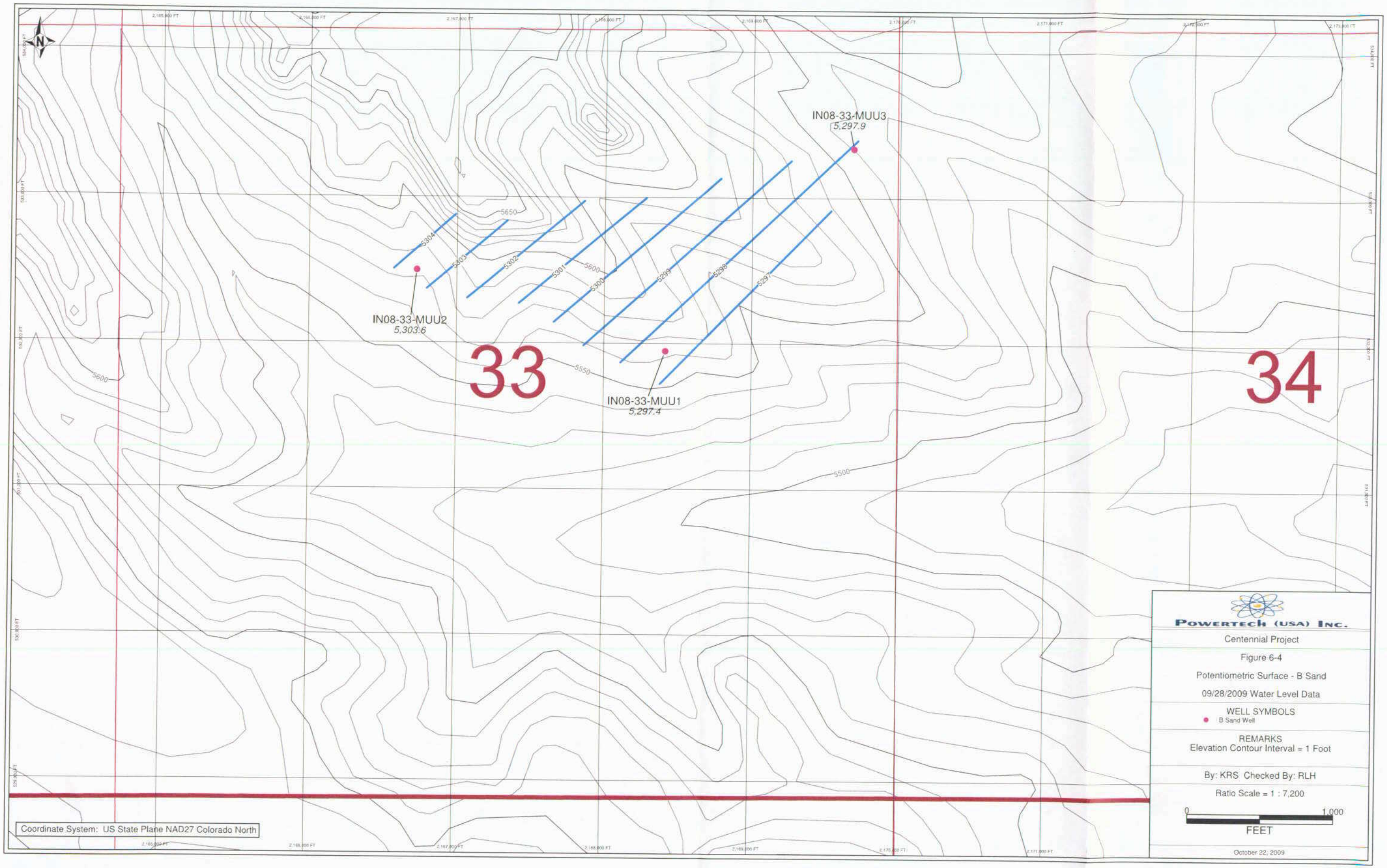
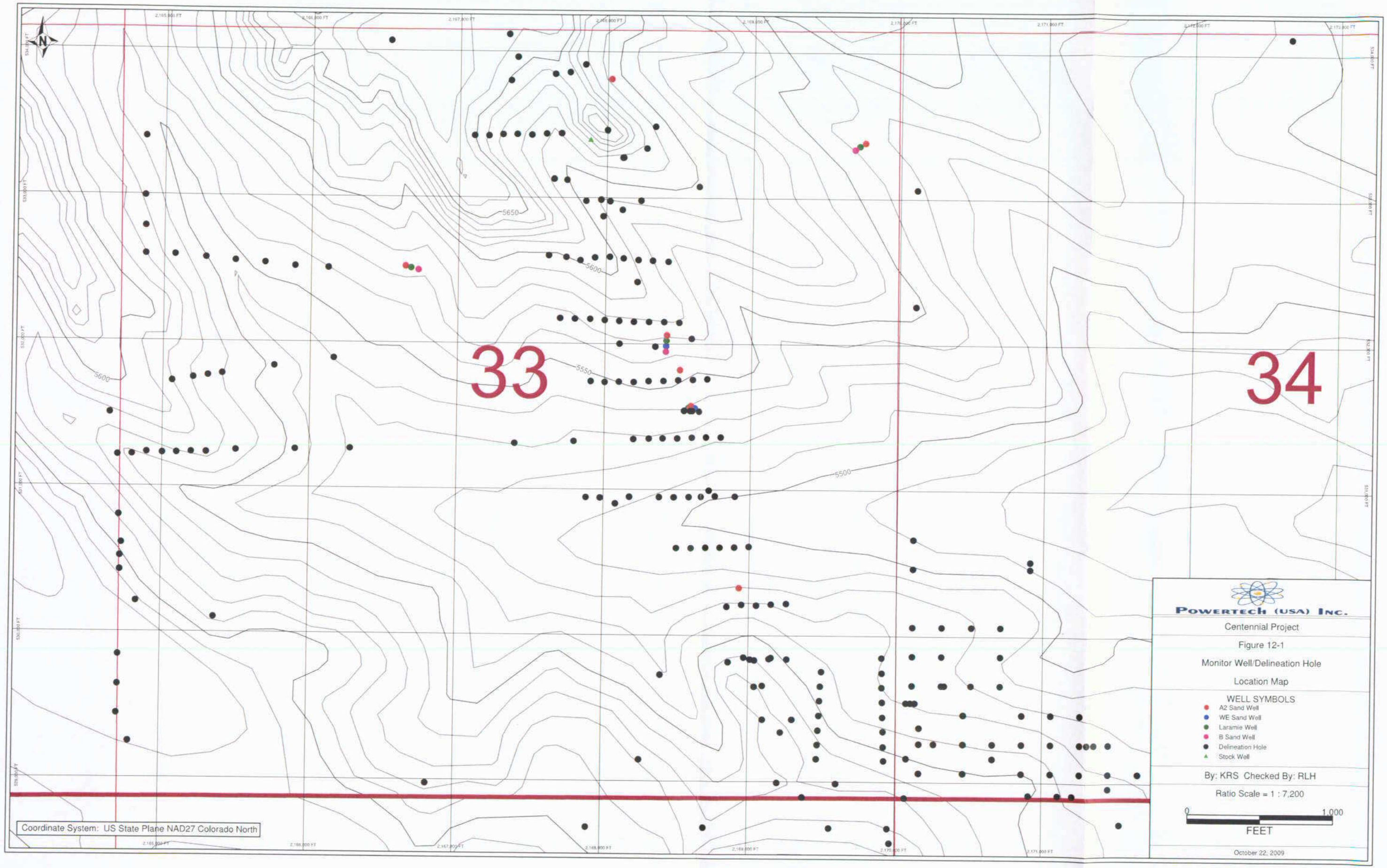
5,266.7
IN08-33-PW1
5,268.8
IN08-33-MM1
5,268.3
IS-003T
5,267.9
IN08-33-MM5
5,266.2
33
34
5269
5268
5267
5266
5650
5600
5550
5500
Coordinate System: US State Plane NAD27 Colorado North
POWERTECH (USA) INC.
Centennial Project
Figure 6-3
Potentiometric Surface - A2 Sand
09/28/2009 Water Level Data
WELL SYMBOLS
A2 Sand Well
REMARKS
Elevation Contour Interval = 1 Foot
By: KRS Checked By: RLH
Ratio Scale = 1 : 7,200
0
1,000
FEET


N
IN08-33-MUU3
5,297.9
IN08-33-MUU2
5,303.6
IN08-33-MUU1
5,297.4
33
34
5650
5600
5550
5500
5304
5303
5302
5301
5300
5299
5298
5297
Coordinate System: US State Plane NAD27 Colorado North
POWERTECH (USA) INC.
Centennial Project
Figure 6-4
Potentiometric Surface - B Sand
09/28/2009 Water Level Data
WELL SYMBOLS
B Sand Well
REMARKS
Elevation Contour Interval = 1 Foot
By: KRS Checked By: RLH
Ratio Scale = 1 : 7,200
0
1,000
FEET
October 22, 2009


N
33
34
5650
5600
5550
5500
5600
Coordinate System: US State Plane NAD27 Colorado North
POWERTECH (USA) INC.
Centennial Project
Figure 12-1
Monitor Well/Delineation Hole
Location Map
WELL SYMBOLS
A2 Sand Well
WE Sand Well
Laramie Well
B Sand Well
Delineation Hole
Stock Well
By: KRS Checked By: RLH
Ratio Scale = 1 : 7,200
0
1,000
FEET
October 22, 2009

NOI P-2008-043 MD-03 Completeness Issue Item #1 Attachments

POWERTECH (USA) INC.

Produced Water Vessel - Cleaning and Inspection Procedure

Powertech has strict guidelines that must be adhered to when bringing water containment vessels onto project properties, specifically when those vessels are being used to contain groundwater produced from uranium ore-bearing aquifers and re-injected into the aquifer from which the groundwater originated. The purpose of these guidelines is to ensure that no residual chemicals or micro-organisms are present within a vessel due to the previous user of the vessel, and thus eliminate the possibility of cross-contamination of chemical or biological substances. The contractor that Powertech selects to supply water containment vessels must be fully aware of our strict adherence to this policy. The contractor selected for cleaning and testing of vessels must certify that all water containment vessels will be cleaned to a specific standard before the vessels are mobilized onsite. The standard operating procedure that will be utilized is summarized in this document. Before vessels are brought onsite, the following procedures must be conducted:

- Remove solids and/or liquids from exterior surface of vessel;
- Thoroughly inspect the vessel(s) for any exterior structural or mechanical damage;
- Perform atmospheric testing prior to cleaning crew entering the vessel;
- Remove and properly dispose of any solids and liquids within the interior and valves of the vessel, including any oil and grease;
- Perform bleach wash on interior and valves;
- Perform high pressure rinse on the interior and valves of the vessel with water that is at or above a temperature of 180 degrees Fahrenheit;
- The interior of the vessel shall be drained and dried of any residual water following the cleaning procedure;
- Provide Powertech a signed certification (Certificate of Cleaning) that vessel(s) has been cleaned pursuant to this (and any other relevant) procedure.

Prior to bringing the water containment vessel(s) onsite, Powertech personnel shall perform the additional steps to ensure the vessel(s) is clean and in proper condition:

- Cross reference the Certificate of Cleaning vessel number with that of each delivered vessel before it enters the site;
- Visually inspect the interior, exterior, and valves of the vessel to ensure cleanliness. Do not enter the vessel. Check for the following items, and if any exist, the vessel must be rejected:
    - Oil, grease or other removable foreign substance on exterior of the vessel,
    - Sediment and other solids in bottom of vessel,
    - Presence of foreign substance(s) on interior of vessel,
    - Water and other liquids within the vessel, and
    - Damage to the tank and/or valves and/or other mechanical problems.

Completeness Issue Item #1 Attachment

- Radiological measurements using an alpha and gamma probe shall be conducted on the containment vessel before it is utilized onsite and, again, after onsite use; all readings will be documented on the appropriate Powertech form.
- Powertech employees shall not enter the tank without proper confined space entry training and appropriate work permit, unless authorized by the mine manager and deemed safe by the onsite representative of the EH&S Department.
- Radiological measurements of the interior shall be made through the portholes and man-ways of the vessel.
- Initially, natural background radiation levels shall be measured and recorded.

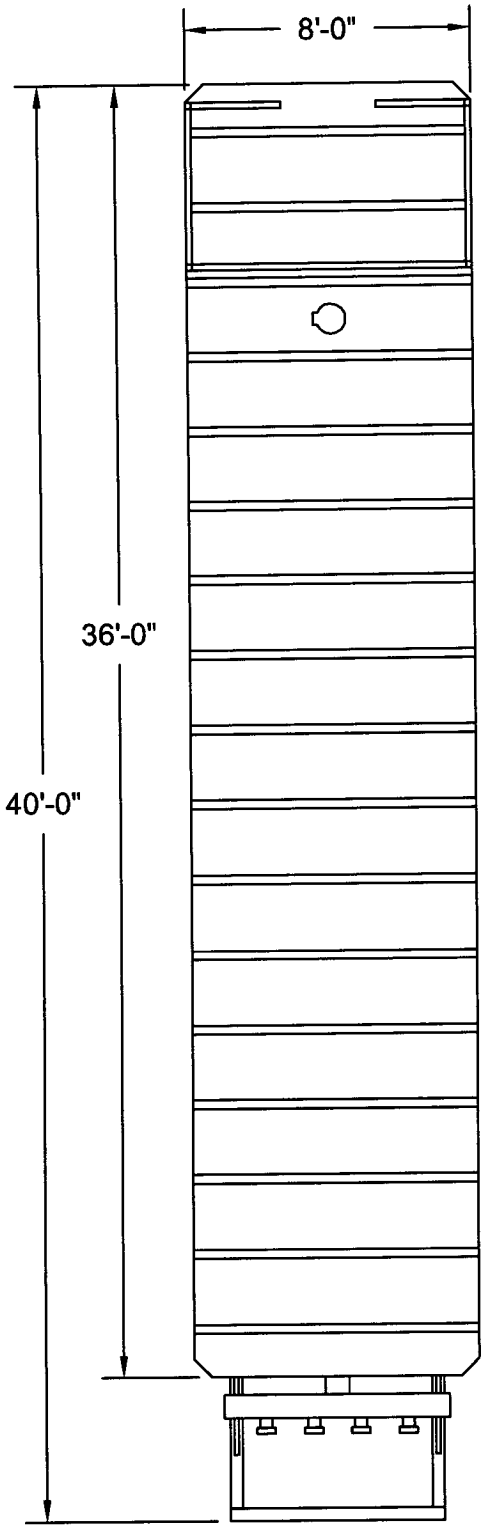
Approved By: Richard E. Blubaugh

Date: September 21, 2009

Completeness Issue Item #1 Attachment

NOI P-2008-043 MD-03 Completeness Issue Item #2 Attachments


25856



Single Rain-for-Rent Tank Example

POWERTECH (USA) INC.

DRAWN	S. Hetrick	PROJECT	Centennial	DATE	05-Oct-2009
CHEDKED	M. Beshore	COORDS	n/a	PLOT DATE	05-Oct-2009
SCALE	3/16" = 1'-0"	FILENAME	p:\centennial\maps\singlerainforrenttank.dwg	REF	399

Completeness Issue Item #2 Attachment

NOI P-2008-043 MD-03 Completeness Issue Item #4 Attachments

SUMMARY; Initial MIT Evaluation; Powertech (USA) Inc.; Wellington, CO; Wellbore: IN08-33-PW1

On July 23rd, 2009, an initial MIT was performed on wellbore IN08-33-PW1.
Prior to installation of testing equipment, a visual inspection of the wellhead and surrounding work site for hazards to field personnel and/ or hindrances to working conditions was conducted.

After satisfactory completion of the visual inspection, the borehole was then prepared for installation of the testing equipment. The surface casing, spline, and o-ring were cleaned/ lubricated and the packers were lowered to 470 feet bgs. The testing wellcap were then bolted to the wellhead flange and the packers inflated with nitrogen to 550 PSI. Packer inflation pressure was monitored for approximately 15 minutes and continually checked for leak-down. After satisfactory testing of the packer inflation pressure, the borehole was then filled with water through a port in the wellcap with the relief valve remaining open to allow air to escape. Upon completing of the filling of the borehole, the injection and relief valves were closed to allow any air remaining in the fluid column to migrate to the wellhead. The remaining air was bled off and the system pressurized with water. The wellhead flange pressure was held for approximately 30 seconds at approximately 105.3 PSI before the inlet valve was shut and the test begun.

At 1352 Hours on 23 July 2009, borehole IN08-33-PW1 begun the initial MIT test. After 15.1 minutes of testing, approximately 8.0 PSI of leakdown occurred equating to approximately 7 percent of pressure loss. IN08-33-PW1 passed the initial MIT test with the requisite <10% leakdown in >15 minutes.

After completion of the initial MIT test, the relief valve was opened and the packers deflated, beginning the falling head/ recovery test. After completion of the falling head/ recovery test, the testing wellcap was removed, the packer was retrieved and the original wellcap re-secured.

Edward W. Farinsky, Hydrogeophysical Engineer

7/30/09
Date

COLOG
A DIVISION OF LAYNE CHRISTENSEN COMPANY

Borehole Geophysical Services

WELL INTEGRITY REPORT

Date of Test:			Name of Contractor Performing Pressure Test:			
MIT			COLOG			
Operator:						
E. FARINSKI						
Address:			Telephone Number:		State:	Zip Code:
810 Quail St suite E			303 279-0171		CO	80215
Well Name and Number:			Field:			
IN08-33-PW1						
Location of Well	Qtr-Qtr	Section	Township	Range	County	State

WELL DATA

Tool Type:	Packer Model:
Wireline Straddle Packer	TAM-350-CI-01, Baski
Contractor Rig Unit#:	Pressure Gauge Model / SN:
#28, #26 #14	Druck 0-700 PSI
Well Construction Information:	
6" ID PVC	
Well Type (Disposal Well, Production Well, Recovery Well, Other):	
Pumping	
Reason for Test (MIT, Workover, etc.):	Type of Test (Initial MIT, MIT, Annual MIT, Other):
~~Yearly~~ MIT	Initial

E.F

BEFORE TEST

Casing Pressure:	Comments:
0 PSI	

START OF TEST

Starting Surface Casing Flange Pressure:	Comments:
105.24 PSI	

END OF TEST

Ending Surface Casing Flange Pressure:	Comments:
98.042 PSI	Pass

TEST DATA

Length of Test:	Initial Depth to Water:	Amount of Fluid Needed to Fill:
15 minutes	~260' bgs	365 gals

RESULTS:

Approved MIT	- No visible leak at surface - < 10% leakdown in 15 minutes
Failed MIT	
Conditionally Approved MIT	See attached Graph

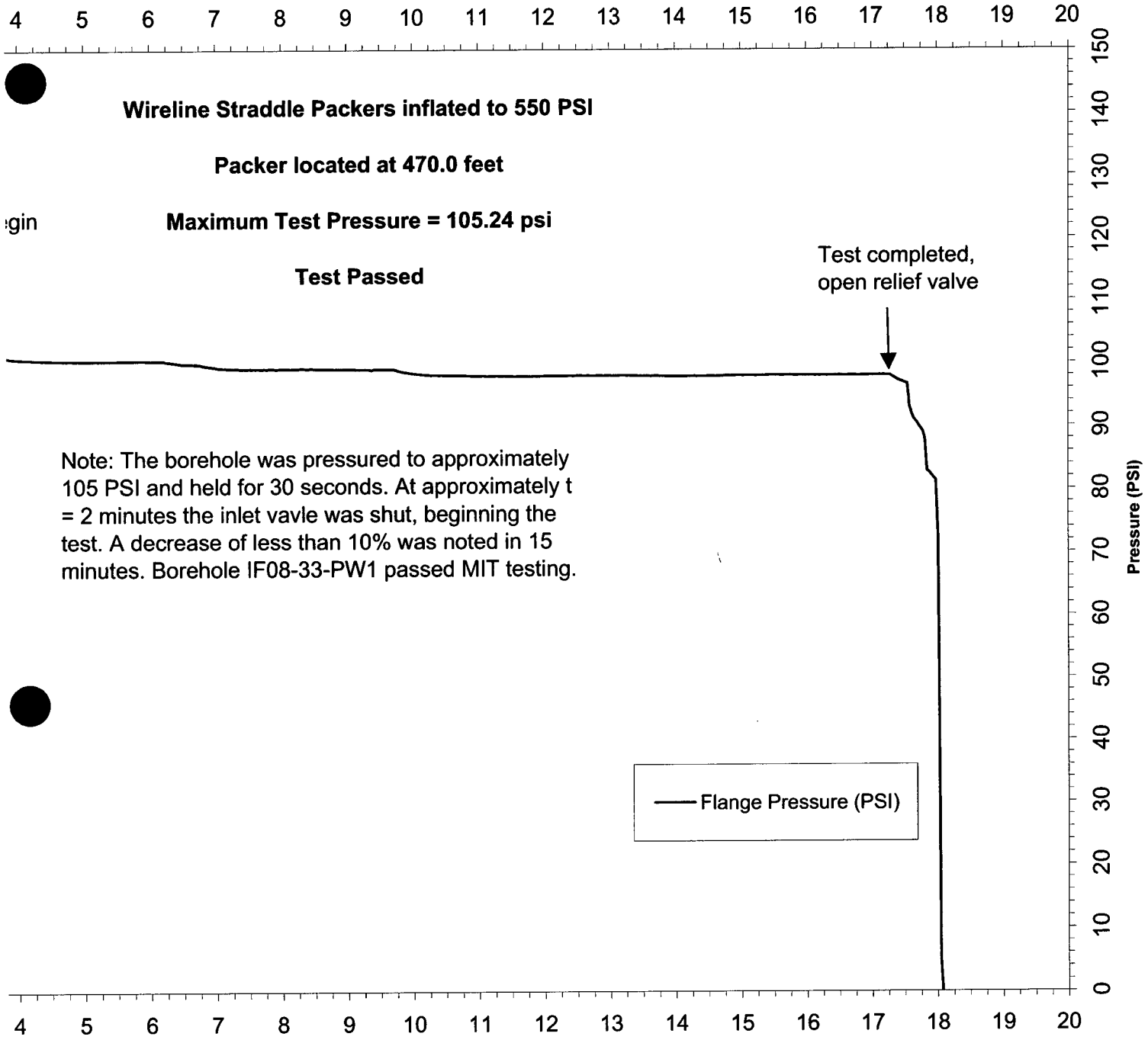
Person Performing Test: Name / Title:	
EDWARD FARINSKI Geophysical Engineer	
Signature:	

COLOG
A Division of Layne Christensen Company

810 Quail Street, Suite E
Lakewood, Colorado 80215
Phone: (303)279.0171 FAX: (303) 278.0135

Completeness Issue Item #4 Attachment

sure and Recovery Data During MIT Evaluation; Powertech; Wellington, CO; Wellbore: IN08-33-PW1



Completeness Issue Item #4 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 048502-MH

2. **WELL OWNER INFORMATION**
NAME OF WELL OWNER: PowerTech (USA) Inc.
MAILING ADDRESS: 5575 DTC Parkway Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 2081 ft. from ☒ N or ☐ S section line and 3702 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT ____, BLOCK ____, FILING (UNIT) ____
Owner's Well Designation: ~~IN08-33-PW1~~ PW1
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to true **N**, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet
DRILLING METHOD Mud Rotary
DATE COMPLETED 9-07-09 TOTAL DEPTH 528 feet DEPTH COMPLETED 526 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-470	Laramie			
470-528	FoxHills			

6. HOLE DIAM (in.)

	From (ft)	To (ft)
8 3/4	0	~~502~~
10 1/2	502	~~526~~
5 3/4	526	528

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	500

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	500	~~526~~

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 500-526

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	829 gals	13lbs	0-500	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____.
Remarks: Moniter well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Sharpe Drilling Company	(307)632-9523	1316

Mailing Address: P.O.Box 20147 Cheyenne, WY 82003

Signature: _____ Print Name and Title: Lyle Sharpe, President Date: ~~10~~-26-09

Completeness Issue Item #4 Attachment

NOI P-2008-043 MD-03 Completeness Issue Item #7 Attachments

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048502-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA) Inc.
MAILING ADDRESS: 5575 DTC Parkway Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 2081 ft. from ☒ N or ☐ S section line and 3702 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT ____, BLOCK ____, FILING (UNIT) ____
Owner's Well Designation: ~~IN08-33-PW1~~ PW1
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet
DRILLING METHOD Mud Rotary
DATE COMPLETED 9-07-09 TOTAL DEPTH 528 feet DEPTH COMPLETED 526 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-470	Laramie			
470-528	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	~~502~~
10 1/2	502	526
5 3/4	526	528

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	500

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	500	~~526~~

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 500-526

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	829 gals	13lbs	0-500	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Moniter well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company
Phone: (307) 632-9523
License Number: 1316
Mailing Address: P.O.Box 20147 Cheyenne, WY 82003
Signature: _____
Print Name and Title: Lyle Sharpe, President
Date: ~~10~~ 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048509-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790 7528

3. WELL LOCATION AS DRILLED: SW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 2315 ft. from ☒ N or ☐ S section line and 3792 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation: IN08-33-MM
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Easting: _____ MM1
Northing:
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION _____ feet
DRILLING METHOD Mud Rotary
DATE COMPLETED 9-2-09 TOTAL DEPTH 505 feet DEPTH COMPLETED 503 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-447	Laramie			
447-505	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	477
10 1/2	478	501
5 5/8	501	505

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	476

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	476	501

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 476-501

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	792gals	13 lbs	0-477	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (303) 632 9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048508-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790.7528

3. WELL LOCATION AS DRILLED: SE 1/4, NW 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 1609 ft. from ☒ N or ☐ S section line and 1929 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation: IN08-33-MM2
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-14-09 TOTAL DEPTH 487 feet DEPTH COMPLETED 483.5 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-415	Laramie			
415-487	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	460
10 1/2	460	485
5 3/4	485	487

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	458.5

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	458.5	483.5

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 458.5-487

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	765gals	13 lbs	0-459	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (307) 632.9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048504-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: NE 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 760 ft. from ☒ N or ☐ S section line and 5047 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation: TN08-33-MM3
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-15-09 TOTAL DEPTH 560 feet DEPTH COMPLETED 556 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-480	Laramie			
480-560	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	533
10 1/2	533	557
5 3/4	557	559.5

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	531

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	531	556

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 531-556

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	876gals	13 lbs	0-531	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level ____ ft. Date/Time measured: _____ Production Rate ____ gpm.
Pumping Level ____ ft. Date/Time measured _____ Test Length (hrs) ____.
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (307) 632-9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048509-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: NW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☐ W
DISTANCES FROM SEC. LINES: 335 ft. from ☒ N or ☐ S section line and 3320 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ~~IN~~08-33-MM
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Owner's Well Designation: MM4
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-16-09 TOTAL DEPTH 591 feet DEPTH COMPLETED 590 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-516	Laramie			
516-591	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	564
10 1/2	564	589
5 3/4	589	591

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	563

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	563	589

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 563-589

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	925gals	13 lbs	0-564	Halliburtor

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company | Phone: (307) 632 9523 | License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ | Print Name and Title: Lyle Sharpe, President | Date: 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048506-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Villag STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: NE 1/4, SE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 3811 ft. from ☒ N or ☐ S section line and 4213 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation: IN08-33-MM
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Easting: _____ MM5
Northing:
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-23-09 TOTAL DEPTH 475.5 feet DEPTH COMPLETED 469 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-412	Laramie			
412-475.5	FoxHills			

6. HOLE DIAM (in.)

	From (ft)	To (ft)
8 3/4	0	446
10 1/2	446	470
5 3/4	470	475.5

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	444

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	444	469

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 444-469

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	743gals	13 lbs	0-444	Halliburtor

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level ____ ft. Date/Time measured: _____ Production Rate ____ gpm.
Pumping Level ____ ft. Date/Time measured _____ Test Length (hrs) ____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (307) 632-9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 048503-MH

2. **WELL OWNER INFORMATION**
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 2116 ft. from ☒ N or ☐ S section line and 3702 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT ____, BLOCK ____, FILING (UNIT) ____
Owner's Well Designation: TN08-33-M01
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-9-09 TOTAL DEPTH 368 feet DEPTH COMPLETED 367 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-368	Laramie			

6. HOLE DIAM (in.)

	From (ft)	To (ft)
8 3/4	0	351
10 1/2	351	366
5 3/4	366	368

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	350

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	350	365

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 350-365

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	599gals	131bs	0-350	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____.
Remarks: Moniter Well to be tested at a later date

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company | Phone: (307)632-9523 | License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ | Print Name and Title: Lyle Sharpe, President | Date: 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048505-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SE 1/4, NW 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 1625 ft. from ☒ N or ☐ S section line and 1968 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT ____, BLOCK ____, FILING (UNIT) ____
Owner's Well Designation: IN08-33-MO2
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☐ Zone 13
Easting: _____ Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet
DRILLING METHOD Mud Rotary
DATE COMPLETED 9-25-09 TOTAL DEPTH 344 feet DEPTH COMPLETED 341 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-344	Laramie			

6. HOLE DIAM (in.)

	From (ft)	To (ft)
6	0	326
10 1/2	326	342
5 3/4	342	344

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	325

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	325	340

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 325-340

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	561gals	13lbs	0-326	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level ____ ft. Date/Time measured: _____ Production Rate ____ gpm.
Pumping Level ____ ft. Date/Time measured _____ Test Length (hrs) ____.
Remarks: Moniter Well to be tested at a later date

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (307) 632-9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048507-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: NE 1/4, NE 1/4, Sec. 33 Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 783 ft. from ☒ N or ☐ S section line and 5008 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation: IN08-33-MO3
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-11-09 TOTAL DEPTH 269 feet DEPTH COMPLETED 267 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-269	Laramie			

6. HOLE DIAM (in.)

	From (ft)	To (ft)
6	0	237
10 1/2	237	267
5 3/4	267	269

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	236

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	236	266

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 236-266

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	423 gals	13lbs	0-237	Halliburtor

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company | Phone: (307) 632-9523 | License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ | Print Name and Title: Lyle Sharpe, President | Date: 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048502-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 2155 ft. from ☒ N or ☐ S section line and 3698 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) IN08-33-MU
Owner's Well Designation: MU1
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-22-09 TOTAL DEPTH 601 feet DEPTH COMPLETED 599 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-460	Laramie			
460-601	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	584
10 1/2	584	599
5 3/4	599	601

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	582.5

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	582	597

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 582-597

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-	955gals	13lbs	0-583	Halliburton
cem				

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company | Phone: (307) 632-9523 | License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ | Print Name and Title: Lyle Sharpe, President | Date: 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048502-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SW 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☐ W
DISTANCES FROM SEC. LINES: 2194 ft. from ☒ N or ☐ S section line and 3698 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation: TN08-33-MUU1
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Easting: _____ MUU1
STREET ADDRESS AT WELL LOCATION: Northing: _____

4. GROUND SURFACE ELEVATION _____ feet DRILLING METHOD Mud Rotary
DATE COMPLETED 9-18-09 TOTAL DEPTH 636 feet DEPTH COMPLETED 634 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
~~0-10~~	~~Alluvial~~			
10-455	Laramie			
455-636	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	614
10 1/2	614	635
5 3/4	635	636

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	613

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	613	633

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 613-633

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	1002gals	13lbs	0-613	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (307) 632-9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048504-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: SE 1/4, NW 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 1648 ft. from ☒ N or ☐ S section line and 2022 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT ____, BLOCK ____, FILING (UNIT) ____
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Owner's Well Designation: IN08-33-MU 2 MUU2
Easting: _____
Northing: _____
STREET ADDRESS AT WELL LOCATION: _____

4. GROUND SURFACE ELEVATION _____ feet
DRILLING METHOD Mud Rotary
DATE COMPLETED 9-25-09 TOTAL DEPTH 603 feet DEPTH COMPLETED 600 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-417	Laramie			
417-603	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	581
10 1/2	580	600

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	580

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	580	600

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 580-600

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	952gals	13 lbs	0-580	Halliburton

Remarks: _____

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company | Phone: (307) 632 9523 | License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: _____ | Print Name and Title: Lyle Sharpe, President | Date: 10-26-09

Completeness Issue Item #7 Attachment

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 048502-MH

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: PowerTech (USA), Inc.
MAILING ADDRESS: 5575 DTC Parkway, Suite 140
CITY: Greenwood Village STATE: CO ZIP CODE: 80111
TELEPHONE NUMBER: (303) 790-7528

3. WELL LOCATION AS DRILLED: NE 1/4, NE 1/4, Sec. 33, Twp. 10 ☒ N or ☐ S, Range 67 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 810 ft. from ☒ N or ☐ S section line and 4977 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING (UNIT) ____
Owner's Well Designation IN08-33
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, ☐ Zone 12 or ☐ Zone 13
Easting: -MUU3
Northing:
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION _____ feet
DRILLING METHOD Mud Rotary
DATE COMPLETED 9-21-09 TOTAL DEPTH 660 feet DEPTH COMPLETED 658 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-10	Alluvial			
10-507	Laramie			
507-660	FoxHills			

6. HOLE DIAM (in.)

HOLE DIAM (in.)	From (ft)	To (ft)
8 3/4	0	639
10 1/2	639	658
5 3/4	658	660

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6	PVC	SDR17	+1	638

PERFORATED CASING: Screen Slot Size (in): .030

3	PVC	sch80	638	658

8. FILTER PACK:
Material silica sand
Size 10/20
Interval 638-658

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent-cem	1040gals	13lbs	0-638	Halliburton

Remarks:

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level ____ ft. Date/Time measured: ____ Production Rate ____ gpm.
Pumping Level ____ ft. Date/Time measured ____ Test Length (hrs) ____
Remarks: Monitor well to be tested at a later date.

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name: Sharpe Drilling Company Phone: (307) 632-9523 License Number: 1316
Mailing Address: P.O. Box 20147 Cheyenne, WY 82003
Signature: Print Name and Title Lyle Sharpe, President Date 10-26-09

Completeness Issue Item #7 Attachment

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 3

Project Name: Centennial Project No.: Jeffrey 33 Pumping Test

Well ID: INOS-33-PW01 Date Installed:

Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe

Aqua Clear PFD added. 1WV = well volume + Tunnel cn pump at 0934 on 8/19/09.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION screen 499'

Measured Well Depth (B) casing: 500 screen: 525 ft.

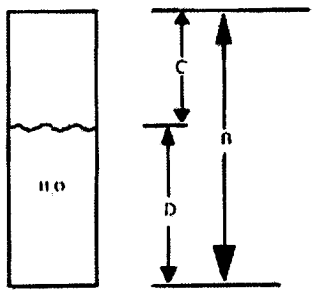
Measured Water Level Depth (C) 277 ft.

Length of Static Water Column (D) 525 - 277 = 248 ft.

Casing Water Volume .248 (A) x 1.5 (B) = 372 gal (D) (C)

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = 372 (gal)



Date	Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal)	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity (NTU)	Comments
8/19/09	1415	n/a	277	30 gal	11.60	7352	62	84.1	gray murky
	1520	n/a	322	0.5	11.74	6359	64	82.8	~clear/
	1600	n/a	319	1.0	11.71	5718	62.5	21.9	clear
8/19/09 pump used	0949	8 gpm	350	1.5	11.19	868.5	62.91	118.3	murky tan
	1010	8 gpm	360	2.0	10.92	630.0	64.70	25.8	~clear-
	1031	16 gpm	368.7	2.5	10.79	585.3	64.03	22.9	~ clear

Samplers Signature: Date: 8/18/09 - 8/19/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 3

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: IN08-33-PW1 Date Installed:
Casing Diameter: 6

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

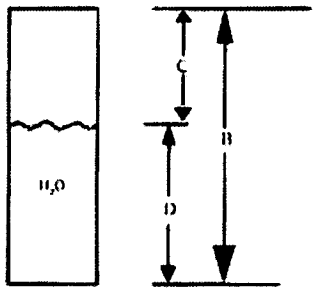
Describe
Aqua Clear-PFD added. GW = well volume. Shut 10 gpm pump off at 1116 @ 372.5 bgs. Turned larger pump on at 1525 @ 305.7

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = 248 ft.
Casing Water Volume (A) x (D) = gal
Volume of Water Added to Well During Installation = gal
Total Purge Volume = 37.2 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal)	pH	Cond (mS/cm)	Temperature °F or C	Turbidity (NTU)	Comments
1055	16 gpm	372.7	3.0	10.5	550	65	13.0	~clear~
1112	10 gpm	372.5	3.5	9.99	517.1	65	12.0	~clear~
1533	15 gpm	386.5	4.0	10.67	604.6	64.5	31.3	~clear
1548	15 gpm	392.5	4.5	9.47	534.7	64.65	51.5	~fizzy white
1600	16 gpm	400.0	5.0	9.82	545.4	64.81	20.7	~fizzy white
1614	16 gpm	403.9	5.5	9.63	549.8	64.82	15.9	~fizzy white

change pumps →

Samplers Signature: DT Date: 8/19/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 3 of 3

Project Name: Centennial Project No: Section 33 Pumping Test
Well ID: @# IN08-33 - PW1 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

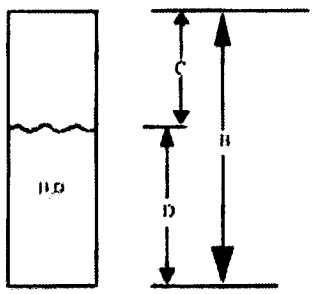
Describe
Approx 1 Gal/ft added, 2.5 well volumes, 19 gpm pump shut off at 1728 with 420.8 feet drawdown.

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION

Measured Well Depth (B) _____ ft.
Measured Water Level Depth (C) _____ ft.
Length of Static Water Column (D) (B) - (C) = 248 ft.
Casing Water Volume (A) x (D) = _____ gal
Volume of Water Added to Well During Installation = _____ gal
Total Purge Volume = 372 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~	pH	Cond (µS/cm)	Temperature °F or C	Turbidity ~~NTU~~	Comments
1625	17gpm	405.3	6.0	9.48	556.5	64.65	10.7	start
1631	18gpm	409.1	6.5	9.55	575.2	64.68	11.8	-clear
1647	19gpm	414.2	7.0	9.46	578.6	64.27	10.2	-clear
1658	19gpm	416.3	7.5	9.37	588.8	64.39	10.0	-clear
1710	19.5gpm	420.0	8.0	9.31	600.5	64.72	9.7	-clear
1718	19gpm	420.6	8.5	9.15	603.0	64.23	7.2	clear
1728	19gpm	420.8	9.0	9.16	619.8	64.78	6.3	clear

Samplers Signature: Date: 8/19/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 3

Project Name: Centennial Project No.: Section 33 pumping Test

Well ID: JN09-33-MW1 Date Installed:

Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

Aqua Clear PFD added. WV = well volume.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION j-coller 471.3

Measured Well Depth (B) Casing: 476 screen: 501 ft.

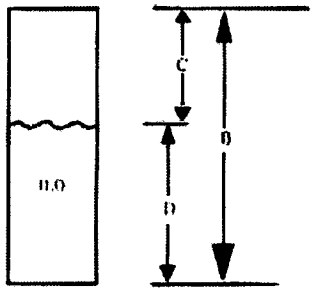
Measured Water Level Depth (C) 285 ft.

Length of Static Water Column (D) 501 (B) - 285 (C) = 216 ft.

Casing Water Volume 1.5 (A) x 216 (D) = 324 gal

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = 324 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) WV	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity (FNU)	Comments
0850		285	20 gal	11.90	6702	60.49	382.1	Murky
0915		315	0.5	11.85	5662	60.63	17.5	clear
0935		320	1.0	11.97	3724	62.26	250.2	Murky
~~0950~~		~~320~~	~~1.5~~	~~11.97~~	~~3936~~	~~62.55~~	~~159.2~~	
0950		320	1.5	11.50	825.7	62.77	224.3	Murky
1025		288	2.0	10.83	431.4	62.43	124.7	Murky

Samplers Signature: Date: 8/5/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 3

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: IN08-33-MW1 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

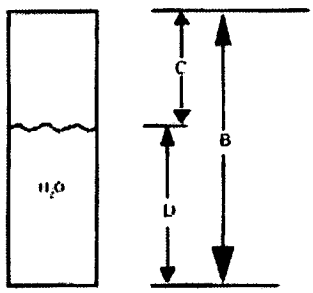
Describe
Tap Clear PFD added. WV = well volume.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = 216 ft.
Casing Water Volume (A) x (D) = 324 gal
Volume of Water Added to Well During Installation = gal
Total Purge Volume = 324 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~Gallons~~ WV	pH	Cond (µS/cm)	Temperature °F or C	Turbidity ~~(NTU)~~ FNU	Comments
1110		290	2.5	10.02	365.9	62.78	366.1	~Murky
1232		285	3.0	9.62	388.0	[illegible]	195.4	~ murky
1300		289	3.5	9.48	425.3	63	81.6	~ murky
1409		292	4.0	9.31	438.9	62.88	78.4	~ murky
1450		295	4.5	9.01	476.0	63.2	72.2	~ clear
1507		296	4.75	8.94	496.9	63.62	90.3	~ clear

Samplers Signature: DT Date: 8/5/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 3 of 3

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: INo8-33-MW1 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

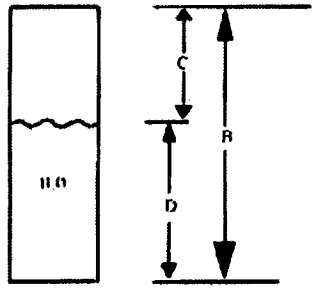
Describe
Aqua Clear PFD added. WV = well volume.
No Sand returning. Problems getting Yield test - recharges too fast.

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION

Measured Well Depth (B) _____ ft.
Measured Water Level Depth (C) _____ ft.
Length of Static Water Column (D) _____ (B) - _____ (C) = 216 ft.
Casing Water Volume _____ (A) x _____ (D) = 324 gal
Volume of Water Added to Well During Installation = _____ gal
Total Purge Volume = 324 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (WV)	pH	Cond (µS/cm)	Temperature (F or C)	Turbidity (NTU)	Comments
1520		289	4.85	8.81	505.2	62.61	58.7	~clear
1607		289	4.9	8.71	517.7	63	47.7	~clear
1615		285	4.95	8.73	518.2	62.87	45.0	~clear
1625		285	5.1	8.69	523.9	62.60	33.1	~clear

Run Bailer to bottom 6 times

Samplers Signature: DT Date: 8/5/9

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 1

Project Name: Centennial Project No.: section 33 pumping test
Well ID: IN09-33-MW2 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

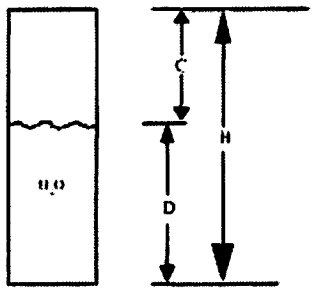
Describe
Aqua Clear PFD added. WV = well volume

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION J-Diller: 399 - try to push down to 434.

Measured Well Depth (B) casing: 458.5 screen: 477 ft.
Measured Water Level Depth (C) 300 ft.
Length of Static Water Column (D) 477 (B) - 300 (C) 177 ft.
Casing Water Volume 177 (A) x 1.55 (D) = 265.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 265.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (µS/cm)	Temperature F or C	Turbidity ~~(NTU)~~ FNU	Comments
1340		300	10 gal	10.39	1906	60.84	96.1	Grey murky
1415		311	0.5	10.29	1277	61.29	35.8	v clear
1450		311	1.0	9.05	751.9	61.76	64.6	murky
1530		309	1.5	8.53	698.5	61.42	43.3	~ murky
1610		309	2.0	8.49	694.5	61.79	35.8	grey clear
1706		308	2.5	8.43	690.7	61.93	26.4	~ clear
1736		308	3.0	8.43	694.4	62	31.0	clear

Samplers Signature: Date: 8/7/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Section 33 pumping test

Well ID: IN09-33-MW3 Date Installed:

Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe

Let recharge overnight till 1400 8/12/09. Stopped again at 1630 on 8/12/09 and let recharge more. Will continue 8/17 & use pump.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) _____ ft.

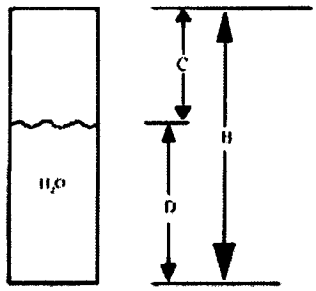
Measured Water Level Depth (C) _____ ft.

Length of Static Water Column (D) _____ (B) - _____ (C) = 321 ft.

Casing Water Volume _____ (A) x _____ (D) = 493.5 gal

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = 493.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~gal~~ WV	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity ~~NTU~~ FNU	Comments
1440	n/a	444	1.5	10.64	311.8	62.90	20.1	~clear
0955	n/a	314	2.0	9.99	272.2	60.51	77.1	grey/clear
0925	n/a	369	2.5	9.95	269.5	60.72	42.2	~clear
1915	6 gpm	474	3.0	9.55	292.8	65.3	6.9	clear
1926	6 gpm	522	3.5	9.70	293.9	65.05	15.3	clear
0930	6 gpm	522	3.85	9.56	329.9	65.5	11.0	clear

8/12 → 8/14 → 8/17 pump used 8/18

Samplers Signature: DT Date: 8/12/09 - 8/18/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: IN08-33-MW3 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

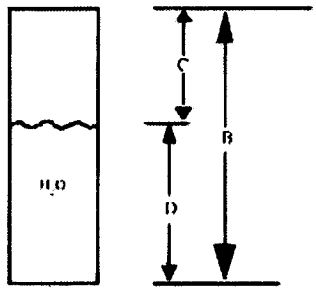
Describe
AquaClear PFD added. WV = well volume. Recharge very slow. Had to stop at 1.33 WV 8/11/09 after drawing down above j-collar. Let recharge. Move to MW3.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION j-collar 527.7

Measured Well Depth (B) Casing: 531, screen: 566 ft.
Measured Water Level Depth (C) 227 ft.
Length of Static Water Column (D) 556 (B) - 227 (C) = 329 ft.
Casing Water Volume 329 (A) x 1.5 (D) = 493.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 493.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal)	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity ~~(NTU)~~ FNU	Comments
1600	~~6 gpm~~	227	20 gal	11.08	2249	59.83	244.0	MUDDY
1639	n/a	352	0.5	11.27	935.0	60.16	33.1	-clear
1900	n/a	461	1.0	11.75	2493	62.78	176.1	grey
2000	n/a	501	1.33	11.13	839	62.63	158.5	grey,
~~0940~~		~~410~~	~~1.5~~	~~9.56~~	~~3033~~	~~57.92~~	~~46.6~~	~~clear~~
~~0945~~		491	~~2.0~~	~~9.80~~	~~3219~~	~~64.30~~	~~DRY~~	~~clear~~

8/12/09 →

Samplers Signature: DT Date: 8/11/09 - 8/12/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: IN08-33-MW4 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

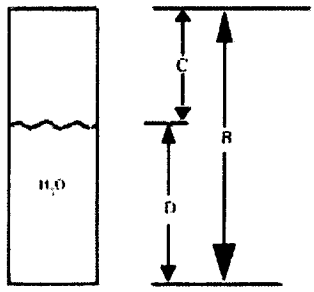
Describe
Aqua Clear PFD added, WV = well volume, Problems getting good pullson 8/6/09, then thunderstorm postponed efforts at 1730

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION J-collar 557.3

Measured Well Depth (B) Casing: 563 screen: 598 ft.
Measured Water Level Depth (C) 339 ft.
Length of Static Water Column (D) 588 (B) - 339 (C) = 249 ft.
Casing Water Volume 249 (A) x 1.5 (D) = 373.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 373.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal)	pH	Cond (µS/cm)	Temperature (°F or C)	Turbidity (NTU)	Comments
1430		339	10 gal	11.43	7811	64	206.6	gray murky
1613		334	0.5	11.52	1415	62.44	49.7	murky
0855		350	1.0	11.30	637.2	60.66	20.5	~ clear
1120		326	1.5	9.76	311.5	63	32.0	~ clear
1400		347	2.0	10.08	340.7	62.69	32.2	grey clear
1445		343	2.5	9.37	344.1	62.61	49.5	~ clear

8/6 EOD →
8/7

Samplers Signature: DT Date: 8/6/09 - 8/7/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Sec tn 33 Pumping Test
Well ID: DN09-33-MW4 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

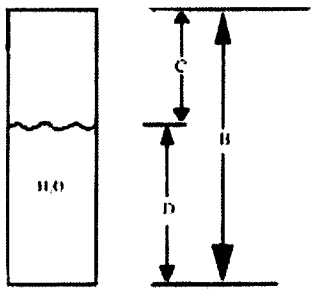
Describe
Aqua Clear PFD added. WV = well volume. No sandpack returning. No yield test - swabs working too slow + recharge too fast.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = 247 ft.
Casing Water Volume (A) x (D) = gal
Volume of Water Added to Well During Installation = gal
Total Purge Volume = 373.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) WV	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity (NTU)	Comments
1518	[illegible]	365	3.0	9.11	355.5	63.01	49.3	~clear
1530	[illegible]	367	3.15	9.00	359.9	62.89	38.4	~clear
1540	[illegible]	368	3.3	8.93	364.5	63.30	29.9	~clear
1550	[illegible]	366	3.42	8.86	367.5	63.28	19.9	clear
1555	[illegible]	367	3.5	8.80	368.7	62.83	17.2	clear

Samplers Signature: Date: 8/7/09

Completeness Issue Item #7 Attachment

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: IN09-33-MW5 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

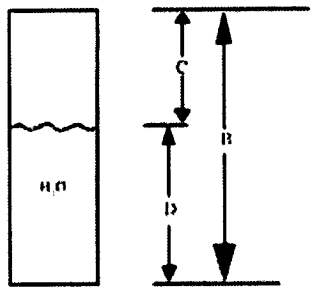
Describe
Aqua Clear PFD added. WV = Well Volume.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION jacobs 439.1

Measured Well Depth (B) casing: 444 screen: 469 ft.
Measured Water Level Depth (C) 250 ft.
Length of Static Water Column (D) 469 (B) - 250 (C) = 219 ft.
Casing Water Volume 219 (A) x 1.5 (D) = 328.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 328.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) WV	pH	Cond (µS/cm)	Temperature °F or C	Turbidity (NTU) FNU	Comments
0850	[illegible]	[illegible]50	5 gal	11.71	2882	59.22	98.1	Grey/clear
0910	[illegible]	278	0.5	11.60	1468	59.43	41.7	~Clear
0920	[illegible]	272	1.0	11.59	1373	60.74	133.9	Grey~Clear
0951	[illegible]	270	1.5	10.01	3515	61.58	51.0	~Clear
1010	[illegible]	274	2.0	9.25	3835	61.98	16.5	~clear
1026	[illegible]	270	2.5	8.75	430.5	61.71	67.5	~clear

Samplers Signature: DI Date: 8/6/09

Completeness Issue Item #7 Attachment

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: IND8-33-MW5 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

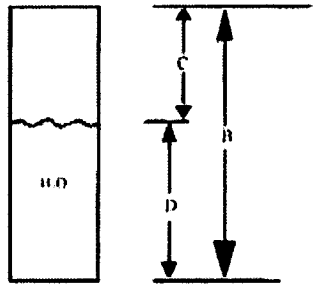
Describe
Aqua clear PFD used. WV = well volume. No sandpack returning. Yield test estimate from 291 = 20 gpm.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = 219 ft.
Casing Water Volume (A) x (D) = gal
Volume of Water Added to Well During Installation = 300 gal
Total Purge Volume = 328.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) WV	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity (NTU) END	Comments
1041		278	3.0	8.39	474.1	61.97	17.6	clear
1056		282	3.5	8.12	505.8	61.95	11.2	clear
1118		275	4.0	7.94	536.0	61.92	6.9	clear
1135		281	4.5	7.83	551.4	61.90	7.1	clear
1141		281	4.8	7.79	552.8	61.75	4.6	clear

Samplers Signature: DT Date: 8/6/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test

Well ID: [illegible] IN08-33-MW1 Date Installed:

Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe: Used Aqua Clear PFD

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) 365 ft.

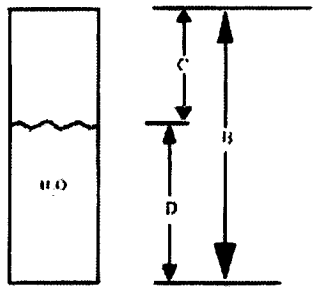
Measured Water Level Depth (C) 192' ft.

Length of Static Water Column (D) 366 (B) - 192 (C) = 123 ft.

Casing Water Volume 1.5 (A) x 365 (D) = 259.5 gal

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = _____ (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (mS/cm)	Temperature (F) or C	Turbidity ~~(NTU)~~ FAU's	Comments
11:20 A	1/4	210	1 well Vol	11.09	443.2	60°	21.0	clear
11:29 A	"	290		9.25	561.4	59.47	32.9	clear
12:02	"	295		8.91	586.2	60.6	20.8	clear
12:29	"	292		8.80	569.5	[illegible]	40.4	slight murky
1246	"	274	2 well vol	8.74	582.2	59.5	45.3	slight murk
1524	"	275		8.52	665	[illegible]	2060	murky

Samplers Signature: Dan Tsang Date: 7/31/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Section 33 Pumping Test Project No.: Centennial 533 Pumping Test

Well ID: IN08-33-M01 Date Installed:

Casing Diameter: 6

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Aqua Clear PFD used. WV = well volume No Sand pack returns. Approx each yield is 5 gpm after 15 min recharge from 307

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.

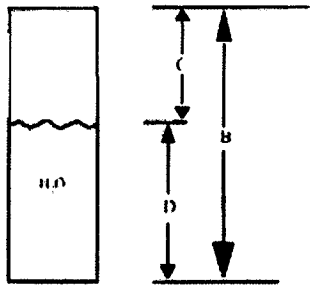
Measured Water Level Depth (C) ft.

Length of Static Water Column (D) (B) - (C) = ft.

Casing Water Volume (A) x (D) = 259.5 gal

Volume of Water Added to Well During Installation = gal

Total Purge Volume = (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (µS/cm)	Temperature (F or C)	Turbidity (NTU)	Comments
1630	n/a	301	4.5 WV	8.3	720	59.8	780	murky
1653	n/a	307	4.79 WV	8.3	722	59.96	200	clearing
1703	n/a	305	5	8.3	723	60.0	200	clearing
1710	n/a	307	5.5	8.3	727	60	200	clearing

Samplers Signature: Date: 7/31/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 1

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: ~~GW~~ IN08-33-MO2 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

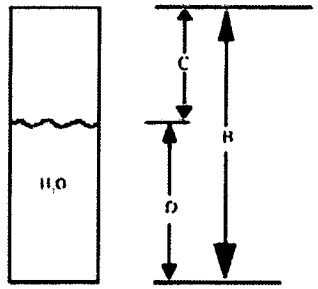
Describe
Aqua Clear PFD added. MW = well volume. Quit at 1300 hours & 1.5 MW to wait for new swab cups. Move to MW02 in morning line, Used pump at 8/21/09 at 6 gpm, Pump on @ 1705 + DTW at 275. Pump off @1820,

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION j-collar: 319.8

Measured Well Depth (B) casing: 325 screen: 340 ft.
Measured Water Level Depth (C) 175 ft.
Length of Static Water Column (D) 340 (B) - 175 (C) = 165 ft.
Casing Water Volume 165 (A) x 1.5 (D) = 247.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 247.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) MW	pH	Cond (µS/cm)	Temperature (°F or C)	Turbidity (NTU)	Comments
0930	n/a	175	15 gal	11.61	3696	63.59	27.5	clear
1050	n/a	209	0.5	11.68	2964	57.28	38.6	murky clear
1200	n/a	217	1.0	11.50	2769	60	142.4	murky
8/20/09 1259	n/a	213	1.5	11.53	1180	60	105.1	murky
8/21/09 1725	8 gpm	267.3	2.0	10.10	462.2	60.62	54.3	clear
Pump on 1745	6 gpm	297.15	2.5	9.12	538.3	62.64	6.5	clear
1820	4 gpm	297.7	3.0	8.95	635.6	62.64	4.5	clear

Samplers Signature: Date: 8/20/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: section 33 pump test
Well ID: IW08-33-MW03 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

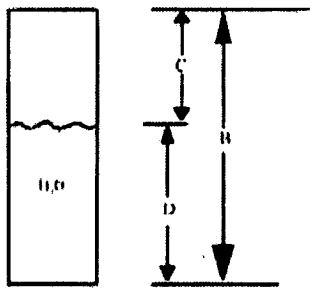
Describe
Hose clear PFD added. WV = well volume

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION Jetter: 212.3

Measured Well Depth (B) Casing: 235 screen: 265 ft.
Measured Water Level Depth (C) 106 ft.
Length of Static Water Column (D) 265 (B) - 106 (C) = 159 ft.
Casing Water Volume 159 (A) x 1.5 (D) = 238.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 238.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (µS/cm)	Temperature °F or C	Turbidity ~~(NTU)~~ FNU	Comments
0930		106	20 gal	11.42	4553	64.6	24.7	clear
1055		125	1.5	11.74	2600	58.71	62.0	grey clear
1109		176	2.0	11.67	1616	57.67	63.2	grey clear
1130		180	2.5	11.11	942.5	63.41	63.48	grey clear
1330		149	3.0	10.81	732.2	65	377.5	murky
1420		134	3.5	10.28	697.2	60	142.5	murky clear

let recharge

Samplers Signature: DT Date: 8/13/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: IW08-33-M03 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

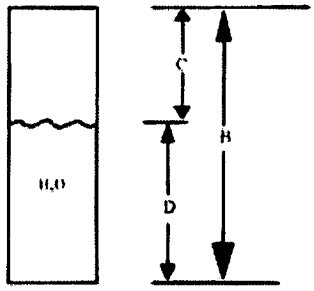
Describe
AquaClear PFD added. WV = Well Volume. Yield test estimate from 190' = 3gpm recharge over 10 minutes.

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = 159 ft.
Casing Water Volume (A) x (D) = 238.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 238.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) EST	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity ENV	Comments
1440		159	4.0	10.11	701.7	58.7	60.5	Grey clear
1455		180	4.5	10.11	740.9	59.68	43.7	Grey Clear
1500		179	5.0	10.09	722.3	58.56	51.2	Grey clear
1630		161	5.5	9.88	713.2	58.59	49.0	Grey clear
1640		180	6.0	9.78	737.7	57.98	42.3	Grey clear
1704		190	6.5	9.74	757.7	58.35	35.1	Grey Clear
1735		174	7.0	9.66	758.6	58.94	50.3	Grey Clear

Recharge

Samplers Signature: DT Date: 8/13/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test

Well ID: JNOG-33-MW1 Date Installed:

Casing Diameter: 6" SDR17 PVC

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe
Aqua Clear PFD added. WV = well volume

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION J-collar 568.9'

Measured Well Depth (B) Screen 597.5' casing 582.5'

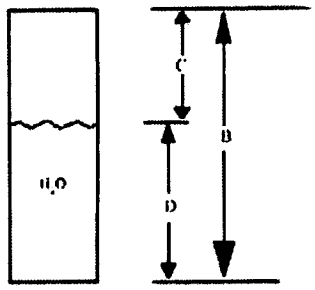
Measured Water Level Depth (C) 290 ft.

Length of Static Water Column (D) 597.5 (B) - 290 (C) = 307.5

Casing Water Volume 1.5 (A) x 307.5 (D) = 461.25 gal

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = 461.25 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~gals~~ WV	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity ~~(NTU)~~ FNU	Comments
1015	n/a	290	15 gal	11.67	4096	62.0	129.3	~clear
1031	n/a	360	.37	11.61	2360	61	113	~clear
1400	n/a	370	1	10.77	2360	62	10	~clear
1455	n/a	403	1.5	9.90	333	63	35.9	~clear
1553	n/a	320	2	9.41	320	63	58.1	~clear
1700	n/a	441	2.5	9.13	374	63.5	57.2	~clear

Samplers Signature: Date: 8/3/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: IW08-33-MW1 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

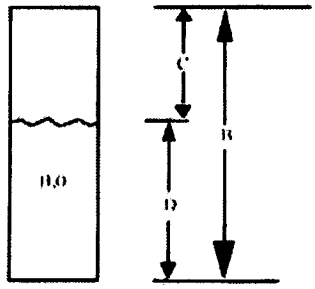
Describe
Aqua-Clear. PFD added. WV = well volume. Approx discharge rate is 4.1 gpm after 15 min recharge from 485 feet.

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = ft.
Casing Water Volume 5 (A) x (D) = 307.5 gal
Volume of Water Added to Well During Installation – gal
Total Purge Volume = 461.25 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) WV	pH	Cond (µS/cm)	Temperature (F or C)	Turbidity (NTU) FNU	Comments
1735	n/a	490	3	9.91	420	[illegible]	27.3	~clear
1740	n/a	485	3.1	8.89	427	63.5	35.8	~clear
1750	n/a	488	3.2	8.91	436	63.5	25.0	~clear
1757	n/a	488	3.3	8.92	443.5	63.41	21.0	~clear
1808	n/a	494	3.4	8.87	451.6	63.48	17.9	~clear
1812	n/a	485	3.5	8.73	463.5	63.67	19.5	~clear

Samplers Signature: Date: 8/3/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test

Well ID: IND8-33-MW1 Date Installed:

Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe AquaClear PFD used. WV = well volume

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION J-collar: 607.5'

Measured Well Depth (B) Casing: 613' screen: 633 ft.

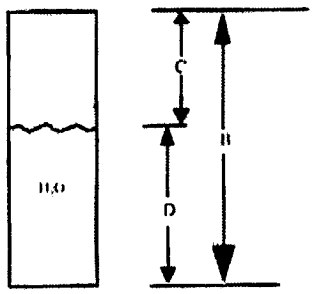
Measured Water Level Depth (C) 263 ft.

Length of Static Water Column (D) 633 (B) - 263 (C) = 370 ft.

Casing Water Volume 370 (A) x 1.5 (D) = 555 gal

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = 555 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (µS/cm)	Temperature °F or C	Turbidity ~~(NTU)~~ FNU	Comments
1000		263	15 gal	11.81	5741	61.45	82.1	Murky
1052		421	0.5	11.72	1966	61.22	56.2	-clear
1137		519	1.0	11.55	2071	60.02	60.3	-clear
1145		535	1.1	10.84	319	67.0	74.5	-clear
1230		570	1.33	9.95	189.4	64.6	136.9	grey clear
1245		578	1.5	9.60	190.3	64.7	53.5	grey clear

Samplers Signature: Dan Bo Date: 8/4/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: EMW-33-MW01 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

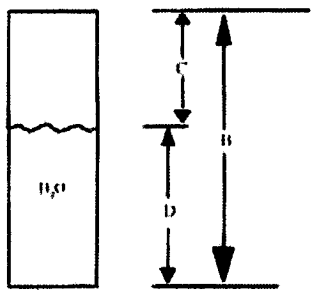
Describe
AquaClear-PFD added WV = Well volume, Estimated Yeild test from 582 for 5 min was 6 gpm, No Sand/grade returns. 15 min from 579 was 3 gpm.

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.
Measured Water Level Depth (C) ft.
Length of Static Water Column (D) (B) - (C) = 370 ft.
Casing Water Volume (A) x (D) = 585 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 585 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (µS/cm)	Temperature ~~F~~ or C	Turbidity ~~(NTU)~~ FNU	Comments
1345		579	1.75	9.51	224.1	66.33	25.7	~clear
1427		582	2.0	9.31	215.0	64.80	24.0	clear
1440		579	2.1	9.26	217.4	65.39	14.4	clear
1450		580	2.2	9.20	217.2	64.36	13.1	clear
1513		567	2.33	9.19	224.2	65.0	11.7	clear
1600		579	2.50	9.06	246.4	64.5	11.2	clear

Yield Test →

Samplers Signature: Date: 9/4/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 Pumping Test
Well ID: IND8-33-MW2 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

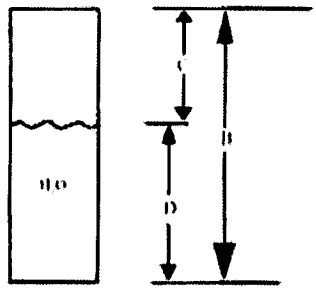
Describe
Aqua Clear PFD added, WV = well volume, Turn Pump on at 0950 hours at 440' w/DTW at 275', N. water-frac to 290' and remove 2 joints of fractured tubing. Replace to 440' & turn pump on at 1030 and DTW at 265' Pump off at DTW of 440' at 1055, set pump at 580' on at 1205 and 315' DTW

CASING VOLUME INFORMATION

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION j-collar 573.5'

Measured Well Depth (B) casing: 580 screen: 600 ft.
Measured Water Level Depth (C) 265 ft.
Length of Static Water Column (D) 600 (B) - 265 (C) = 335 ft.
Casing Water Volume 335 (A) x 1.5 (D) = 502.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 502.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gals)~~ GAL	pH	Cond (µS/cm)	Temperature (F or C)	Turbidity ~~(NTU)~~ NTU	Comments
1640	n/a	265	20 gal	11.57	6719	61.06	112.2	grey in color
1905	n/a	299	0.25	11.73	5344	61.13	55.2	murky
1035	14 gpm	377	0.5	11.82	4728	62.21	13.2	~ clear
1214	14 gpm	394	1.0	9.29	337.4	65.81	4.8	clear
1245	7 gpm	384	1.5	10.12	446.8	69.16	6.4	clear
1325	6 gpm	506.5	2.0	8.92	509.8	69.02	6.7	clear

up set pump

Samplers Signature: Date: 8/20/09 - 8/21/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: INC8-33-MW2 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☐ Bailing ☒ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Agitate clear PFD added, WV = well volume. Pump off at 1454.

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION

Measured Well Depth (B) ft.

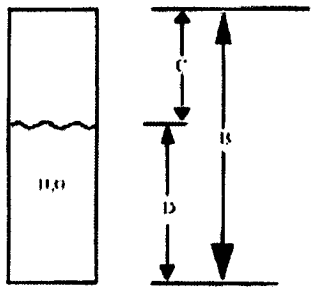
Measured Water Level Depth (C) ft.

Length of Static Water Column (D) (B) - (C) = 335 ft.

Casing Water Volume (A) x (D) = gal

Volume of Water Added to Well During Installation - gal

Total Purge Volume = 502.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed ~~(gal)~~ WV	pH	Cond (µS/cm)	Temperature (F or C)	Turbidity ~~(NTU)~~ FNU	Comments
1410	6gpm	507.6	2.5	7.97	594.9	70	8.3	clear
1454	6gpm	503.5	30	7.73	586.8	68.39	7.3	clear

Samplers Signature: DT Date: 8/21/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 1 of 2

Project Name: Centennial Project No.: Section 33 pumping test
Well ID: IN09-33-MW03 Date Installed:
Casing Diameter: 6"

METHOD OF DEVELOPMENT

☒ Swabbing ☒ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

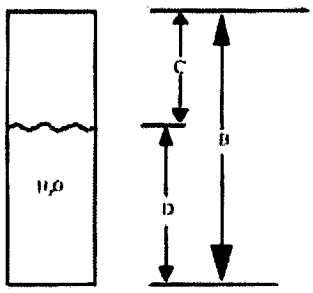
Describe
Aquaclear PFD added. WV = well volume. Swab not working very well. Came up to 25% in 12 hours (3pm 8/10 to 8/11 3am) probably contaminated w/ cement from underreaming w/ same waters as drilling cement

CASING VOLUME INFORMATION

Casing ID (inch)	10	15	20	22	30	40	43	50	60	70	80
Unit Casing Volume (A) (gal/ft)	004	009	016	02	037	065	075	10	15	20	26

PURGING INFORMATION j-collar: 634.8

Measured Well Depth (B) casing: 638 screen: 658 ft.
Measured Water Level Depth (C) 237 ft.
Length of Static Water Column (D) 658 (B) - 237 (C) = 421 ft.
Casing Water Volume 421 (A) x 1.5 (D) = 631.5 gal
Volume of Water Added to Well During Installation = 0 gal
Total Purge Volume = 631.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) WV	pH	Cond (µS/cm)	Temperature (F) or C	Turbidity (NTU)	Comments
1500	n/a	237	15 gal	11.81	6893	60.69	32.5	Grey-clear
1615	n/a	382	0.5	11.99	6214	61.27	33.6	~ clear
1740	n/a	468	1.0	11.91	4754	63.22	36.9	~clear
1830	n/a	295	1.5	11.37	931	61.87	21.7	~clear
1100	n/a	431	2.0	11.31	5468	62.55	21.0	~clear
1205	n/a	502	2.5	10.91	347.0	64.29	17.2	~clear

4 bailers Bailed 20X w 3" bailer

Samplers Signature: D.T. Date: 8/10/09 - 8/11/09

Attachment A: R Squared Inc.
Well Development Record

SHEET 2 of 2

Project Name: Centennial Project No.:

Well ID: IA08-33-MW03 Date Installed:

Casing Diameter:

METHOD OF DEVELOPMENT

☒ Swabbing ☒ Bailing ☐ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

Deepest DTW measured = 512 ft 8/11. Casing/swab problems around 480 to 500 joint. Slows down swabbing proces. Switch to MW3 to allow MW03 to recharge over night into good casing

CASING VOLUME INFORMATION Yield test from 502 was approx. 2gpm.

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

Measured Well Depth (B) ft.

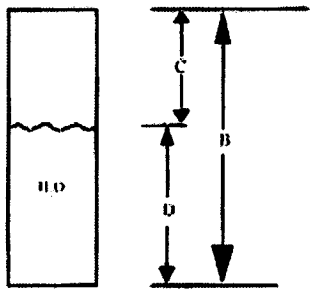
Measured Water Level Depth (C) ft.

Length of Static Water Column (D) (B) - (C) = 421 ft.

Casing Water Volume (A) x (D) = 631.5 gal

Volume of Water Added to Well During Installation = 0 gal

Total Purge Volume = 631.5 (gal)



Time	Pump Rate	Water Level Depth (ft)	Volume Removed (gal) MW	pH	Cond (µS/cm)	Temperature F or C	Turbidity (NTU) MW	Comments
1405		485	3.0	10.15	323.0	65.33	31.9	~clear
0930		410	3.5	9.66	303.3	63.92	16.6	~clear
1045		491	4.0	9.50	326.9	64.20	21.0	~clear
1250		488	4.5	9.15	335.0	65.35	20.4	~clear
1335		484	4.2	9.11	393.0	64.65	27.9	~clear

8/12 →

Samplers Signature: DT Date: 8/11/09 - 9/12/09

Completeness Issue Item #7 Attachment

2166000 2168000 2170000

534000 534000

29 28 33 32 5 4 3

T10N R67W
T9N R67W

5662 5550 5500 5600 5608

IN08-33-MM4
IN08-33-MM3
IN08-33-MO3
IN08-33-MUU3
IN08-33-MM2
IN08-33-MO2
IN08-33-MUU2
IN-14-33
IN08-33-MM5
IN08-33-MM1

See Inset Map Below for Detail in this Area

IN08-33-PW1 (Injection Well)
IN08-33-MO1
IN08-33-MU1
IN08-33-MUU1
IN08-33-MM1

532000 532000 536000 536000

IN08-33-PW1 (Injection Well)
Electrical Generator
Personnel Shelter
IN08-33-MO1
IN08-33-MU1
IN08-33-MUU1
Perimeter Fence
Water Storage Tanks
IN08-33-MM1
0 20 40 80 120
Feet

Legend

- Water Storage Tanks
- Electrical Generator
- Personnel Shelter
- Proposed Permit Boundary with New Land Position
- Perimeter Fence
- Existing Power Lines

Well Classification

- B Sand
- Pump Test Well
- A2 Sand
- Laramie Formation
- WE Sand
- Exploration Well
- R Squared Monitor Well

Road Classification

- State Highway
- Paved / County Road
- Maintained Gravel, Soil or Stone
- Unimproved
- Primitive Road/Path
- Congested City Streets
- Railroad

Feet
0 100 200 400 600 800
0 50 100 200
Meters

N

REVISIONS				
#	DRAWN	CHECKED	APPROVED	DATE
1	S Hallock	M Bonkoski	M Lee Smith	5-Oct-2009
2	S Hallock	M Bonkoski	D Tee Tuttle	14-Aug-2009
3	S Hallock	M Bonkoski	D Tee Tuttle	30-Apr-2009

AS1
CHECK SCALE
This line should measure 1" by 0.5" on a properly plotted drawing.

DRAWN	05-Oct-2009	DATE	30-Apr-2009
DESIGN	S. Hallock	CHECKED	J. Mays
SCALE	As Noted	FILENAME	P:\Centennial\Maps\PumpTestPlan\Fig4.mxd

POWERTECH (USA) INC.

Figure 4

Centennial Project
Section 33 Pumping Test Layout

PROJECT: Centennial
DATUM: NAD 27, Colorado State Plane North (feet)
-
1 of 1

Completeness Issue Item #8 Attachment

NOI P-2008-043 MD-03 Completeness Issue Item #9 Attachments