State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 63-32573

Priority: November 21, 2006

Maximum Diversion Rate: 23.18 CFS
Maximum Diversion Volume: 6,535.0 AF

This is to certify, that CITY OF EAGLE
660 E CIVIC LN
EAGLE ID 83616

has applied for a permit to appropriate water from:

Source: GROUND WATER

and a permit is APPROVED for development of water as follows:

BENEFICIAL USE	PERIOD OF USE	RATE OF DIVERSION	ANNUAL VOLUME
DIVERSION TO STORAGE	01/01 to 12/31	2.93 CFS	
MUNICIPAL STORAGE	01/01 to 12/31		1,836.0 AF
MUNICIPAL	01/01 to 12/31	23.18 CFS	6,535.0 AF
MUNICIPAL FROM STORAGE	01/01 to 12/31		1,660.0 AF

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SE1/4NW1/4	Sec. 13, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SW1/4SW1/4	Sec. 15, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4SE1/4	Sec. 21, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4NE1/4	Sec. 22, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4SE1/4	Sec. 22, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4SW1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4SW1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SW1/4NE1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4NW1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4SW1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4SW1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4SE1/4	Sec. 23, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SW1/4NE1/4	Sec. 19, Twp 05N, Rge 01E, B.M.	ADA County
GROUND WATER	NW1/4NE1/4	Sec. 24, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4NW1/4	Sec. 24, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4SW1/4	Sec. 24, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4NE1/4	Sec. 27, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4NW1/4	Sec. 27, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SW1/4SE1/4	Sec. 28, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4SE1/4	Sec. 28, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4SE1/4	Sec. 28, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SW1/4NE1/4	Sec. 28, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	SE1/4SE1/4	Sec. 28, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NE1/4NE1/4	Sec. 33, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NW1/4NE1/4	Sec. 33, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NW1/4NE1/4	Sec. 33, Twp 05N, Rge 01W, B.M.	ADA County
GROUND WATER	NW1/4NE1/4	Sec. 33, Twp 05N, Rge 01W, B.M.	ADA County

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CONDITIONS OF APPROVAL

1. Proof of application of water to beneficial use shall be submitted on or before March 09, 2017.
2. Subject to all prior water rights.
3. A map depicting the place of use boundary for this water right at the time of this approval is attached as Attachment A to this document for illustrative purposes.
4. This right authorizes a peak diversion rate of 23.18 cfs with an annual diversion volume limit of 6,535 acre-feet of water for reasonably anticipated future needs for a 30 year planning horizon within the service area pursuant to Chapter 2, Title 42, Idaho Code.
5. The full system capacity necessary to provide water for the reasonably anticipated future needs authorized under this right must be constructed by the end of the designated planning horizon.
6. I.C. § 42-204 requires that project construction commence within one year from the date of permit issuance and shall proceed diligently to completion unless it can be shown to the satisfaction of the Director of the Department of Water Resources that delays were due to circumstances over which the permit holder had no control. Water right holder has improved, developed, and installed a pump, electrical wiring and transformer, and a measuring tube in the SVR7 well (located at NE¼SW¼, Section 23, Township 5 North, Range 1 West), and has improved, developed, and installed well casing in the Kling Irrigation well (located at SE¼SE¼, Section 28, Township 5 North, Range 1 West). Both of these wells are authorized points of diversion for this permit. Accordingly, the requirement concerning commencement of construction has been met.
7. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code and applicable Well Construction Rules of the Department.
8. The place of use is generally located within Sections 7, 15, 17, 18, 19, 20, 21, 22, Township 5 North, Range 1 East, and Sections 10, 11, 12, 13, 14, 15, 21, 23, 24, 26, 27, 28, and 33, Township 5 North, Range 1 West.
9. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.
10. A proof of beneficial use statement shall be due on or before March 9, 2017. If proof is submitted on or before March 9, 2017, the permit holder shall, at the same time, submit a request for a five year extension of time pursuant to Idaho Code § 42-204(5). Based upon the information provided, the Director will decide whether it is appropriate to grant the extension. Nothing in this condition prevents the permit holder from submitting a request for extension of time to submit proof of beneficial use prior to the filing of proof.
11. In connection with the proof statement submitted for this permit, the permit holder shall submit a report showing the total annual volume, the maximum daily volume, and the maximum instantaneous rate of flow diverted from the points of diversion authorized for this permit during the authorized development period for the permit. For development both inside and outside of the M3 Eagle development boundaries, the report shall also show the extent to which the full system capacity necessary to provide water for reasonably anticipated future needs has been constructed and the extent to which planning, design, and investment have occurred for any unconstructed portion of the system capacity necessary to divert and use water for reasonably anticipated future needs. The Department will evaluate such proof statement and report consistent with IDWR Application Processing Memorandum No. 63 (June 15, 1999) unless legally obligated to do otherwise.

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12. In accordance with Idaho Code § 42-217, in connection with proof of beneficial use for this permit, the right holder shall also submit a revised estimate of the reasonably anticipated future needs, a revised description of the service area, and a revised planning horizon, together with appropriate supporting documentation.
13. The right holder shall comply with all aspects of the approved Monitoring Plan dated March 17, 2011. A copy of the monitoring plan is attached hereto as Attachment B and incorporated herein by this reference.
14. This right does not grant any right-of-way or easement across the land of another.
15. The Director retains jurisdiction to require the right holder to provide purchased or leased natural flow or stored water to offset depletion of Lower Snake River flows if needed for salmon migration purposes. The amount of water required to be released into the Snake River or a tributary, if needed for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this permit.
16. If, during the established planning horizon, the Department determines, based on credible evidence from the monitoring, the monitoring report or otherwise, that there is a substantial likelihood that diversion and use of groundwater under the permit is causing material injury to any senior water rights, the Department may issue an order to the water right holder to show cause, after notice and hearing, as to why the water right holder should not reduce existing diversions under the permit, forego additional diversions, or provide adequate mitigation to remedy any such material injury. Any senior water user alleging material injury may petition the Department to commence a show cause hearing and the Department shall conduct a hearing. Any such hearing shall be held according to the Department's rules governing contested cases and its conjunctive management rules and a final decision shall be made on the record according to the evidence. Nothing in this paragraph shall create any evidentiary presumption, establish or change any burden of proof or obligation to come forward with evidence, or otherwise modify the rights of any water right holder under Idaho law.
17. In exercising its continuing authority under this Order, the Department shall take into consideration all monitoring data, hydrogeologic evidence, and other information pertaining to the question whether water right holder's ground water pumping under this permit is causing material injury to any of protestants' senior water rights.
18. In accordance with Idaho Code § 42-226, Idaho Code §§ 42-237a through 237h, and Idaho Code § 42-607, and the Department's Rules, IDAPA 37.03.011 (as these may be amended from time to time), water diversion and use under this permit shall be subject to curtailment when and to the extent the Department determines such diversion and use is causing material injury to senior water rights and is not mitigated.

This permit is issued pursuant to the provisions of Section 42-204, Idaho Code. Witness the signature of the Director, affixed at Boise, this 30th day of July, 2012.

Gary Spackman

GARY SPACKMAN, Director

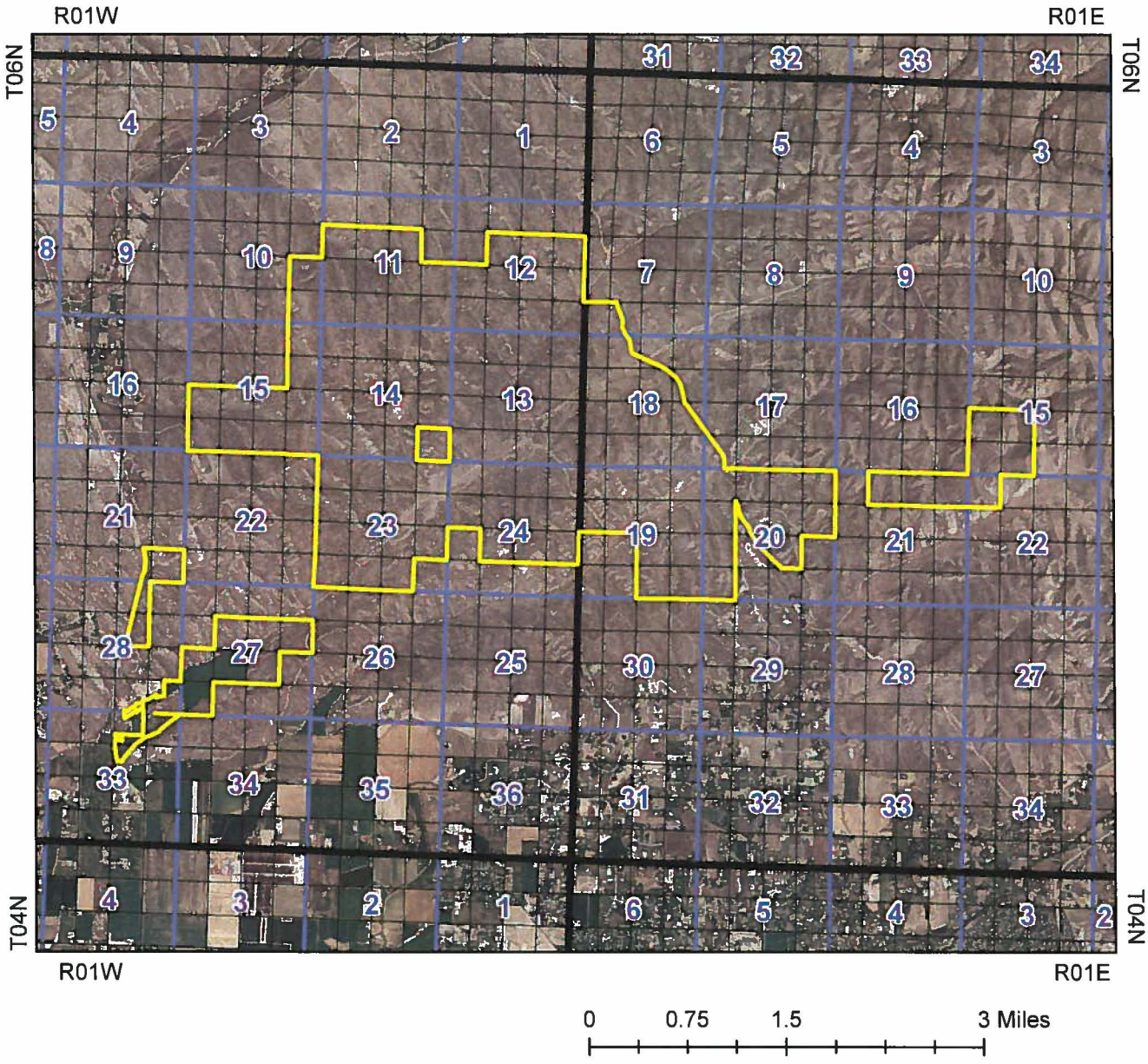
Attachment A

State of Idaho
Department of Water Resources

Permit to Appropriate Water

63-32573

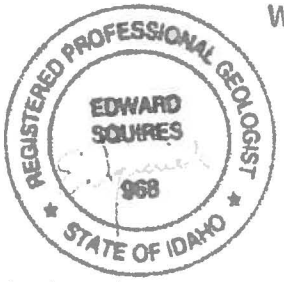
Water Service Area Boundary for M3 Eagle Llc



Attachment B

Hydro Logic, Inc.
1002 W. Franklin Street, Boise, ID 83702 (208) 342-8369, Fax (208) 342-3100, hli@hydrologicinc.net

TECHNICAL MEMORANDUM



TO: Bill Brownlee/ M3 Eagle, LLC, / Eagle, Idaho

FROM: Ed Squires/ Hydro Logic, Inc. / Boise, Idaho

DATE: March 17, 2011

SUBJECT: M3 Eagle, LLC Ground Water-Level/Production Monitoring Plan

OVERVIEW

M3 Eagle, LLC (M3) was granted water right Permit No. 63-32573 on January 25, 2010 for municipal purposes at an instantaneous flow-rate of 3.28 cubic feet per second[1]. Two of the conditions of approval for the water right No. 63-32573 are related to monitoring of ground water production and water levels from a series of existing and to-be-constructed wells for the M3 development. Specifically these conditions state:

> *"Prior to the diversion and use of water under this approval, the right holder shall install and maintain acceptable measuring device(s), including data logger(s), at the authorized point(s) of diversion, in accordance with Department specifications."*
>
> *"Prior to the diversion of water in connection with this water right, the right holder shall provide the Department with a plan for monitoring ground water levels in the vicinity of the place of use for this water right. The monitoring should occur in parallel with development and production and should include identification of non-producing wells and timelines for measuring and reporting. The right holder shall not divert water in connection with this right until the monitoring plan is approved by the Department. Failure to comply with the monitoring plan once it is accepted shall be cause for the Department to cancel or revoke this right."*

In compliance with these conditions, and to monitor its own effects from pumping, M3 contracted with Hydro Logic, Inc. (HLI) to develop and formalize a water level/water production monitoring and reporting plan. Seven zones within five long-term designated (non-producing) wells have been identified for water level monitoring (Figures 1 and 2). From previous aquifer testing results, it can be shown that the seven-zone network will be a good indication of groundwater levels on and around the M3 property. In addition to the seven-zone, five-well monitoring network, ground water levels and pumped ground water volume will be monitored in all water supply production wells as they are constructed and brought into production. The details of the monitoring plan, including the protocols, instrumentation, types of measurements, proposed timelines for measuring, and reporting requirements are presented below:

[1] The permitted quantity is subject to change pending the outcome of a judicial review action filed by M3 in Ada County District Court entitled *M3 Eagle v. Idaho Department of Water Resources*, Case No. CV OC 1003180.

WELLS TO BE MONITORED

The following wells have been selected for initial on-going monitoring at the locations shown on Figures 1 and 2: TW#1- Zones 3 and 5, TW#2- Zone 1, TW #3-Zone 4, TW#4-Zones 2 and 4, SVR#7 and SVR#9. Four of these (TW#1, TW#2, TW#3, and TW#4) are existing long-term designated monitoring wells constructed by M3 specifically for monitoring. One additional non-producing well proposed for monitoring is SVR#9; an existing well drilled on the property prior to the time it was purchased by M3. Two producing wells for water right No. 63-32573 are currently in existence: SVR#7 and Kling Irrigation wells. These supply wells and all other supply wells to be constructed and/or used under water right No. 63-32573, shall be equipped for monitoring water levels and water production volume as detailed below.

M3 shall grant IDWR reasonable access to these wells for purposes of monitoring and analyzing ground water. If M3 constructs an additional monitoring well on its property, such well shall be subject to monitoring and reporting requirements in this Monitoring Plan.

MONITORING RESPONSIBILITY

M3, as the current water right holder, has the primary responsibility for its ground water monitoring and reporting obligations to IDWR. Currently, M3 has charged Ed Squires of HLI with operating its monitoring network and to interpret and report its findings[2]. HLI can be contacted at:

Hydro Logic, Inc.
1002 W. Franklin Street
Boise, Idaho 83702
(208) 342-8369 office
ed@hydrologicinc.net e-mail

MONITORING INSTRUMENTS AND EQUIPMENT

All ground water level measurements will be obtained from a combination of electronic pressure-transducer/digital data-loggers calibrated to, and verified with, periodic manual measurements using chalked-steel tapes and non-stretch electric well sounders. The digital water level measurements[3] are taken with *Solinst Gold Levelogger*® (or equivalent) non-vented data-loggers suspended within dedicated monitoring tubes using stainless steel and/or Kevlar® braided cable. A digital barometric data-logger, such as a *Solinst Barologger*® (or equivalent), installed inside of a well located on M3 property, will be used to record changing atmospheric pressure and to compensate the pressure readings of the unvented data loggers by subtracting the component of water level fluctuations caused solely by changes in barometric pressure. Manual

[2] Hydro Logic, Inc. is currently contracted to conduct M3's monitoring but this function shall be accomplished by whatever consultant is hired by M3, by M3 itself, or by M3's successors.

[3] The pressure-transducer/data-logger measures the weight of the water column over the instrument (plus barometric pressure). The weight of the water column is converted to feet of water over the pressure-transducer by the software of the instrument. To convert these pressures to depth-to-water, the thickness of the water column over the transducer must first be subtracted. The hand-measured depth-to-water is then added to the corresponding data-point and used to calibrate the digital data.

water level measurements, using chalked-steel tapes, such as *Lufkin*® brand spring steel tapes, and/or non-stretch electric water level tapes, such as manufactured by *Testwell Instruments*® will be used to convert the water level pressures to depth-to-water measurements. All hand measurements will be recorded and reported to 0.01 foot.

MEASUREMENT INTERVALS

All electronic data loggers will measure and record water levels at 12-hour intervals.[4] Manual on-site measurements will be taken at a minimum of six times per year: a minimum of three during the seasonal high water-level period (January through early March) and a minimum of three during the seasonal low water-level period (September through October).

WATER LEVEL PROCESSING AND ANALYSIS

Each data logger will be removed from the well and connected to a portable computer (PC) for data uploading. The data from the digital instrument (time and pressure) will be transferred to the PC, brought back to the office and then processed using *MS Excel*®. Raw data logger readings first will be converted to pressure above the data logger by subtracting the simultaneously-measured atmospheric pressure (*Barologger*® or equivalent) data. All the digitally-measured water levels will be converted to depth-to-water measurements using the manually-measured water level recorded prior to removal of the data logger. The Barometric Efficiency (BE) effects of the aquifer[5] will also be removed using the method outlined in the Ground Water Manual (US Department of the Interior, 1981).

The following equation is the accepted industry standard for aquifer BE corrections and will be used in the interpretive reports:

$$WL_{aquifer} = WL_{well} + [(P_t - P_{ave}) * BE]$$

$WL_{aquifer}$	=	corrected depth-to-water in the aquifer, in feet
WL_{well}	=	depth-to-water in the well calibrated to the manual measurement, in feet
P_{ave}	=	mean atmospheric pressure for the year, in feet of water
P_t	=	atmospheric pressure at the time of each measurement, in feet of water
BE	=	dimensionless scaling factor of Barometric Efficiency (varies 0 to 1.0)

The BE correction factor applied to each well will be calculated from water levels and atmospheric pressure data recorded during periods when no pumping is occurring in the vicinity of the M3 property and seasonal water-level-trend effects are relatively small. The BE correction

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[4] For long-term monitoring, and to ensure longer battery life and manageable data file size, two daily measurements (noon and midnight) are considered optimal.

[5] Barometric Efficiency ("BE") of an aquifer describes how changes in barometric pressure affect water levels (or pressures) in the *aquifer* compared with how the same change in barometric pressure affect water levels in a *well* open to the atmosphere. In an aquifer with a BE of 50 percent, a barometrically-caused change in *well* water level of 1 foot, results in a change in *aquifer* water level (or pressure) of 0.5 feet. Well water level data are corrected for BE to indicate what the water levels in the aquifer would be, were there no well (open to the atmosphere) completed in the aquifer. Calculation of BE is somewhat subjective to the assumptions and interpretation of the analyst. Therefore, it is an interpretation rather than data and the calculation of BE will be included in the interpretive Monitoring Reports of this monitoring plan.

factor used in interpretive reports will be based on the best available data from the monitoring. If better data become available and a better BE correction factor becomes available, then the improved value and its derivation shall be discussed in the monitoring interpretive report ("Monitoring Report" described in "Interpretation and Reporting" section). The raw data to be processed and analyzed will be submitted to IDWR twice per year as described below in the Interpretation and Reporting section of this report.

Individual well head equipment and measurement protocols are listed, by well, in the tables below. Photos of the six wellheads and reference measurement point distances above ground level are shown in Figure 3.

WELL HEAD CONFIGURATIONS AND FIELD-MONITORING PROTOCOL

1. **Well TW #1 - Zone 3** (Figure 4).

    a. Flow-Meter:
        i. This is a dedicated monitoring well and will not be pumped except for short-term, low-volume water sampling purposes.

    b. Monitoring Tube Well:
        i. A designated 2-inch diameter, schedule 80 PVC plastic monitoring tube well is installed within the steel wellhead enclosure.
        ii. The monitoring tube well is open to the PGSA through a 0.020-inch cut slot well screen installed over the depth interval 395-to-425 feet below ground level (bgl).
        iii. The well screen is enveloped with a graded (#8-#16) sand filter over the interval 305-to-425 feet bgl.
        iv. The monitoring tube is completed in the upper PGSA.
        v. The borehole of TW #1 is sealed both above and below Zone 3 with pressure-grouted, high-solids, bentonite grout.
        vi. TW #1 is protected by a locking, bullet resistant, steel well head enclosure.

    c. Digital Data Acquisition:
        i. A Model # 3001 LT F65 "Levelogger" ® data-logger/pressure-transducer, produced by Solinst Canada, or equivalent, will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
        ii. The instrument will record a combination of pressure of water over the transducer and atmospheric pressure along with time of measurement. Measurement accuracy of the instrument will be 0.05 percent of full scale (65 feet), or about 0.03 feet.
        iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

d. Measuring Datum:
   i. Measuring point is the top of the steel well head enclosure which is 3.2 feet above ground level (Figure 3).
   ii. The surveyed (survey-grade GPS) measuring point datum is 2,606.39 feet above mean sea level.

e. Barometric Efficiency:
   i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
   ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure will be opened and any tampering or damage to the casing noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape will be sterilized in a chlorine bleach solution.
   iii. The depth-to-water will be measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the wetted chalk at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement will be recorded.
   iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.
   v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable, and cap to the 2-inch PVC monitoring tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC[6].
   vi. The data-logger is connected to a portable PC. Using the appropriate software and peripherals, the data from the data logger are transferred to the PC.
   vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.

[6] In the event vented pressure-transducer/data-loggers are used for monitoring, the instruments would not have to be removed from the well. Rather, the instruments could be downloaded directly to the PC via the vent/data cable at the well head.

viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.
ix. The data logger is returned to the monitoring tube well and the depth-to-water re-measured as per step iii, above.
x. The steel well head security enclosure is closed, locked, and the lock closure double-checked.

2. **Well TW #1 - Zone 5** (Figure 4).

a. Flow-Meter:
i. This is a dedicated monitoring well and will not be pumped except for short-term, low-volume water sampling purposes.

b. Monitoring Tube Well:
i. A designated 2-inch diameter, schedule 80 PVC plastic monitoring tube well is installed within the steel wellhead enclosure.
ii. The monitoring tube well is open to the alluvial sand aquifer overlying the PGSA through a 0.020-inch cut slot well screen installed over the depth interval 97-to-137 feet below ground level (bgl).
iii. The well screen is enveloped with a graded (#8-#16) sand filter over the interval 67-to-144 feet bgl.
iv. The monitoring tube well is completed into the alluvial sand aquifer overlying the PGSA.
v. The borehole of TW #1 is sealed both above and below Zone 5 with pressure-grouted, high-solids, bentonite grout.
vi. TW #1 is protected by a locking, bullet resistant, steel well head enclosure.

c. Digital Data Acquisition:
i. A Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure-transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
ii. This instrument records a combination of pressure of water over the transducer and atmospheric pressure along with the time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

d. Measuring Datum:
i. Measuring point is the top of the steel well head enclosure which is 3.2 feet above ground level (Figure 3).
ii. The surveyed (survey-grade GPS) measuring point datum is 2,606.39 feet above mean sea level.

e. Barometric Efficiency:
   i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
   ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure will be opened and any tampering or damage to the casing noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape will be sterilized in a chlorine bleach solution.
   iii. The depth-to-water will be measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement will be recorded.
   iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.
   v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable, and cap to the 2-inch PVC monitoring tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.
   vi. The data-logger is connected to a portable PC. Using the appropriate software and peripherals, the data from the data logger are transferred to the PC.
   vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.
   viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.
   ix. The data logger is returned to the monitoring tube and the depth-to-water re-measured as per step iii, above.
   x. The steel well head security enclosure is closed, locked, and the lock closure double-checked.

3. **Well TW #2 - Zone 1** (Figure 5).

   a. Flow-Meter:
      i. This is a dedicated monitoring well and will not be pumped except for short-term, low-volume water sampling purposes.

   b. Monitoring Tube Well:
      i. A designated 2-inch diameter, schedule 80 PVC plastic monitoring tube well is installed within the steel wellhead enclosure.
      ii. The monitoring tube well is open to the PGSA through a 0.020-inch cut slot well screen installed over the depth interval 270-to-320 feet bgl.
      iii. The well screen is enveloped with a graded (#6-#12) sand filter over the interval 259-to-334 feet bgl.
      iv. The monitoring tube is completed in the lower PGSA.
      v. The borehole of TW #2 is sealed both above and below Zone 1 with pressure-grouted, high-solids, bentonite grout.
      vi. TW #2 is protected by a locking, bullet resistant, steel well head enclosure.

   c. Digital Data Acquisition:
      i. A Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure-transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
      ii. This instrument records a combination of pressure of water over the transducer and atmospheric pressure along with time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
      iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

   d. Measuring Datum:
      i. Measuring point is the top of the steel well head enclosure which is 3.2 feet above ground level (Figure 3).
      ii. The surveyed (survey-grade GPS) measuring point datum is 2,766.01 feet above mean sea level.

   e. Barometric Efficiency:
      i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
      ii. The annual mean of the recorded fluctuations of the in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure is opened and any tampering or damage to the casing is noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape is sterilized in a chlorine bleach solution.
   iii. The depth-to-water is measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement are recorded.
   iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.
   v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable and cap to the 2-inch PVC monitoring tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.
   vi. The data-logger is connected to a portable PC. Using the appropriate software and peripherals, the data from the data logger are transferred to the PC.
   vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.
   viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.
   ix. The data logger is returned to the monitoring tube and the depth-to-water re-measured as per step iii, above.
   x. The steel well head security enclosure is closed, locked, and the lock double-checked.

4. **Well TW #3 - Zone 4** (Figure 6).

   a. Flow-Meter:
      i. This is a dedicated monitoring well and will not be pumped except for short-term, low-volume water sampling purposes.

   b. Monitoring Tube Well:
      i. A designated 2-inch diameter, schedule 80 PVC plastic monitoring tube well is installed within the steel wellhead enclosure.

ii. The monitoring tube well is open to the PGSA through a 0.020-inch cut slot well screen installed over the depth interval 334-to-354 feet bgl.
iii. The well screen is enveloped with a graded (#8-#16) sand filter over the interval 303-to-355 feet bgl.
iv. The monitoring tube well is completed in the upper PGSA.
v. The borehole of TW #3 is sealed both above and below Zone 4 with pressure-grouted, high-solids, bentonite grout.
vi. TW #3 is protected by a locking, bullet resistant, steel well head enclosure.

c. Digital Data Acquisition:
   i. A Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure-transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or Kevlar® cable.
   ii. This instrument records a combination of pressure of water over the transducer and atmospheric pressure along with the time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
   iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

d. Measuring Datum:
   i. Measuring point is the top of the steel well head enclosure which is 3.5 feet above ground level (Figure 3).
   ii. The surveyed (survey-grade GPS) measuring point datum is 2,786.63 feet above mean sea level.

e. Barometric Efficiency:
   i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
   ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure is opened and any tampering or damage to the casing is noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape is sterilized in a chlorine bleach solution.
   iii. The depth-to-water is measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-

water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement are recorded.

iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.

v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable and cap to the 2-inch PVC monitoring tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.

vi. The data-logger is connected to a portable PC. Using the appropriate software, the data from the data logger are transferred to the PC.

vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.

viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.

ix. The data logger is returned to the monitoring tube and the depth-to-water re-measured as per step iii, above.

x. The steel well head security enclosure is closed and locked with the lock double-checked.

5. **Well TW #4 - Zone 2** (Figure 7).

a. Flow-Meter:

i. This is a dedicated monitoring well and will not be pumped except for short-term, low-volume water sampling purposes.

b. Monitoring Tube Well:

i. A designated 2-inch diameter, schedule 80 PVC plastic monitoring tube well is installed within the steel wellhead enclosure.

ii. The monitoring tube well is open to the PGSA through a 0.020-inch cut slot well screen installed over the depth interval 326-to-556 feet bgl.

iii. The well screen is enveloped with a graded (#8-#16) sand filter over the interval 298-to-564 feet bgl.

iv. The monitoring tube well is fully penetrating and open to the full thickness of the PGSA.

v. The borehole of TW #4 is sealed both above and below Zone 2 with pressure-grouted, high-solids, bentonite grout.

vi. TW #4 is protected by a locking, bullet resistant, steel well head enclosure.

c. Digital Data Acquisition:
   i. A Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure-transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
   ii. This instrument records pressure of water over the transducer and time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
   iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

d. Measuring Datum:
   i. Measuring point is the top of the steel well head enclosure which is 4.15 feet above ground level (Figure 3).
   ii. The measuring point datum is about 2,675 (+/- 15 feet) (Google Earth) feet above mean sea level.

e. Barometric Efficiency:
   i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
   ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure is opened and any tampering or damage to the casing is noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape is sterilized in a chlorine bleach solution.
   iii. The depth-to-water is measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "removed" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement are recorded.

iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.
v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable and cap to the 2-inch PVC monitoring tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.
vi. The data-logger is connected to a portable PC. Using the appropriate software, the data from the data logger are transferred to the PC.
vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.
viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.
ix. The data logger is returned to the monitoring tube well and the depth-to-water re-measured as per step iii, above.
x. The steel well head security enclosure is closed and locked.

6. **Well TW #4 - Zone 3** (Figure 7).

a. Flow-Meter:
   i. This is a dedicated monitoring well and will not be pumped except for short-term, low-volume water sampling purposes.

b. Monitoring Tube Well:
   i. A designated 2-inch diameter, schedule 80 PVC plastic monitoring tube well is installed within the steel wellhead enclosure.
   ii. The monitoring tube well is open to the unnamed alluvial sand aquifer through a 0.020-inch cut slot well screen installed over the depth interval 181-to-201 feet bgl.
   iii. The well screen is enveloped with a graded (#8-#16) sand filter over the interval 166-to-211 feet bgl.
   iv. The monitoring tube is fully penetrating and open to the full thickness of the unnamed alluvial sand aquifer.
   v. The borehole of TW #4 is sealed both above and below Zone 3 with pressure-grouted, high-solids, bentonite grout.
   vi. TW #4 is protected by a locking, bullet resistant, steel well head enclosure.

c. Digital Data Acquisition:
   i. A Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure-transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
   ii. This instrument records pressure of water over the transducer along with the time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
   iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in

the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

d. Measuring Datum:
   i. Measuring point is the top of the steel well head enclosure which is 4.15 feet above ground level (Figure 3).
   ii. The measuring point datum is about 2,675 (+/- 15 feet) (Google Earth) feet above mean sea level.

e. Barometric Efficiency:
   i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
   ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure is opened and any tampering or damage to the casing is noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape is sterilized in a chlorine bleach solution.
   iii. The depth-to-water is measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement are recorded.
   iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.
   v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable and cap to the 2-inch PVC monitoring tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.
   vi. The data-logger is connected to a portable PC. Using the appropriate software, the data from the data logger are transferred to the PC.
   vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.
   viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.

ix. The data logger is returned to the monitoring tube and the depth-to-water re-measured as per step iii, above.
x. The steel well head security enclosure is closed and locked.

7. **Well SVR #9** (Figure 8).

a. Flow-Meter:
i. This is a dedicated monitoring well and will not be pumped except for the possibility of periodic short-term, low-volume water sampling purposes.

b. Monitoring Tube:
i. The well has no designated monitoring tube within the 8-inch diameter steel well casing.
ii. The well is open to the PGSA through a wire-wound, stainless steel well screen with 0.030-inch openings over the interval 235-to-263 feet bgl.
iii. The well screen is enveloped within a graded (#8-#12) sand filter.
iv. The well is completed in the middle portion of the Pierce Gulch Sand but near the top of the PGSA (the saturated portion of the sand).
v. The borehole of SVR #9 is sealed both above and below the well screen and filter-pack portion of the borehole with pressure-grouted, high-solids, bentonite grout.
vi. SVR #9 is protected by a locking, bullet resistant, steel well head enclosure.

c. Digital Data Acquisition:
i. A Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure-transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
ii. This instrument records a combination of pressure of water and atmospheric pressures over the transducer along with the time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

d. Measuring Datum:
i. Measuring point is the inside edge of the open steel well head security enclosure which is 1.8 feet above ground level (Figure 3).
ii. The surveyed (survey-grade GPS) measuring point datum is 2,753.06 feet above mean sea level.

e. Barometric Efficiency:
i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.

ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

f. Monitoring Protocol:

i. With each site visit, the locking steel well head enclosure is opened and any tampering or damage to the casing is noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).

ii. The lower 5 feet of the clean chalked-steel water level tape is sterilized in a chlorine bleach solution.

iii. The depth-to-water is measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement are recorded.

iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.

v. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger and cable) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.

vi. The data-logger is connected to a portable PC. Using the appropriate software and peripherals, the data from the data logger are transferred to the PC.

vii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.

viii. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.

ix. The data logger is returned to depth inside of the casing and the depth-to-water re-measured as per step iii, above.

x. The steel well head security enclosure is closed, locked, and the lock double-checked.

8. **Well SVR #7** (Figure 9).

a. Flow-Meter:

i. This well has not yet been connected to any water system and no well head plumbing, controls, electrical power, or distribution water system has been constructed.

ii. All M3 water supply wells will be equipped with high-quality electromagnetic induction flow-meters manufactured by national suppliers prior to being brought on line.
iii. All flow-meters will either be new, factory-calibrated meters or, for used and/or aging meters, the meter will be calibrated every five years in the installed state. The rated flow range of the installed pumping plant and will indicate instantaneous flow and total volume pumped.

b. Measurements (when SVR #7 is on line and actively pumping):
   i. Water system personnel from M3 or its successor will visit all pumping wells at least one time per week.
   ii. Flow-meter totalizer readings, instantaneous flow rate readings, depth to water, and date and time of measurement will be manually recorded on a pump-house chart.

c. Monitoring Tubes:
   i. Two designated 1-inch diameter, plastic monitoring tubes will be installed with and attached to, the pump column with the lower end just above the pump bowl assembly.
   ii. The well is open to the PGSA through combined intake section consisting of a louvered "shutter screen" open to the aquifer from 279-to-339 feet below ground level and a cut-slot well screen with $^{1}/_{8}$-inch openings from 339-to-349 feet bgl.
   iii. The well screen is enveloped inside of a $^{5}/_{16}$-minus, crushed and washed basalt rock-chip-gravel pack over the interval 242-to-380 feet bgl.
   iv. The well is completed in the middle section of the PGSA.
   v. The borehole of SVR #7 is sealed both above and below the screened section with pressure-grouted, high-solids, bentonite grout.
   vi. SVR #7 is currently protected by a locking, bullet resistant, steel well head enclosure. When a distribution system is constructed, a well house may be built and the existing steel well head modified.
   vii. Any changes in grade and/or well head elevation will be carefully documented to maintain a consistent measuring datum.

d. Digital Data Acquisition:
   i. As long as this well is used solely for monitoring purposes, a Model # 3001 LT F65 "*Levelogger*" ® data-logger/pressure- transducer, produced by Solinst Canada (or equivalent), will be suspended within the well on a $^{1}/_{16}$-inch diameter braided stainless steel or *Kevlar*® cable.
   ii. This instrument records a combination of pressure of water and atmospheric pressure over the transducer along with the time of measurement. Measurement accuracy of the instrument is 0.05 percent of full scale (65 feet), or about 0.03 feet.
   iii. The serial number of the installed instrument will be recorded on the raw data files. If a replacement data logger is required, a description of the new data logger, its serial number, its range and accuracy will be noted in the raw data files. An explanation for any instrument replacements will be included in the next interpretative report prepared after replacement.

iv. When SVR#7 is equipped and used as a water supply well, it will be similarly equipped with the same monitoring devices used to monitor all other production wells depending on the equipment specified for the water system.

e. Measuring Datum:
   i. Measuring point is inside upper edge of the open steel well head enclosure which is currently 5.5 feet above the ground level (Figure 3).
   ii. The surveyed (survey-grade GPS) measuring point datum is 2,709.84 feet above mean sea level.

f. Barometric Efficiency:
   i. The barometric efficiency (BE) of this well will be calculated from the best available data as described above and reported in the interpretive reports.
   ii. The annual mean of the recorded fluctuations of the variations in atmospheric pressure, as measured by the M3 site barometer, will be calculated from the monitored data.

g. Monitoring Protocol:
   i. With each site visit, the locking steel well head enclosure is opened and any tampering or damage to the casing is noted along with weather conditions (temperature, precipitation or any other factors that might affect data reading or reporting).
   ii. The lower 5 feet of the clean chalked-steel water level tape is sterilized in a chlorine bleach solution.
   iii. The depth-to-water is measured to the nearest 0.01 ft using a hand-held chalked-steel tape measure (with readings to 0.01 ft). A chalk block is rubbed on both sides of the lower five to ten feet of the tape. The depth-to-water is measured to the inside lip of the open well head enclosure (Figure 3). The tape is lowered to a depth that is about 3 feet more than the last recorded water level. The length of the tape relative to the measuring point is recorded as the "held" portion of the tape. The tape is withdrawn from the well and the length of the chalk wetted at the bottom of the tape is recorded as the "cut" portion of the tape. The total depth-to-water from the measuring point is calculated by subtracting the value recorded as "cut" from the value recorded as "held." The total depth-to-water from the measuring point and the time of measurement are recorded.
   iv. The depth-to-water measurement is repeated one or more times to verify its accuracy and repeatability.
   v. When SVR#7 well is brought into production, a chalked steel tape may not be an accurate means of measuring pumping and non-pumping water levels. In this case, and as will be the case with all pumping production wells, a non-stretch electric well sounding tape (such as manufactured by *Testwell Instruments*® shall be used to measure water levels to that same accuracy as specified for chalked steel tape measurements.
   vi. The data logger is then removed with the cable carefully wound up and the entire assembly (data logger, cable and cap to the 2-inch PVC monitoring

tube) is placed on a clean plastic tarp to maintain cleanliness of the logger assembly while the data is uploaded to the PC.

vii. The data-logger is connected to a portable PC. Using the appropriate software and peripherals, the data from the data logger are transferred to the PC.

viii. The data logger is reset (memory cleared) if and only if a previous upload of data has been duplicated and therefore verified.

ix. The battery life of the data-loggers will be taken into account and replaced before the expected lifetime of the instrument's to avoid problems.

x. The data logger is returned to the monitoring tube and the depth-to-water re-measured as per step iii, above.

xi. The steel well head security enclosure is closed and locked with the lock double-checked.

MONITORING EQUIPMENT, INSTRUMENTS, AND CALIBRATION

1) Measuring Instruments.

a. Water-level sounding tapes.

i. *Steel tapes.* Spring-steel tapes, such as manufactured by *Lufkin*®, specifically constructed for chalked water level measurements, incremented in one-foot intervals with the lowermost 20-feet of the tape embossed in $1/100^{th}$ of a foot increments will be used to measure water levels. Recognizing that steel tapes stretch also (that is why Lufkin supplies a ruler with each steel tape), we did not compensate for these very small changes which we assumed to be constant once the tape is extended.

ii. *Monitoring tubes:* All wells will be equipped with designated monitoring tubes for measuring water levels without becoming entangled with the pump column or submersible power cables and to avoid "casing suck" whereby the tape can temporarily stick to the wetted steel casing.

iii. *Electric Water Level Sounding Tapes:* For pumping wells, and for any well unable to be measured by the chalked steel tape method, non-stretch electric water level sounders such as manufactured by *Testwell Instruments*® will be used to measure water levels to 0.01/ft.

b. Electronic data loggers:

i. Electronic data loggers installed in the designated (non-pumping) test wells require no periodic calibration or maintenance. If a data logger appears to be failing, it is returned to the manufacturer for repair, data recovery and/or replacement.

ii. All water supply production wells will be equipped with digital electronic equipment to measure and record system pressure, water-level, instantaneous flow, pumped volume, etc. as all high-quality municipal systems are required to do. These are generally standardized monitoring packages that are identical for each well and which report back to a centralized data recording system. The exact manufacturer and/or type of remote sensing and data-transmission system that will be used is not

currently designed or known but shall be from a nationally recognized manufacturer with a proven track record.

iii. All pressure-transducer/data-logging instruments will be housed inside of designated monitoring tubes within the well. Tube of sufficient rigidity and diameter will be used to ensure continued insertion and removal of the instruments to/from the well.

2) Permanently Installed Flow Meters.

a. Flow-Meter Type.

i. All M3 water production wells will be equipped with high-quality electromagnetic induction flow-meters manufactured by national suppliers prior to being brought on line. The precise equipment will be chosen according to cost, performance, and reliability.

b. Flow Range

i. All flow-meters will be within the calibrated and rated flow range of the installed pumping plant and will indicate instantaneous flow and total volume pumped.

c. Flow Meter Calibration.

i. All new high-quality flow-meters are factory-calibrated within close tolerances. Periodically, at approximately five-year intervals, flow-meter calibrations will be checked by means of pumped filling of tanks of known volume, by pumping tests using a circular orifice weir, or using another calibrated flow-meter.

ADDITIONAL WATER LEVEL DATA

After a new Supply Well has been constructed, it will be pump-tested following protocols established by IDEQ for Public Drinking Water Systems. The data from these tests will be submitted in electronic format to IDWR as part of the raw monitoring data collected for that year. These data will be analyzed, interpreted, and reported by the groundwater consultant preparing the interpretive monitoring reports (described below).

INTERPRETATION AND REPORTING

Semi-Annual Data Submittals: The raw electronic and hand-measured water level data, including data corrected for fluctuations in atmospheric pressure, for each well will be submitted to IDWR twice per year – once on or before December 31st (for data collected from June 1st-to-November 30th) and once on or before June 30th (for data collected from December 1st-to May 31st).[7] These data will be submitted to IDWR on compact disc in MS Excel®, non-encrypted format with column headings included at the beginning of the file, posted above each recorded data type. For pumping wells, the raw data submittal will include field and digitally-acquired

[7] The June 1-to-November 30 and December 1-to-May 31) monitoring periods are intended to ensure that the highest and lowest water levels of the year are measured and recorded. (The lowest levels have been shown to occur in September-October, while the highest levels occur during January-March.)

pumping and non-pumping water levels and pump house production data for all M3 water supply wells.

Annual Monitoring Report: On or before July 31 each year after pumping commences under the Permit, M3 shall prepare and file with IDWR an interpretive monitoring report by a professional hydrogeologist ("Monitoring Report") which shall include:

1) The amount, timing, and location of ground water production under the Permit.
2) Plotted hydrographs for each monitored well using BE-corrected data showing seasonal variations, water-level trends, and pumping effects, along with a discussion of water level trends, and notable changes in water levels, the high and low water level measurements recorded, and an explanation of any other factors that may be relative to the water levels in the Pierce Gulch Sand Aquifer (PGSA).
3) Drawdown calculations determined by comparison of the average water level at each monitoring well for each month during the most recent annual period with the average water level for the same month during the previous annual monitoring period(s) or similar information as may be required by the Department.
4) Other information describing hydrologic impacts of the water right holder's ground water pumping on senior surface and ground water users (to the extent data is available) and a determination of the cause(s) of any observed water level declines.
5) A discussion of the effects of the water right holder's ground water pumping on the shallow aquifer.
6) Any available updated information concerning projections for the project's impacts on the aquifer at full build out.

The monitoring and reporting requirements set forth herein shall remain in place throughout the Permit's 30 year planning horizon unless terminated sooner by order of the Department. If the Department determines that annual Monitoring Reports are not necessary to effectively administer water rights or evaluate impacts on the resource by the water right holder's pumping, the Department can reduce the frequency of the Monitoring Reports to once every five years or such other frequency the Department deems necessary.

M3 Eagle, LLC's Proposed Long-Term Ground Water Level Monitoring Network

October 15, 2010

TW #3

TW #2

TW #4

TW #1

SVR #7

SVR #9

APPROXIMATE M3-EAGLE PROPERTY BOUNDARY

APPROXIMATE M3-EAGLE PROPERTY BOUNDARY

SW SW

NOT A PART

NW NE

NE SW

SE NE

SE SE

SW NE

one mile

N

Willow Creek Road

Big Gulch

Little Gulch

Union Ditch

Farmers Ditch

Linder Rd.

Park Ln.

Ballantyne Rd.

Eagle Rd.

Highway 16

T5N R1W

T5N R1E

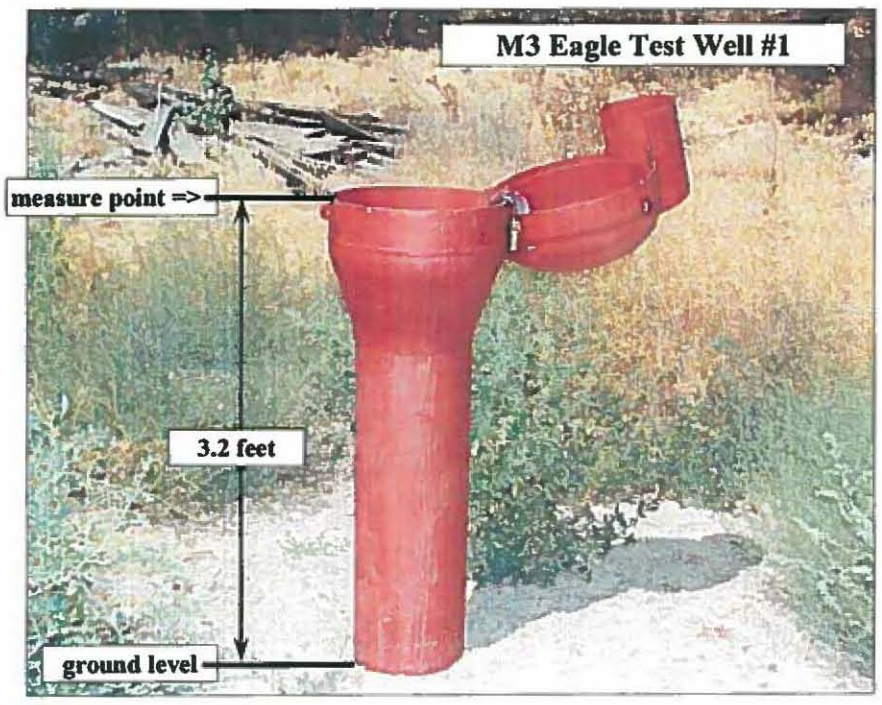
Hydro Logic, Inc.
Boise, Idaho
U.S. Geological Survey
7.5-min. series quads
scale 1:24000

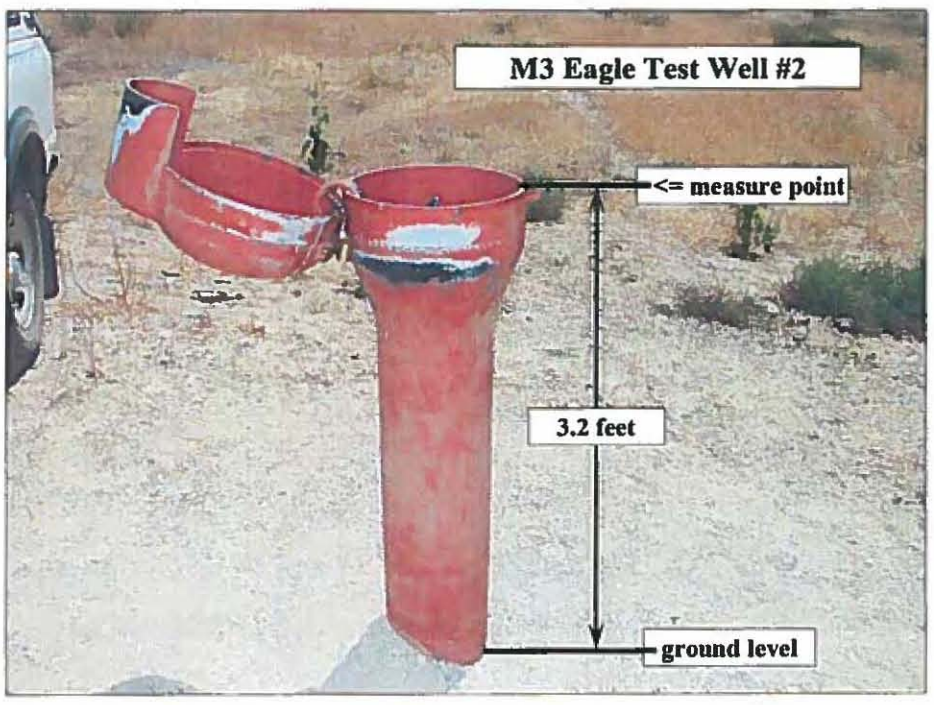
Figure 1.

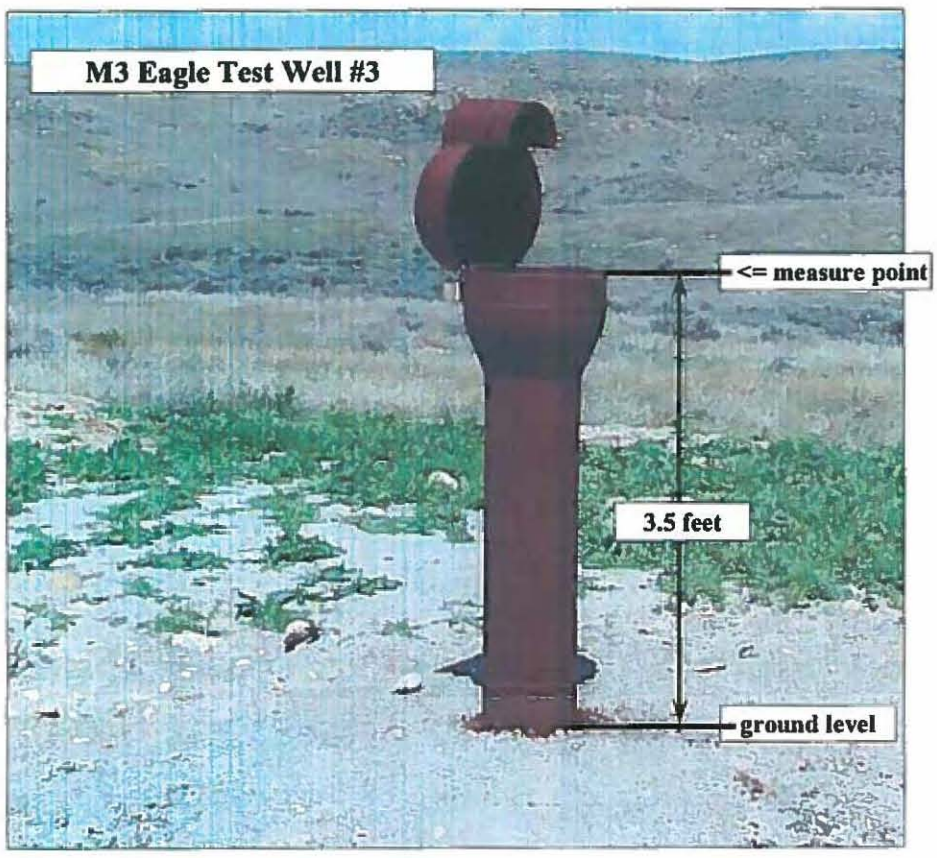
M3 Eagle, LLC's Proposed Long-Term Ground Water Level Monitoring Network
October 15, 2010

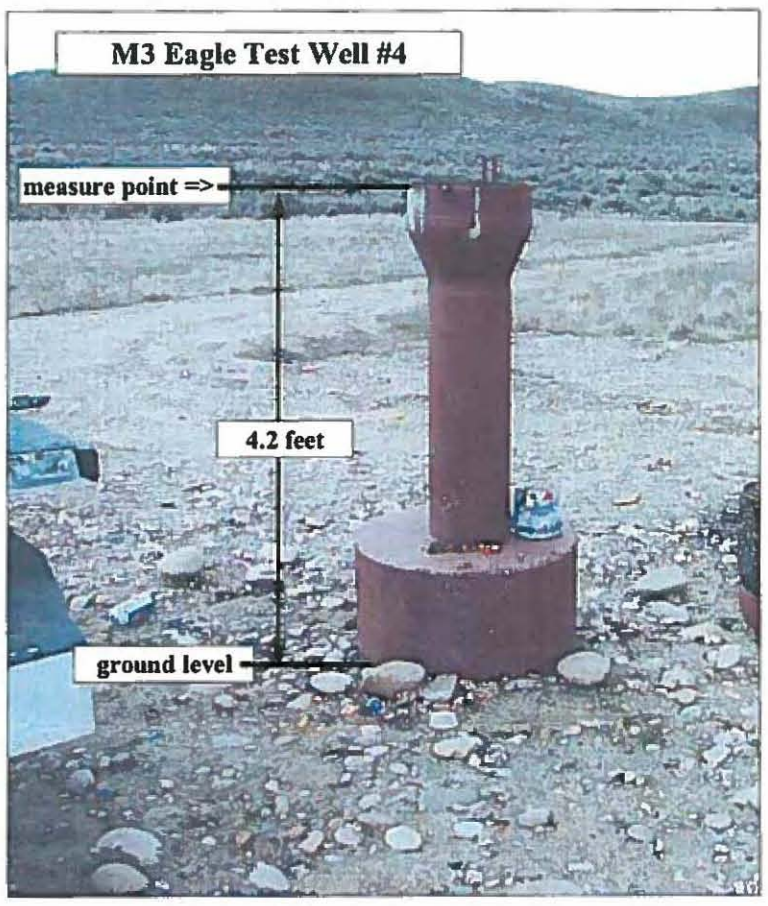
TW #1
TW #2
TW #3
TW #4
SVR #7
SVR #9
NOT A PART
SW SW
NW NE
NE SW
SE NE
SE SE
SW NE
one mile
Highway 16
Big Gulch
Willow Creek Road
Little Gulch
Farmer's Union Canal
Butler Rd.
Black Ln.
Ballantyne Rd.
N. Eagle Rd.
APPROXIMATE M3-EAGLE PROPERTY BOUNDARY
APPROXIMATE M3-EAGLE PROPERTY BOUNDARY
N
T5N R1W
T5N R1E
Hydro Logic, Inc.
Boise, Idaho
Google Earth Imagery
scale 1:24000

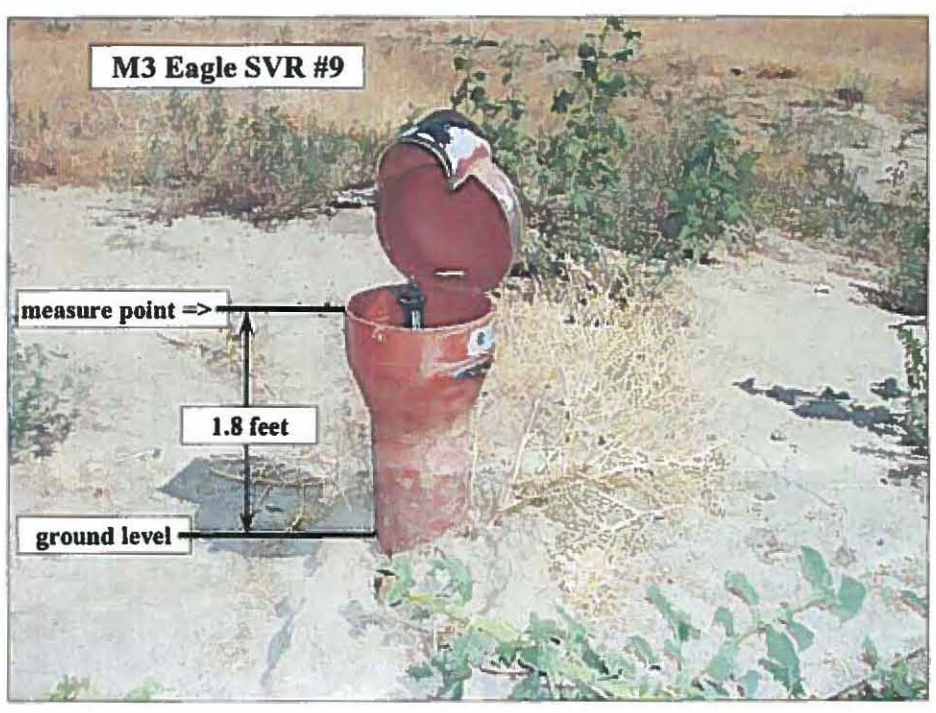
Figure 2.











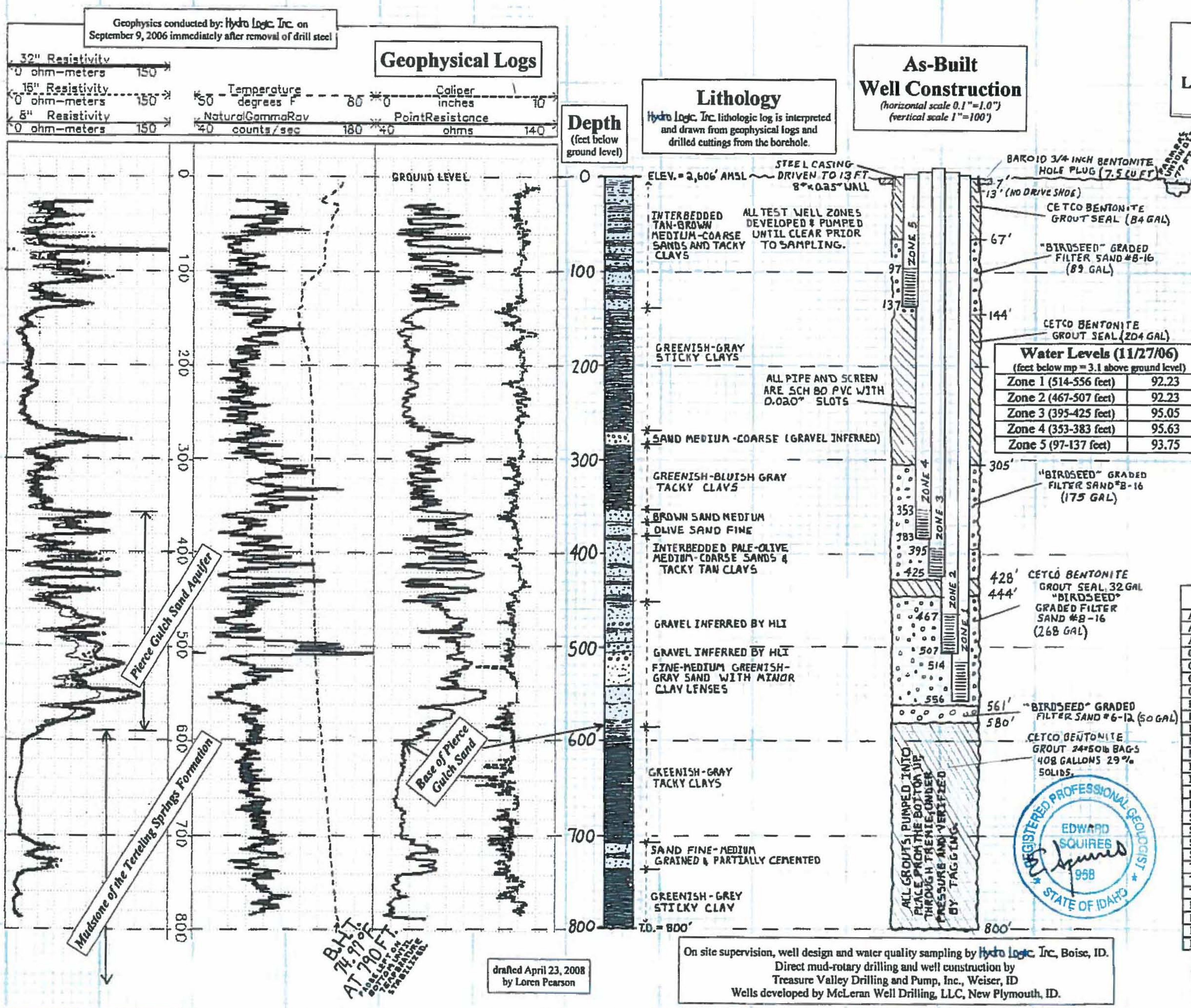
Hydro Logic, Inc.
Boise, Idaho

Figure 3.

Figure 3. M3 Eagle Monitoring Well Measure Points

M3 Eagle - Test Well #1

T. 5 N., R. 1 W., Section 28, SE¼, SE¼
Latitude 43° 44' 12.37" Longitude 116° 27' 26.86"
Well completed September 2006



Geophysics conducted by: Hydro Logic Inc. on September 9, 2006 immediately after removal of drill steel
Geophysical Logs
32" Resistivity 0 ohm-meters 150
16" Resistivity 0 ohm-meters 150
8" Resistivity 0 ohm-meters 150
Temperature 50 degrees F 80
NaturalGammaRay 40 counts/sec 180
Caliper 0 inches 10
PointResistance 40 ohms 140
Depth (feet below ground level)
Lithology
Hydro Logic Inc. lithologic log is interpreted and drawn from geophysical logs and drilled cuttings from the borehole.
As-Built Well Construction
(horizontal scale 0.1"=1.0") (vertical scale 1"=100')
GROUND LEVEL
ELEV. = 2,606' AMSL
STEEL CASING DRIVEN TO 13 FT 8"x0.25" WALL
BAROID 3/4 INCH BENTONITE HOLE PLUG (7.5 CU FT)
FARMERS UNION DITCH 77 FT AWAY
13' (NO DRIVE SHOE)
INTERBEDDED TAN-BROWN MEDIUM-COARSE SANDS AND TACKY CLAYS
ALL TEST WELL ZONES DEVELOPED & PUMPED UNTIL CLEAR PRIOR TO SAMPLING.
CETCO BENTONITE GROUT SEAL (84 GAL)
67'
"BIRDSEED" GRADED FILTER SAND #8-16 (89 GAL)
144'
CETCO BENTONITE GROUT SEAL (204 GAL)
GREENISH-GRAY STICKY CLAYS
ALL PIPE AND SCREEN ARE SCH 80 PVC WITH 0.020" SLOTS
SAND MEDIUM-COARSE (GRAVEL INFERRED)
305'
GREENISH-BLUISH GRAY TACKY CLAYS
"BIRDSEED" GRADED FILTER SAND #8-16 (175 GAL)
BROWN SAND MEDIUM
OLIVE SAND FINE
INTERBEDDED PALE-OLIVE MEDIUM-COARSE SANDS & TACKY TAN CLAYS
428' CETCO BENTONITE GROUT SEAL 32 GAL
444' "BIRDSEED" GRADED FILTER SAND #8-16 (268 GAL)
GRAVEL INFERRED BY HLI
GRAVEL INFERRED BY HLI
FINE-MEDIUM GREENISH-GRAY SAND WITH MINOR CLAY LENSES
561' "BIRDSEED" GRADED FILTER SAND #6-12 (50 GAL)
580'
CETCO BENTONITE GROUT 24-50lb BAGS 408 GALLONS 29% SOLIDS.
GREENISH-GRAY TACKY CLAYS
SAND FINE-MEDIUM GRAINED & PARTIALLY CEMENTED
GREENISH-GREY STICKY CLAY
T.D. = 800'
800'
ALL GROUTS PUMPED INTO PLACE FROM THE BOTTOM UP THROUGH TREMIE, UNDER PRESSURE AND VERIFIED BY TAGGING.
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1
Pierce Gulch Sand Aquifer
Base of Pierce Gulch Sand
Mudstone of the Terteling Springs Formation
B.H.T. 74.97°F AT 790 FT.
REGISTERED PROFESSIONAL GEOLOGIST EDWARD SQUIRES 958 STATE OF IDAHO

Water Levels (11/27/06)

(feet below mp = 3.1 above ground level)

Zone 1 (514-556 feet)	92.23
Zone 2 (467-507 feet)	92.23
Zone 3 (395-425 feet)	95.05
Zone 4 (353-383 feet)	95.63
Zone 5 (97-137 feet)	93.75

drafted April 23, 2008
by Loren Pearson

On site supervision, well design and water quality sampling by Hydro Logic Inc, Boise, ID.
Direct mud-rotary drilling and well construction by
Treasure Valley Drilling and Pump, Inc., Weiser, ID
Wells developed by McLeran Well Drilling, LLC, New Plymouth, ID.

Water Chemistry

Analyte (mg/L unless noted)	Zone 1 514-556 feet	Zone 2 467-507 feet
Alkalinity	133.0	125.0
Ammonia as N	0.37	0.06
Arsenic	<0.003	<0.003
Calcium as CaCO3	84.4	85.5
Chloride	3.42	3.22
Conductivity (uS/cm)	302	297.0
Corrosivity	-0.40	-0.44
Fluoride	0.69	0.60
Hardness	111.0	109.0
Iron (dissolved/filtered)	0.23	<0.01
Magnesium	6.50	5.73
Manganese (dissolved)	0.10	0.02
Nitrate as N	<0.10	<0.10
Nitrite as N	<0.01	<0.01
pH (SU)	7.47	7.48
Potassium	2.26	2.21
Silica	31.8	30.7
Sodium	22.1	21.7
Sulfate	17.2	20.7
Sulfide	<0.05	<0.05
Total Dissolved Solids	173 .0	188.0
Total Kjeldahl Nitrogen	0.39	0.13
Total Organic Carbon	<1.0	<1.0
Field Temperature (°F)	67.1	66.0
Field Conductivity (uS)	305	295
Dissolved Oxygen	+1.7	+2.6
Field pH (S.U.)	7.19	7.19

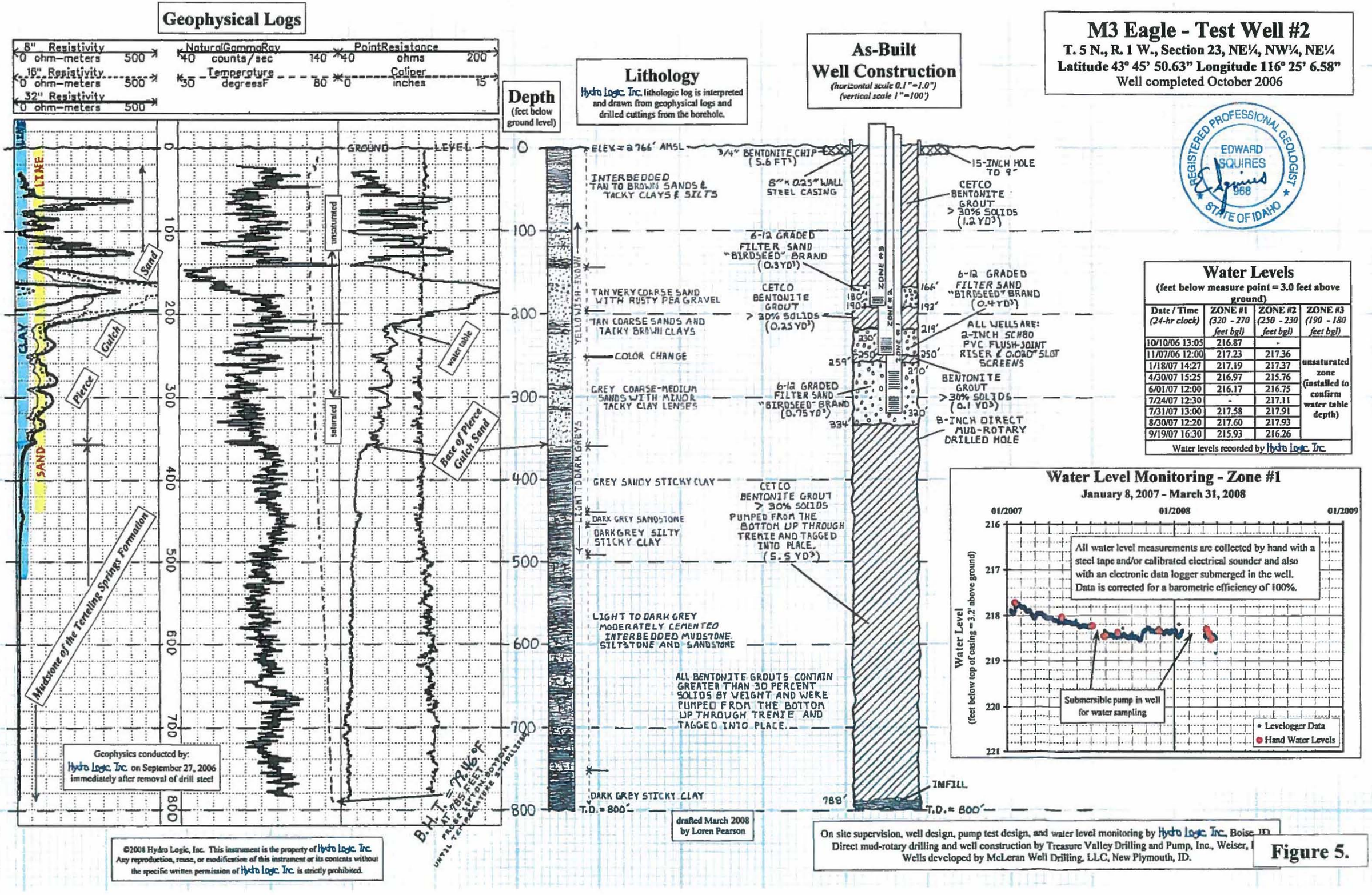
Analyses by Alchem Laboratories, Boise, Idaho.
Zones 1 to 3 sampled 10/09/06. Zones 4 & 5 sampled 10/9/06.
Field measured parameters by Hydro Logic, Inc.

Analyte (mg/L unless noted)	Zone 3 395-425 feet	Zone 4 352-382 feet	Zone 5 98-138 feet
Alkalinity	119.0	114.0	119.0
Ammonia as N	0.04	<0.01	<0.01
Arsenic	<0.003	0.0049	0.0081
Calcium as CaCO3	77.7	81.3	85.9
Chloride	3.57	3.54	4.36
Conductivity (uS/cm)	282.0	285.0	281.0
Corrosivity	-0.50	-0.61	-1.16
Fluoride	0.60	0.50	0.24
Hardness	102.0	105.0	111.0
Iron (dissolved/filtered)	0.01	<0.01	<0.01
Magnesium	5.83	5.85	6.22
Manganese (dissolved)	<0.01	<0.01	<0.01
Nitrate as N	0.30	0.33	2.30
Nitrite as N	<0.01	<0.01	<0.01
pH (SU)	7.84	7.40	6.91
Potassium	2.07	2.10	2.74
Silica	29.5	28.7	38.0
Sodium	21.1	17.9	13.6
Sulfate	21.4	22.3	12.0
Sulfide	<0.05	<0.05	<0.05
Total Dissolved Solids	185.0	203.0	208.0
Total Kjeldahl N	<0.10	<0.10	<0.10
Total Organic Carbon	<1.0	<1.0	<1.0
Field Temperature (°F)	64.7	63.8	57.4
Field Conductivity (uS)	274	268	265
Dissolved Oxygen	+4.9	+2.63	+ 9.51
Field pH (S.U.)	7.27	7.07	6.72

Figure 4.

M3 Eagle - Test Well #2

T. 5 N., R. 1 W., Section 23, NE¼, NW¼, NE¼
Latitude 43° 45' 50.63" Longitude 116° 25' 6.58"
Well completed October 2006



Geophysics conducted by: Hydro Logic, Inc. on September 27, 2006 immediately after removal of drill steel

drafted March 2008 by Loren Pearson

REGISTERED PROFESSIONAL GEOLOGIST
EDWARD SQUIRES
968
STATE OF IDAHO

Water Levels

(feet below measure point = 3.0 feet above ground)

Date / Time (24-hr clock)	ZONE #1 (320 - 270 feet bgl)	ZONE #2 (250 - 230 feet bgl)	ZONE #3 (190 - 180 feet bgl)
10/10/06 13:05	216.87	-	unsaturated zone (installed to confirm water table depth)
11/07/06 12:00	217.23	217.36	
1/18/07 14:27	217.19	217.37	
4/30/07 15:25	216.97	215.76	
6/01/07 12:00	216.17	216.75	
7/24/07 12:30	-	217.11	
7/31/07 13:00	217.58	217.91	
8/30/07 12:20	217.60	217.93	
9/19/07 16:30	215.93	216.26	

Water levels recorded by Hydro Logic, Inc.

Water Level Monitoring - Zone #1

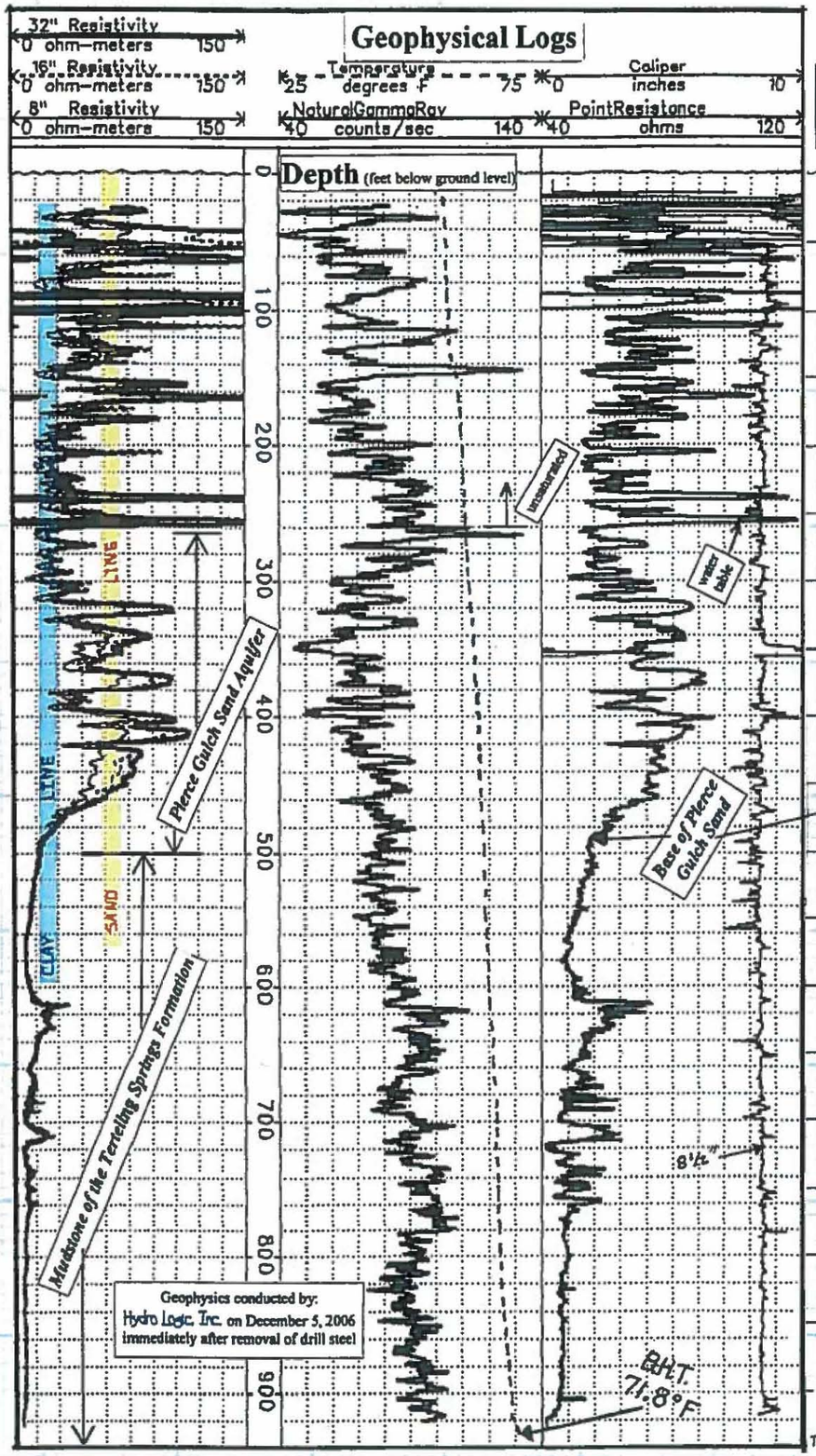
January 8, 2007 - March 31, 2008

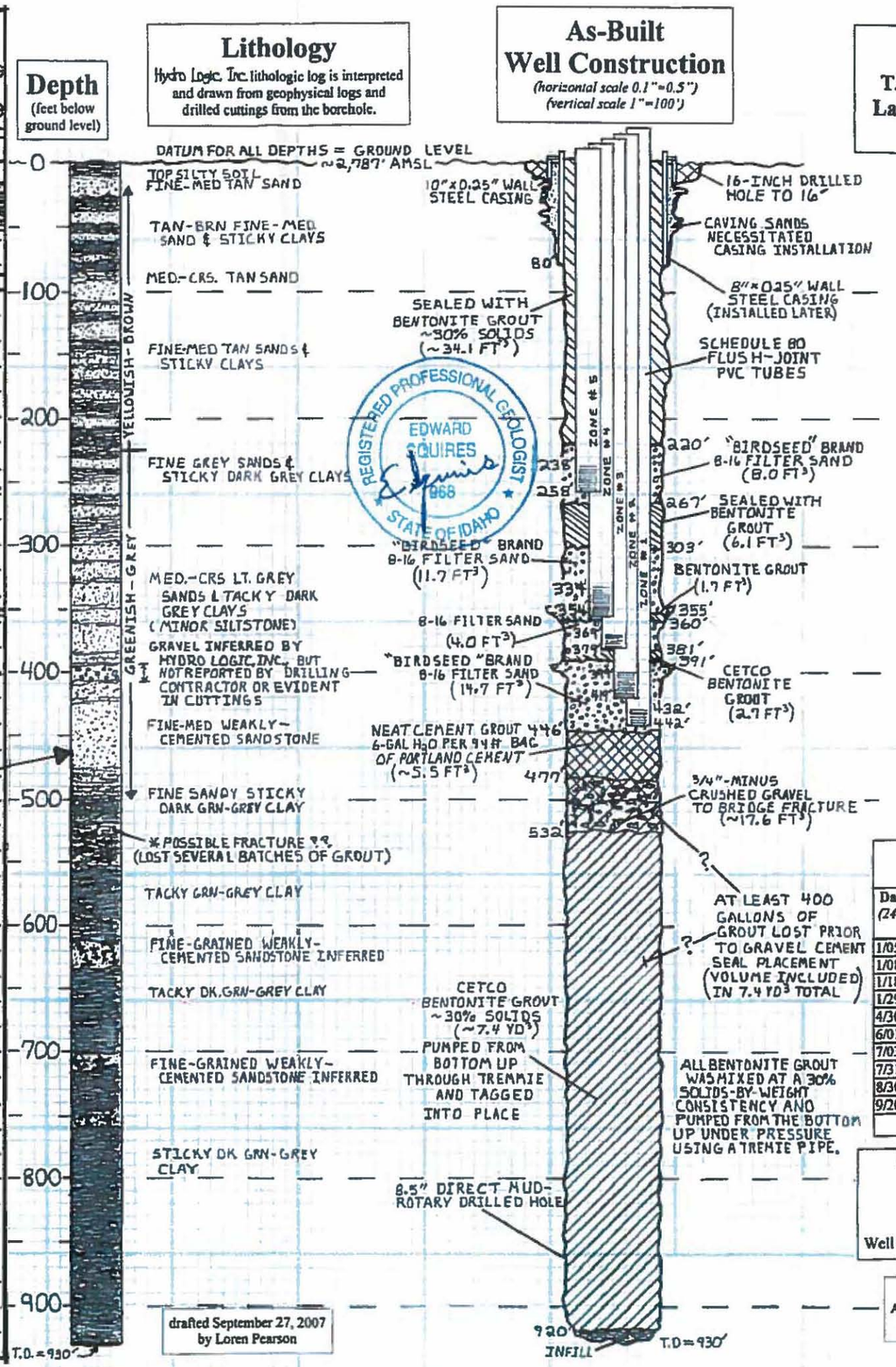
On site supervision, well design, pump test design, and water level monitoring by Hydro Logic, Inc., Boise, ID
Direct mud-rotary drilling and well construction by Treasure Valley Drilling and Pump, Inc., Weiser, I
Wells developed by McLeran Well Drilling, LLC, New Plymouth, ID.

Figure 5.

M3 Eagle - Test Well #3

T. 5 N., R. 1 W., Section 15, SW¼, SW¼, SW¼
Latitude 43°45' 56.44" Longitude 116° 27' 8.35"
Well completed December, 2006





Lithology

Hydro Logic, Inc. lithologic log is interpreted and drawn from geophysical logs and drilled cuttings from the borehole.

DATUM FOR ALL DEPTHS = GROUND LEVEL ~2,787' AMSL

TOP SILTY SOIL / FINE-MED TAN SAND

TAN-BRN FINE-MED SAND & STICKY CLAYS

MED.-CRS. TAN SAND

FINE-MED TAN SANDS & STICKY CLAYS

FINE GREY SANDS & STICKY DARK GREY CLAYS

MED.-CRS LT. GREY SANDS & TACKY DARK GREY CLAYS (MINOR SILTSTONE)

GRAVEL INFERRED BY HYDRO LOGIC, INC., BUT NOT REPORTED BY DRILLING CONTRACTOR OR EVIDENT IN CUTTINGS

FINE-MED WEAKLY-CEMENTED SANDSTONE

FINE SANDY STICKY DARK GRN-GREY CLAY

* POSSIBLE FRACTURE ?? (LOST SEVERAL BATCHES OF GROUT)

TACKY GRN-GREY CLAY

FINE-GRAINED WEAKLY-CEMENTED SANDSTONE INFERRED

TACKY DK.GRN-GREY CLAY

FINE-GRAINED WEAKLY-CEMENTED SANDSTONE INFERRED

STICKY DK GRN-GREY CLAY

drafted September 27, 2007 by Loren Pearson

As-Built Well Construction

(horizontal scale 0.1"=0.5")
(vertical scale 1"=100')

10"x0.25" WALL STEEL CASING

80

SEALED WITH BENTONITE GROUT ~30% SOLIDS (~34.1 FT³)

"BIRDSEED" BRAND 8-16 FILTER SAND (11.7 FT³)

8-16 FILTER SAND (4.0 FT³)

"BIRDSEED" BRAND 8-16 FILTER SAND (14.7 FT³)

NEAT CEMENT GROUT 446 6-GAL H_2O PER 94 #. BAG OF PORTLAND CEMENT (~5.5 FT³)

CETCO BENTONITE GROUT ~30% SOLIDS (~7.4 YD³)

PUMPED FROM BOTTOM UP THROUGH TREMMIE AND TAGGED INTO PLACE

8.5" DIRECT MUD-ROTARY DRILLED HOLE

ZONE #5
ZONE #4
ZONE #3
ZONE #2
ZONE #1

238
258
303
331
355
360
364
379
381
391
432
442
477
532
920
INFILL
T.D.=930'

16-INCH DRILLED HOLE TO 16'

CAVING SANDS NECESSITATED CASING INSTALLATION

8"x0.25" WALL STEEL CASING (INSTALLED LATER)

SCHEDULE 80 FLUSH-JOINT PVC TUBES

220' "BIRDSEED" BRAND 8-16 FILTER SAND (8.0 FT³)

267' SEALED WITH BENTONITE GROUT (6.1 FT³)

BENTONITE GROUT (1.7 FT³)

CETCO BENTONITE GROUT (2.7 FT³)

¾"-MINUS CRUSHED GRAVEL TO BRIDGE FRACTURE (~17.6 FT³)

AT LEAST 400 GALLONS OF GROUT LOST PRIOR TO GRAVEL CEMENT SEAL PLACEMENT (VOLUME INCLUDED IN 7.4 YD³ TOTAL)

ALL BENTONITE GROUT WAS MIXED AT A 30% SOLIDS-BY-WEIGHT CONSISTENCY AND PUMPED FROM THE BOTTOM UP UNDER PRESSURE USING A TREMIE PIPE.

REGISTERED PROFESSIONAL GEOLOGIST
EDWARD SQUIRES
968
STATE OF IDAHO

Ground Water Chemistry

Analysis (in mg/L unless noted)	ZONE #1 (442 - 432 feet bgl)	ZONE #2 (419 - 399 feet bgl)	ZONE #3 (379 - 369 feet bgl)
Alkalinity	136.0	123.0	117.0
Ammonia as N	0.28	0.14	0.05
Arsenic	0.008	0.005	0.009
Calcium as $CaCO_3$	69.8	74.8	86.5
Chloride	5.39	5.31	7.02
Conductivity (µS)	316.0	305.0	321.0
Corrosivity	-0.14	-0.46	-0.30
Fluoride	0.51	0.52	0.52
Hardness	98.4	106.0	118.0
Iron (dissolved)	0.16	0.09	0.03
Magnesium	6.94	7.48	7.47
Manganese (dissolved)	0.07	0.09	0.05
Nitrate as N	0.13	0.13	0.12
Nitrite as N	<0.01	<0.01	<0.01
Orthophosphate	0.477	0.270	0.276
pH - Lab (S.U.)	7.90	7.59	7.72
Potassium	2.90	2.54	2.53
Silica	43.5	41.2	35.8
Sodium	30.4	24.3	26.2
Sulfate	22.7	23.9	32.3
Sulfide	< 0.05	< 0.05	< 0.05
Total Dissolved Solids	253	235.0	238.0
Total Kjeldahl Nitrogen	0.35	0.23	0.18
Total Organic Carbon	1.34	< 1.0	< 1.0
Field Conductivity (µS)	310	307	321
Field Dissolved Oxygen	6.64	4.89	4.87
Field O.R.P. (mV)	+106	+6	+110
Field pH (S.U.)	7.62	7.22	7.46
Field Temperature (°F)	64.2	63.2	62.2

Analyses by Alchem Laboratories, Boise, ID
Samples collected on January 30, 2007 by Hydro Logic, Inc.

Water Levels

(feet below measure point = 3.5 feet above ground)

Date / Time (24-hr clock)	ZONE #1 (442 - 432 feet bgl)	ZONE #2 (419 - 399 feet bgl)	ZONE #3 (379 - 369 feet bgl)	ZONE #4 (354 - 334 feet bgl)	ZONE #5 (258 - 238 feet bgl)
1/05/07 13:05	261.42	261.48	261.68	261.79	unsaturated zone (installed to prove water table depth)
1/08/07 17:34	262.28	262.34	262.43	262.62	
1/18/07 10:07	263.30	263.34	263.42	263.60	
1/29/07 09:26	262.22	262.30	262.35	262.54	
4/30/07 11:39	262.62	262.63	262.71	262.90	
6/01/07 09:45	261.85	261.84	261.90	262.09	
7/03/07 09:54	262.34	263.74	263.81	263.99	
7/31/07 10:58	263.85	263.82	263.92	264.07	
8/30/07 10:01	263.93	263.95	263.96	264.18	
9/20/07 16:06	262.15	262.10	262.17	262.35	

Water levels recorded by Hydro Logic, Inc.

On site supervision, well design, pump test design, and water quality sampling by Hydro Logic, Inc., Boise, ID.
Direct mud-rotary drilling and well construction by Treasure Valley Drilling and Pump, Inc., Weiser, ID
Well development by McLeran Well Drilling, LLC, New Plymouth, ID.

Figure 6.

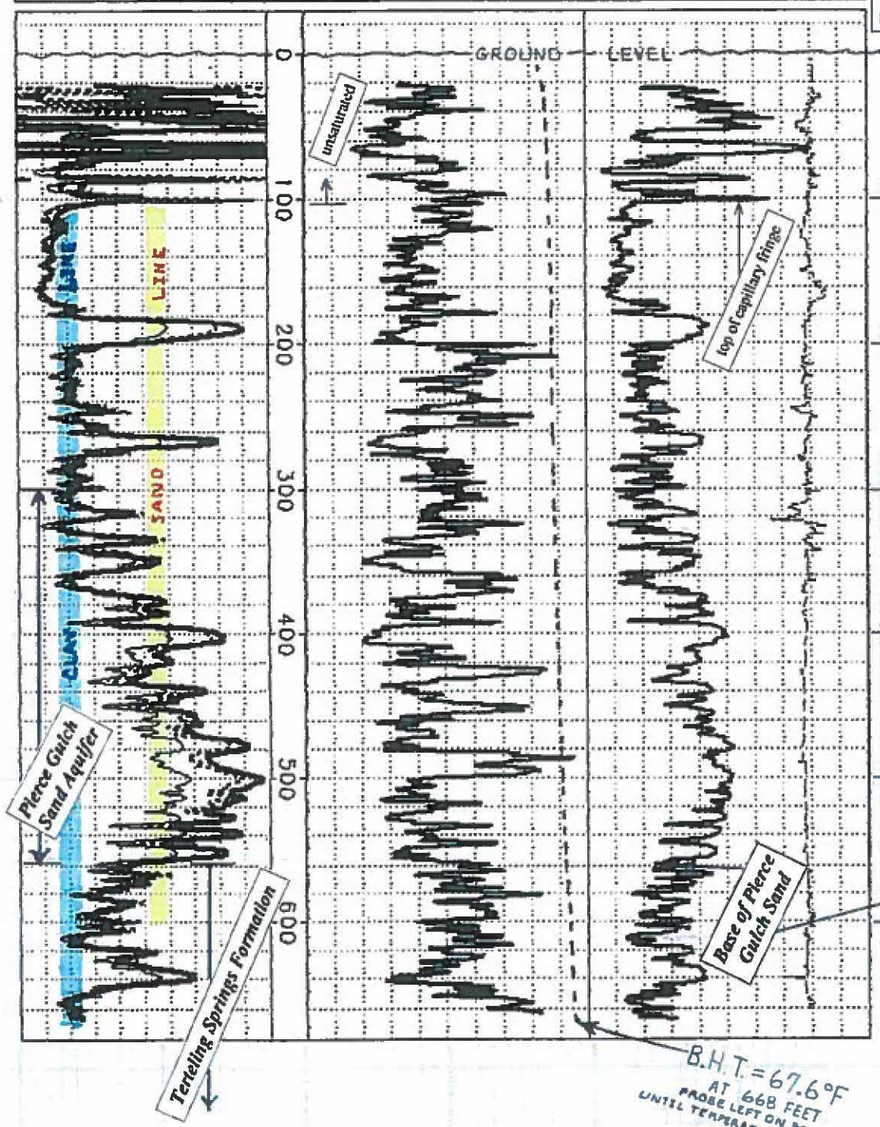
M3 Eagle - Test Well #4

T. 5 N., R. 1 W., Section 27, NW¼, SE¼, NE¼
Latitude 43° 44' 48.7" Longitude 116° 26' 14.6"
Well completed February 2008

Geophysical Logs

Geophysics conducted by: Hydro Logic, Inc. on September 27, 2006 immediately after removal of drill steel

32" Resistivity 0 ohm-meters 140
16" Resistivity 0 ohm-meters 140
8" Resistivity 0 ohm-meters 140
Temperature 0 degrees F 70
Caliper 0 inches 10
Natural Gamma Ray 40 counts/sec 140
Point Resistance 50 ohms 180



B.H.T. = 67.6°F AT 668 FEET PROBE LEFT ON BOTTOM UNTIL TEMPERATURE STABILIZED.

Lithology

Hydro Logic, Inc. lithologic log is interpreted and drawn from geophysical logs and drilled cuttings from the borehole.

Depth (feet below ground level)

0 ELEV. ≈ 2,673' AMSL
30-INCH AUGER-DRILLED HOLE
INTERBEDDED TAN TO BROWN SANDS AND TACKY CLAYS & SILTS
GRAVEL INFERRED BY HLI
STICKY DARK GREENISH-GREY CLAYS
TAN MEDIUM-COARSE SAND
STICKY GREENISH GREY CLAYS
GREY FINE-MEDIUM SANDS INTERBEDDED WITH STICKY GREENISH-GRAY CLAYS
TRACE OF WOOD
GRAVEL INFERRED BY HLI
PALE OLIVE SEQUENCES OF FINE TO COARSE SANDS & THIN OLIVE CLAY LENSES
GRAVEL INFERRED BY HLI
GREENISH GREY FINE GRAINED SANDSTONES (Possibly pyrite cemented) AND STICKY GREENISH GREY CLAYS
TRACES OF WOOD
GREY CEMENTED FINE-GRAINED SANDSTONES
DARK GREY STICKY CLAY T.D. = 672'
100
200 BROWNS
300 GREY'S
400
500
600

As-Built Well Construction

(horizontal scale 0.1"=1.0')
(vertical scale 1"=100')

BARDID 3/4-INCH BENTONITE CHIP (2.5 YD³)
24-INCH x 0.25" WALL STEEL CASING
CEMENT GROUT (0.4 YD³)
BENTONITE GROUT (2.9 FT³)
#6 - #12 GRADED FILTER SAND "BIRDSEED" BRAND (10.5 FT³)
BENTONITE GROUT (4.0 FT³)
CEMENT GROUT (6.4 FT³)
HIGH-SOLIDS (>31%) BENTONITE GROUT (8.3 FT³)
#8 - #16 GRADED FILTER SAND "BIRDSEED" BRAND (0.4 YD³)
8" DIAMETER DIRECT MUD-ROTARY DRILLED HOLE
HIGH-SOLIDS (>31%) BENTONITE GROUT (4.8 FT³)
CEMENT GROUT (2.9 FT³)
INFILL
4" # ZONE
ZONE #2
ZONE #1
0.25" THICK STEEL PLATE
BARDID 3/4-INCH BENTONITE CHIP (1.7 YD³)
6-INCH x 0.322" WALL STEEL CASING
#6 - #12 GRADED FILTER SAND "BIRDSEED" BRAND (5.6 FT³)
CEMENT GROUT (12.8 FT³)
HIGH-SOLIDS (>31%) BENTONITE GROUT (7.6 FT³)
#8 - #16 GRADED FILTER SAND "BIRDSEED" BRAND (2.7 YD³)
ALL WELLS ARE MADE FROM 2-INCH SCH 80 FLUSH-JOINT PIPE AND 0.020" SLOT SCREEN. ALL TUBE WELLS WERE DEVELOPED & AIR-LIFT PUMPED UNTIL CLEAR.
HIGH-SOLIDS (>31%) BENTONITE GROUT (2.9 FT³)
27 26 55' 83' 96' 152' 166' 181' 201' 211' 243' 266' 298' 326' 556' 564' 597' 607' 617' 626' 646' 655' 672' = T.D.

NOTES: ALL GROUTS PUMPED FROM THE BOTTOM UP THROUGH TREMIE AND TAGGED INTO PLACE.
ALL BENTONITE GROUTS CONTAIN GREATER THAN 31% SOLIDS BY WEIGHT.
ALL CEMENT GROUTS WERE MADE WITH 6 GALLONS OF WATER MIXED WITH 94 POUNDS OF PORTLAND CEMENT.

REGISTERED PROFESSIONAL GEOLOGIST — EDWARD SQUIRES — 968 — STATE OF IDAHO

drafted March 2008 by Loren Pearson

Ground Water Chemistry

Analysis (in mg/L unless noted)	ZONE #1 (646 - 626 ft bgl)	ZONE #2 (556 - 326 ft bgl)
Alkalinity	128.0	122.0
Ammonia as N	0.11	<0.01
Arsenic	0.0029	0.0066
Calcium as $CaCO_3$	83.9	81.0
Chloride	4.13	4.57
Color (apparent)	<1	<1
Conductivity (µS)	307.0	300.0
Corrosivity	-0.45	-0.46
Fluoride	0.48	0.43
Hardness	118.0	109.0
Iron (total)	0.31	0.02
Iron (dissolved)	0.27	0.01
Magnesium	8.33	6.81
Manganese (dissolved)	0.07	0.01
Nitrate as N	<0.10	0.39
Nitrite as N	<0.01	<0.01
Odor	<1	<1
Orthophosphate	0.104	0.133
pH - Lab (S.U.)	7.45	7.52
Potassium	2.52	2.28
Silica	37.2	32.5
Sodium	24.0	25.8
Sulfate	21.2	23.0
Sulfide	<0.05	<0.05
Total Dissolved Solids	225.0	223.0
Total Kjeldahl Nitrogen	0.11	<0.10
Total Organic Carbon	<1.0	1.00
Field Conductivity (µS)	*316 to 333*	*303 to 334*
Field Dissolved Oxygen	*0.09*	*2.26*
Field O.R.P. (mV)	*-122 to -105*	*+99 to +116*
Field pH (S.U.)	*7.48 to 7.64*	*7.53 to 7.70*
Field Temperature (°F)	*68.9*	*64.6*

Water samples and field parameters collected on April 3, 2008 by Hydro Logic, Inc.
Each field parameter (except DO) was acquired with two separate calibrated meters to validate measurements.
Analyses by Alchem Laboratories, Inc., Boise, ID

Water Levels

(feet below measure point = 3.5 feet above ground)

Date / Time (24-hr clock)	ZONE #1 (646 - 626 ft bgl)	ZONE #2 (556 - 326 ft bgl)	ZONE #3 (201 - 181 ft bgl)	ZONE #4 (61 - 71 ft bgl)
3/07/08 18:31	130.25	130.72	134.76	unsaturated zone (installed to confirm vadose zone)
3/14/08 17:12	130.25	130.73	134.20	
3/20/08 12:27	130.32	130.79	134.49	
3/22/08 18:12	130.43	130.92	134.74	
3/31/08 14:51	130.11	130.60	134.56	

Water levels recorde

On site supervision, well design, pump test design, and water quality sampling by Hydro Logic, Inc., Boise, ID.
Direct mud-rotary drilling and well construction by Treasure Valley Drilling and Pump, Inc., Weiser, ID
Well development by McLeran Well Drilling, LLC, Fruitland, ID

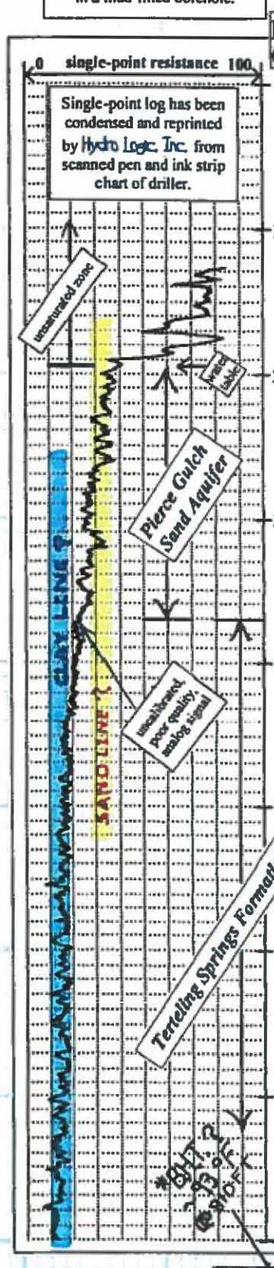
Figure 7.

M3 Eagle - S.V.R. Well #9

T.5.N R.1E. Section 19, SW¼, NE¼
Latitude N43° 45' 33.3" Longitude W116° 22' 52.1"
Completed June 2004

Geophysical Log

(June 2004)
by Stevens and Sons Drilling in a mud-filled borehole.

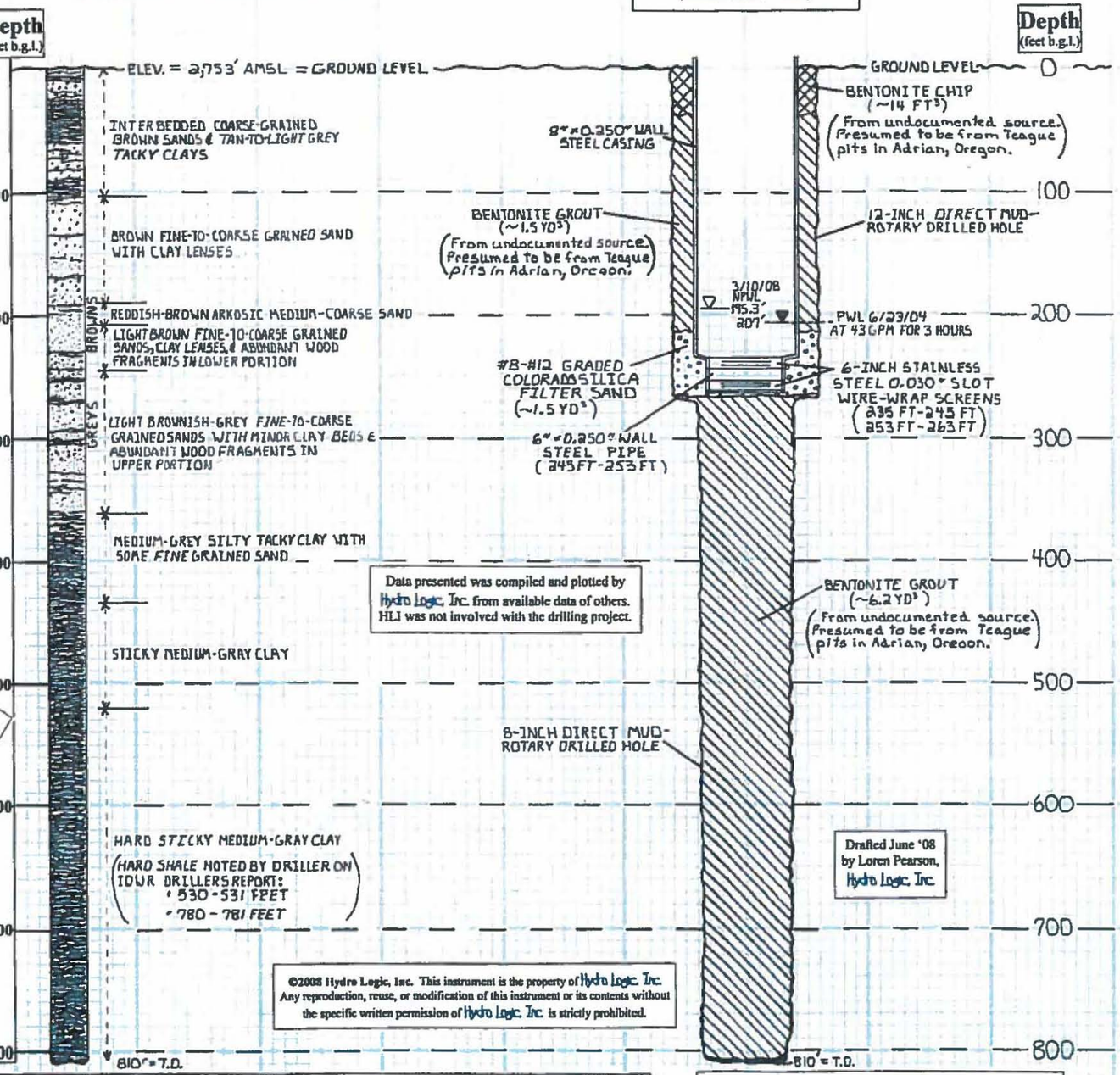


Lithology

Feast Geosciences lithologic log was developed from drilled cuttings. Lithology has been reinterpreted and readjusted below 120 feet to better fit with HLI's interpretation of the geology and the geophysical log.

As-Built Well Construction

(horizontal scale 0.1"=1.0")
(vertical scale 1"=100')



Data presented was compiled and plotted by Hydro Logic, Inc. from available data of others. HLI was not involved with the drilling project.

Drafted June '08 by Loren Pearson, Hydro Logic, Inc.

* SPF report of 10-13-2004 states:
"The driller measured the bottom-hole temperature (at 810 feet below ground surface) by running a bit to the bottom of the borehole, then pulling up and measuring the temperature of a chunk of clay attached to the bit. He recorded a temperature of 93°F in the clay. The actual temperature of the clay is probably higher (but cooled as the bit was retracted to ground surface)."

On site supervision and well design by:
SPF Water Engineering and Feast Geosciences, LLC, Boise, ID.
Direct mud-rotary drilling and well construction by:
Stevens and Son Drilling Co., Nampa, ID

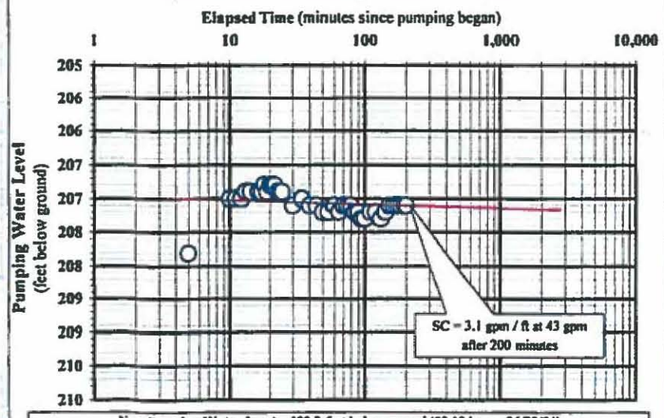
Ground Water Chemistry

Lab Analyses (note: all samples with 0.45µm filter prior to analysis except sulfide)	SPF Water Engineering Results (in mg/L unless noted) SCREENED (235 - 263 feet bgl)
Ammonia as N	0.10
Antimony	<0.005
Arsenic	<0.005
Barium	0.10
Beryllium	<0.0005
Bicarbonate	107
Cadmium	<0.0005
Calcium as $CaCO_3$	24.9
Chloride	10
Chromium	<0.002
Conductivity (µS)	336
Fluoride	0.45
Hardness	102
Iron (dissolved)	0.60
Magnesium	10.4
Manganese	0.12
Mercury	<0.0002
Nickel	<0.02
Nitrate as N	<0.2
Nitrite as N	<0.01
pH (S.U.)	2.5
Potassium	2.0
Selenium	<0.005
Sodium	26.9
Sulfate	44
Sulfide (unfiltered)	<0.05
Thallium	<0.002
Total Dissolved Solids	216
Field Analyses	
Field Temperature (°F)	68

SPF samples collected on June 23, 2004 by Feast Geosciences.
Analyses by Analytical Laboratories, Boise, ID

REGISTERED PROFESSIONAL GEOLOGIST
EDWARD SQUIRES
968
STATE OF IDAHO

Hydraulic Testing - (June 23, 2004)

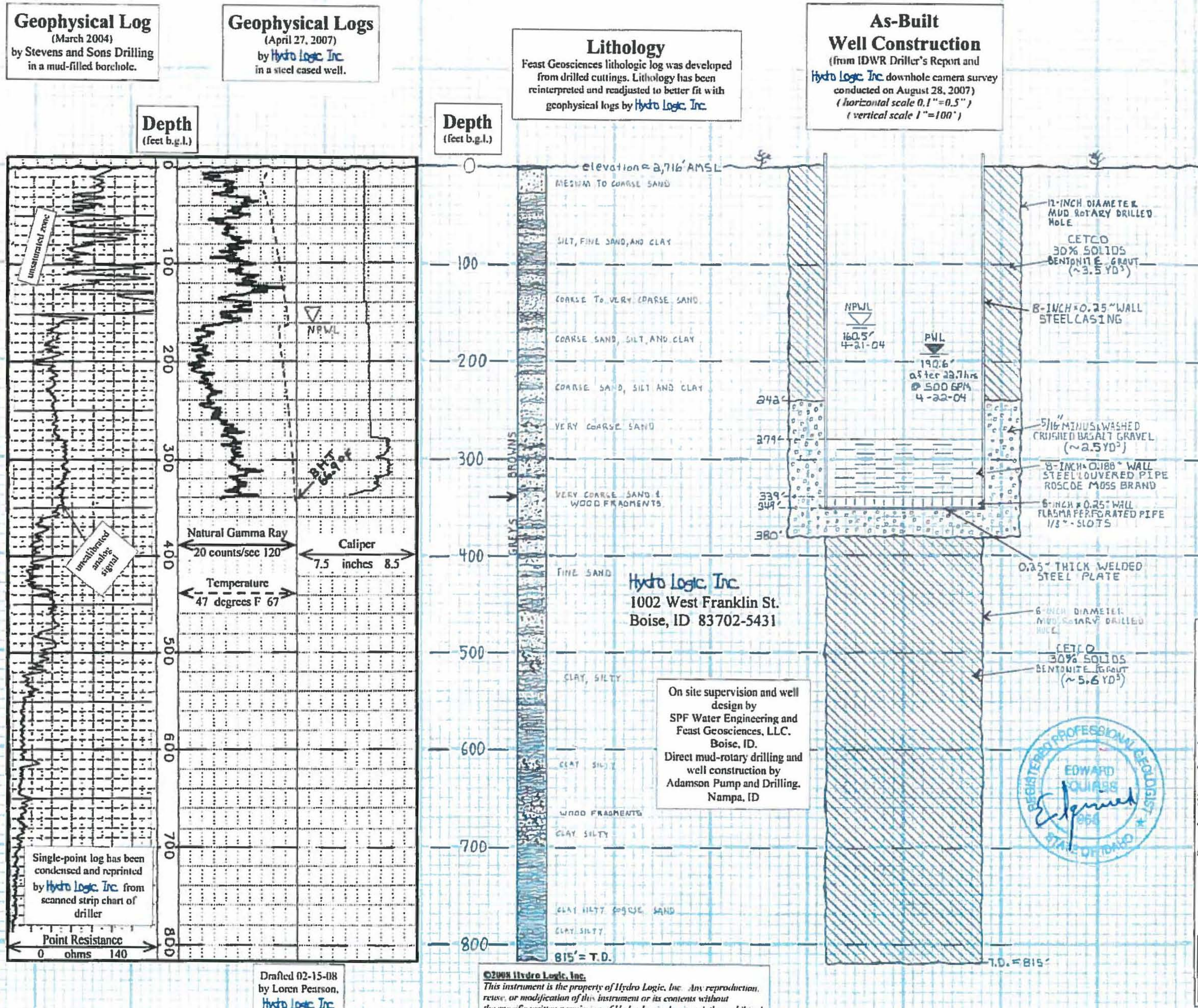


Non-Pumping Water Level = 193.3 feet below ground (09:10 hrs on 06/23/04)
Test conducted by Feast Geosciences and Stevens and Son Drilling Co.
Well was developed by pumping and surging according to SPF report.
Plotted by Hydro Logic, Inc.

Figure 8.

M3 Eagle - S.V.R Well #7

T5N R1W Section 23, NE¼, SW¼
Latitude 43° 45' 18.9" Longitude 116° 25' 29.7"
Completed April 2004



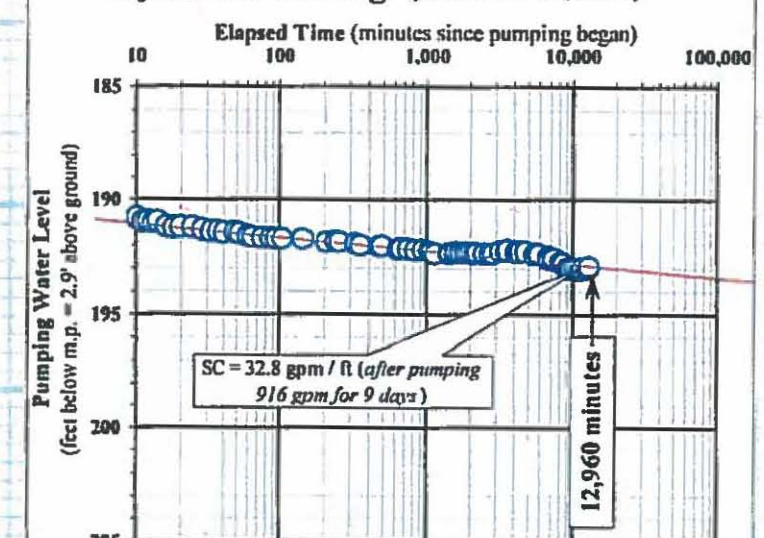
Drafted 02-15-08 by Loren Pearson, Hydro Logic Inc.

Ground Water Chemistry

Lab Analyses	SPF Water Engineering Results (in mg/L unless noted) SCREENED (279 - 349 feet bgl)	Hydro Logic Inc. Results (in mg/L unless noted) SCREENED (279 - 349 feet bgl)
Alkalinity		120.0
Ammonia as N	<0.04	0.02
Arsenic	<0.005	0.0037
Calcium as $CaCO_3$	29.1	77.8
Chloride	5	4.42
Conductivity (uS)		305.0
Corrosivity		-0.35
Fluoride	0.44	0.43
Hardness	110	115.0
Iron (dissolved)		0.11
Iron (total)	0.11	0.11
Magnesium	8.19	8.91
Manganese	<0.05	0.02
Nitrate as N	0.31	0.34
Nitrite as N	<0.01	<0.01
Odor		<1
pH		7.63
Potassium	2.0	2.60
Silica		38.9
Sodium	22.9	23.2
Sulfate	24	23.5
Sulfide	<0.05	<0.05
Total Dissolved Solids	212	235.0
Total Kjeldahl Nitrogen		<0.10
Total Organic Carbon		3.36
Field Analyses		
Field Conductivity (µS)	300	382
Field Dissolved Oxygen		+1.37
Field Odor (describe)		minor H_2S
Field O.R.P. (mV)		+55
Field pH (S.U.)	7.00	7.40
Field Temperature (°F)	68.1	67.0
Field Visible Gas (yes or no)		yes

HLI samples collected on March 14, 2008 by Hydro Logic Inc.
Analyses by Alchem Laboratories, Boise, ID
SPF samples collected on April 21, 2004 by Feast Geosciences.
Analyses by Analytical Laboratories, Boise, ID

Hydraulic Testing - (March 10-19, 2008)



Non-Pumping Water Level = 165.00 feet below m.p. (16:00 hrs on 03/10/2008)
Testing conducted by Hydro Logic Inc. and McLeran Well Drilling, LLC.
(no barometric or antec… …d to this plot.)

Figure 9.