

# Mountain Home Monitoring Well Installation Completion Report



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October 2026



Open-File Report

# Introduction

In January 2022, the Idaho Water Resource Board (IWRB) passed a resolution to fund a four-year hydrologic study in the Mountain Home Plateau, which included drilling five new monitoring wells to collect data needed for future groundwater model development (IWRB, 2022). The resolution addressed concerns from water users in the Mountain Home Plateau about ongoing groundwater declines and the long-term sustainability of the regional aquifer. In 1981, the Idaho Department of Water Resources (IDWR) designated the Cinder Cone Butte Critical Ground Water Area<sup>1</sup> followed by the designation of the Mountain Home Ground Water Management Area<sup>2</sup> in 1982 (Figure 1).

The monitoring wells were drilled in the spring and summer of 2024. IDWR awarded the well completion projects to the lowest bidding driller through an Invitation to Bid. Access agreements were developed with landowners of the monitoring well sites to facilitate drilling and subsequent monitoring activities. IDWR staff provided drilling oversight and collected lithologic data at each site. Pressure transducers were installed in each well to collect continuous water levels.

Details regarding the location, borehole lithology, and construction of the five monitoring wells are summarized in the following sections. All wells are in the Mountain Home GWMA, except for one (MH 1), which is in the Cinder Cone Butte CGWA (Figure 1). These wells supplement and enhance IDWR's existing Mountain Home groundwater level monitoring network (Steimke, 2025).

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<sup>1</sup> A Critical Ground Water Area (CGWA) is all or part of a groundwater basin that does not have sufficient groundwater to provide a reasonably-safe supply for irrigation or other uses at the current or projected rates of withdrawal (IDWR, 1981).

<sup>2</sup> A Ground Water Management Area (GWMA) is all or part of a groundwater basin that may be approaching the conditions of a CGWA (IDWR, 1982).

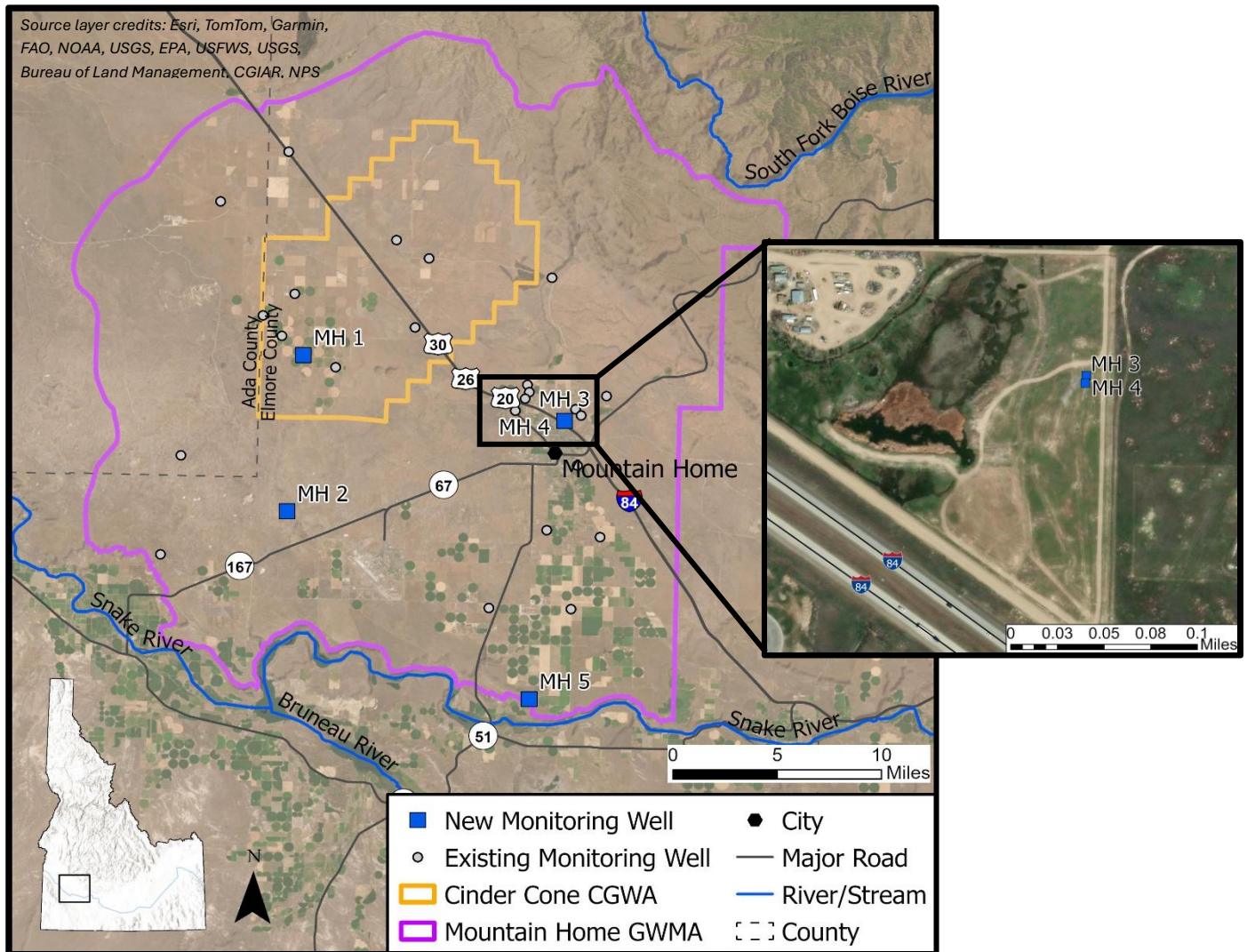


Figure 1: Map of the Mountain Home groundwater level monitoring network, including the locations of new monitoring wells.

## Monitoring Well Descriptions

The information on well construction presented in this section is taken from the drillers' reports submitted to IDWR (Appendix A). Descriptions of borehole lithology are from field observations taken by IDWR staff at the drill site and may differ slightly from drillers' reports due to differences in interpretation. All depths are reported as feet below land surface (bls).

The United States Geological Survey (USGS) conducted independent borehole geophysics investigations in four of the five wells. The geophysical logs are included in Appendix B. Additional information, including photos and borehole videos, are documented in Zingre and Twining (2025).

*Table 1: Summary of Mountain Home monitoring wells*

| Well Name | Completion Date | Total Depth (feet bls) | Latitude | Longitude | Metal Tag | Station ID        |
|-----------|-----------------|------------------------|----------|-----------|-----------|-------------------|
| MH 1      | 3/28/2024       | 708                    | 43.2017  | -115.9371 | D0104213  | 02S 04E<br>36CCC1 |
| MH 2      | 3/21/2024       | 605                    | 43.0891  | -115.9490 | D0104214  | 04S 04E<br>11CAD1 |
| MH 3      | 4/11/2024       | 460                    | 43.1583  | -115.6878 | D0104215  | 03S 06E<br>13CDA1 |
| MH 4      | 8/2/2024        | 150                    | 43.1582  | -115.6878 | D0104627  | 03S 06E<br>13CDA2 |
| MH 5      | 3/12/2024       | 512                    | 42.9576  | -115.7158 | D0104216  | 05S 06E<br>27CBC1 |

## MH 1

Mountain Home Monitoring Well #1 (MH 1) is located on privately owned property in Elmore County approximately 13 miles northwest of the City of Mountain Home. The location for this well was selected to fill a groundwater level measurement data gap in the western extent of the Cinder Cone Butte CGWA. IDWR's current monitoring wells in this area are all irrigation wells, which are not suitable for the installation of pressure transducers. The construction of MH 1 allows for continuous water level monitoring for the first time in this critical area. The well was drilled by Cold Steel Drilling with air and dual rotary to a depth of 708 feet. It is cased with 6-inch steel to a depth of 640 feet and has a 4.5-inch PVC liner from 608 to 648 feet. A 60-foot manufactured PVC screen was set in from 648 to 708 feet. The well was sealed with bentonite down to 50 feet.

The borehole lithology consists primarily of alternating sand and clay layers in the top 200 feet (Figure 2). Deeper lithology is primarily basalt, with intermittent, smaller layers of sand, clay, and claystone. Static depth to water measured by IDWR staff shortly after well completion was 429.3 feet. Water levels have fluctuated annually by approximately 19.5 feet and peaked in late September or early October (Figure 3). The USGS conducted an independent borehole geophysics investigation in the well on November 12, 2024 (Appendix B).

## Mountain Home Monitoring Well #1 (MH 1)

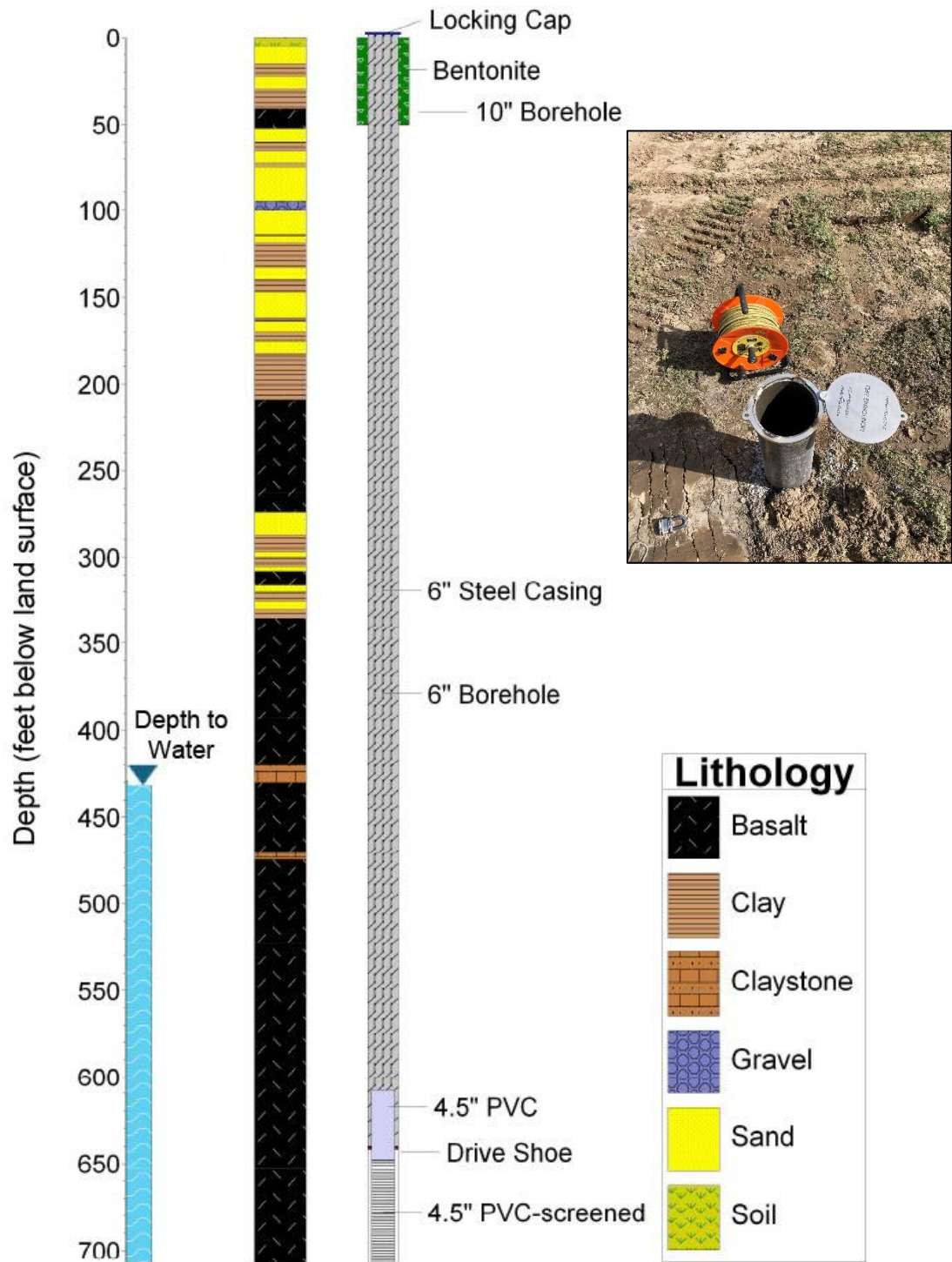
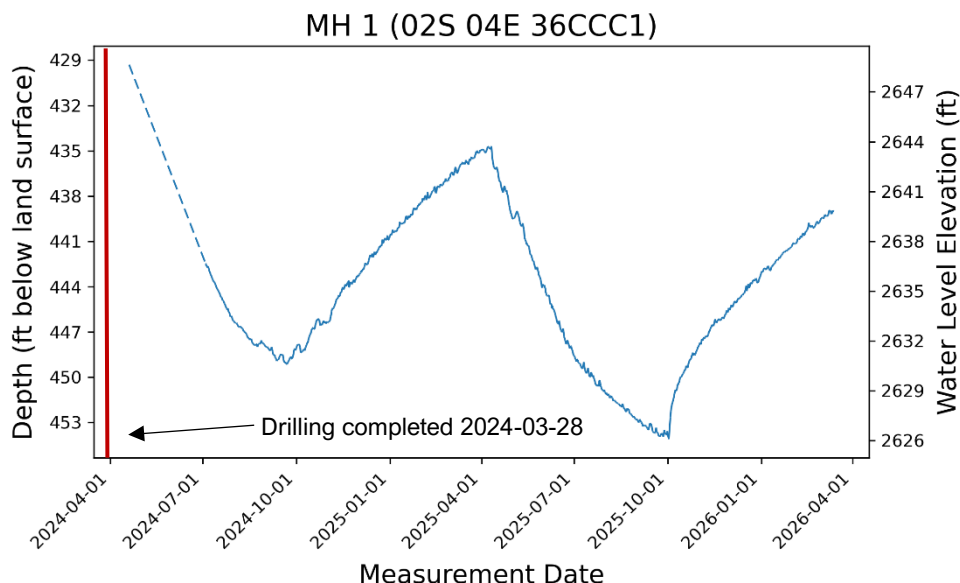


Figure 2: Depth to water, lithology, and construction details for MH 1 and a photo of the well.



*Figure 3: Hydrograph of groundwater levels for MH 1. The dashed line indicates a time gap between measurements.*

## MH 2

Mountain Home Monitoring Well #2 (MH 2) is located on privately owned property in Elmore County approximately 13 miles southwest of the City of Mountain Home. This location was selected to fill a data gap in the southwest area of the Mountain Home GWMA.

The borehole lithology consists primarily of basalt, with thin layers of clay, sand, and sandstone in the top 50 feet and below 475 feet (Figure 4). Static depth to water measured by IDWR staff shortly after well completion was 360.57 feet. In the first two years of monitoring, water levels have steadily declined by 2.4 feet between the first and most recent measurements for this period of record (Figure 5).

The well was drilled by Cold Steel Drilling (Figure 6) with air and dual rotary to a depth of 605 feet. It is cased with 6-inch steel to a depth of 537 feet and has a 4.5-inch PVC liner from 505 to 545 feet. A 60-foot manufactured PVC screen was set in from 545 to 605 feet. The well was sealed with bentonite down to 60 feet.

The USGS conducted an independent borehole geophysics investigation in the well on November 13, 2024 (Appendix B).

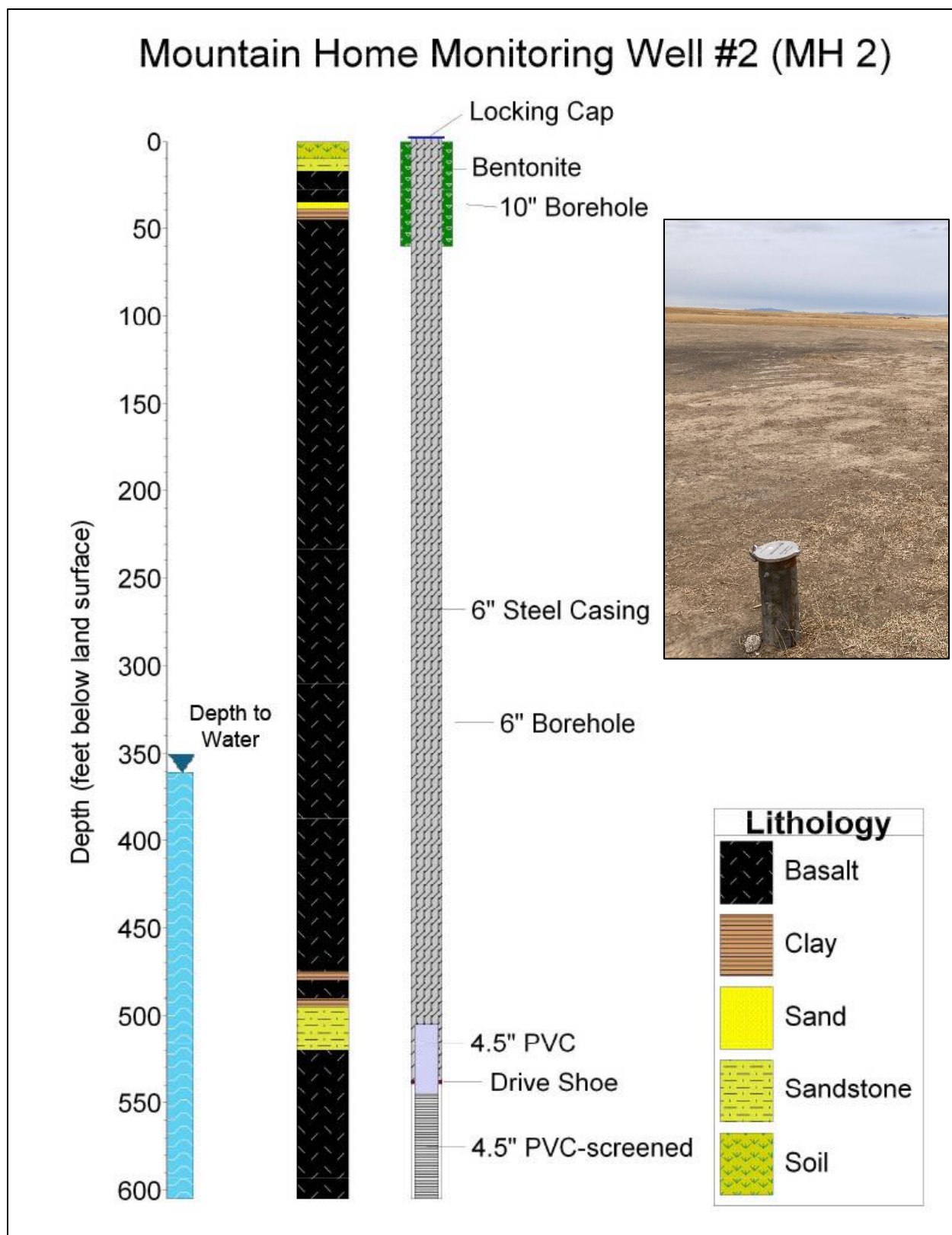
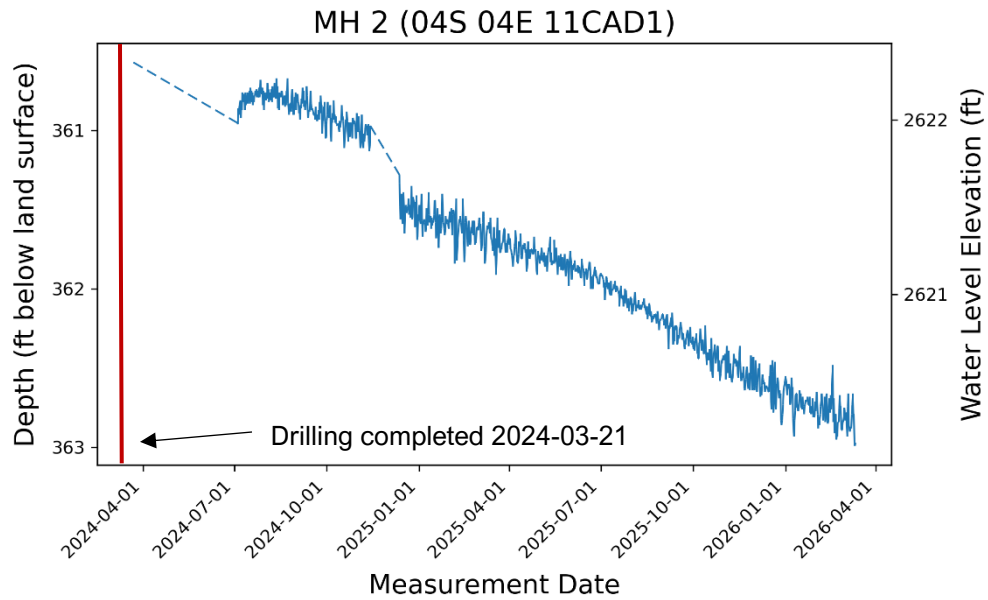


Figure 4: Depth to water, lithology, and construction details for MH 2 and a photo of the well.



*Figure 5: Hydrograph of groundwater levels for MH 2. The dashed lines indicate time gaps between measurements.*



*Figure 6: MH 2 being drilled by Cold Steel Drilling in March 2024.*

## MH 3 and MH 4

Mountain Home Monitoring Well #3 (MH 3) and Mountain Home Monitoring Well #4 (MH 4) are located immediately north of the City of Mountain Home and Interstate 84. These wells are approximately 20 feet apart from each other and were drilled to and sealed at different depths to understand both the perched and regional aquifer conditions at one location. The wells are located on property owned by the City of Mountain Home.



*Figure 7: Mountain Home Monitoring Well #3 (MH 3).*

MH 3 (Figure 7) was drilled by Cold Steel Drilling with air and dual rotary into the regional aquifer at a depth of 460 feet with a completed measurable depth of 456 feet. The well is cased with 6-inch steel to a depth of 440 feet. A 15-foot manufactured stainless-steel screen was set in from 441 to 456 feet. The well was sealed with bentonite down to 150 feet.

The borehole lithology for MH 3 consists primarily of basalt, with intermittent layers of clay, claystone, and cinders in the top 260 feet (Figure 8). Below 330 feet, layers of clay, claystone, tuff, cinders, siltstone, sand, and basalt were present. Static depth to water measured by IDWR staff shortly after well completion was 81.94 feet.

The USGS conducted an independent borehole geophysics investigation in the well on November 14, 2024 (Appendix B).

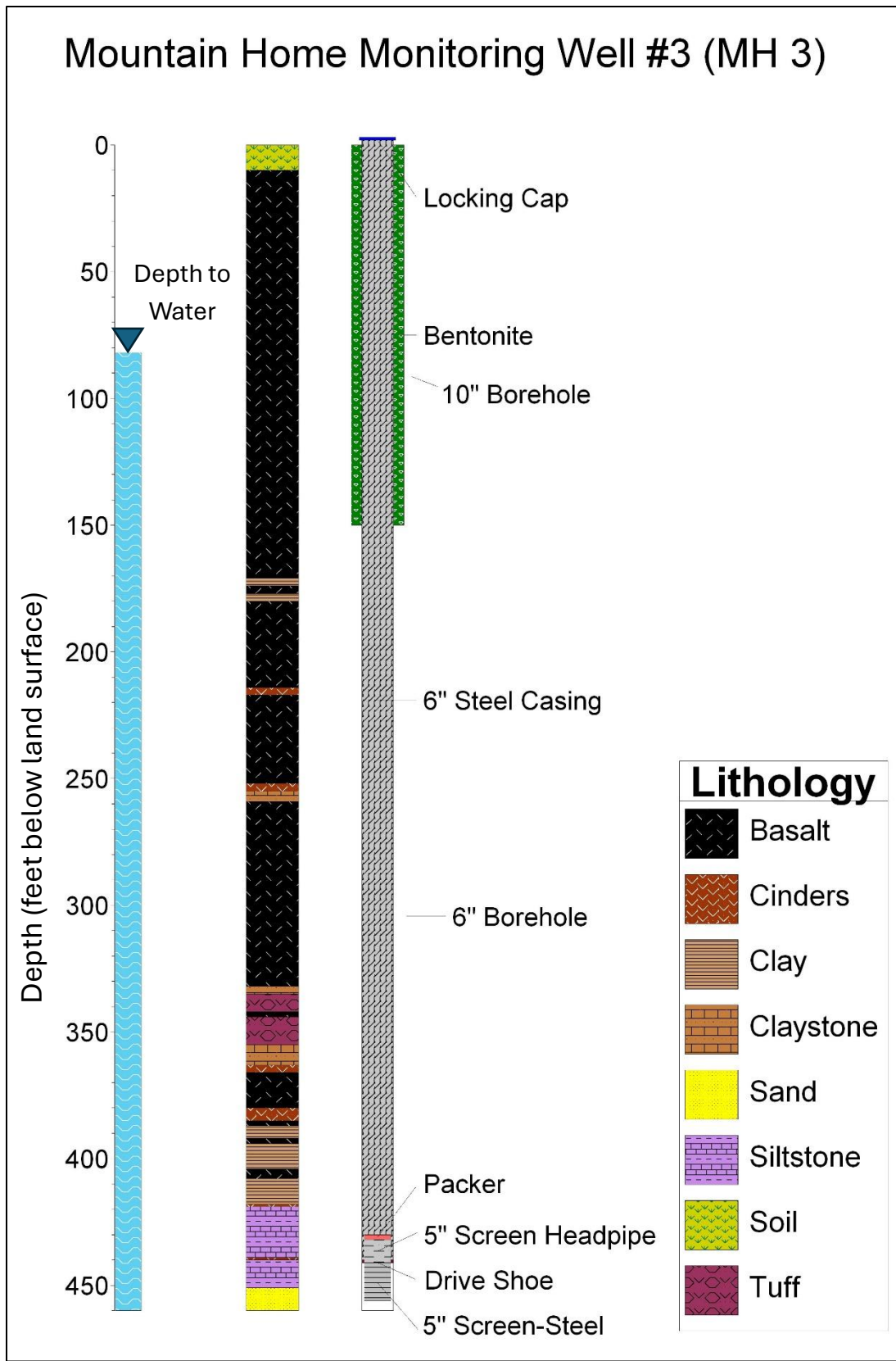


Figure 8: Depth to water, lithology, and construction details for MH 3.

MH 4 was drilled by Abundant Water Wells Inc. with air rotary into the perched aquifer at a depth of 150 feet. The well is cased with 6-inch steel to a depth of 140 feet. A filter pack was poured from 110 to 150 feet, and a 10-foot manufactured steel screen was welded in place from 140 to 150 feet. The well was sealed with bentonite down to 40 feet.

The borehole lithology for MH 4 is predominantly basalt with a layer of sand from 45 to 50 feet and a void space from 52 to 55 feet (Figure 9). Static depth to water measured by IDWR staff shortly after well completion was 71.54 feet. Borehole geophysics were not conducted on MH4 due to its proximity and similar lithology to MH 3.

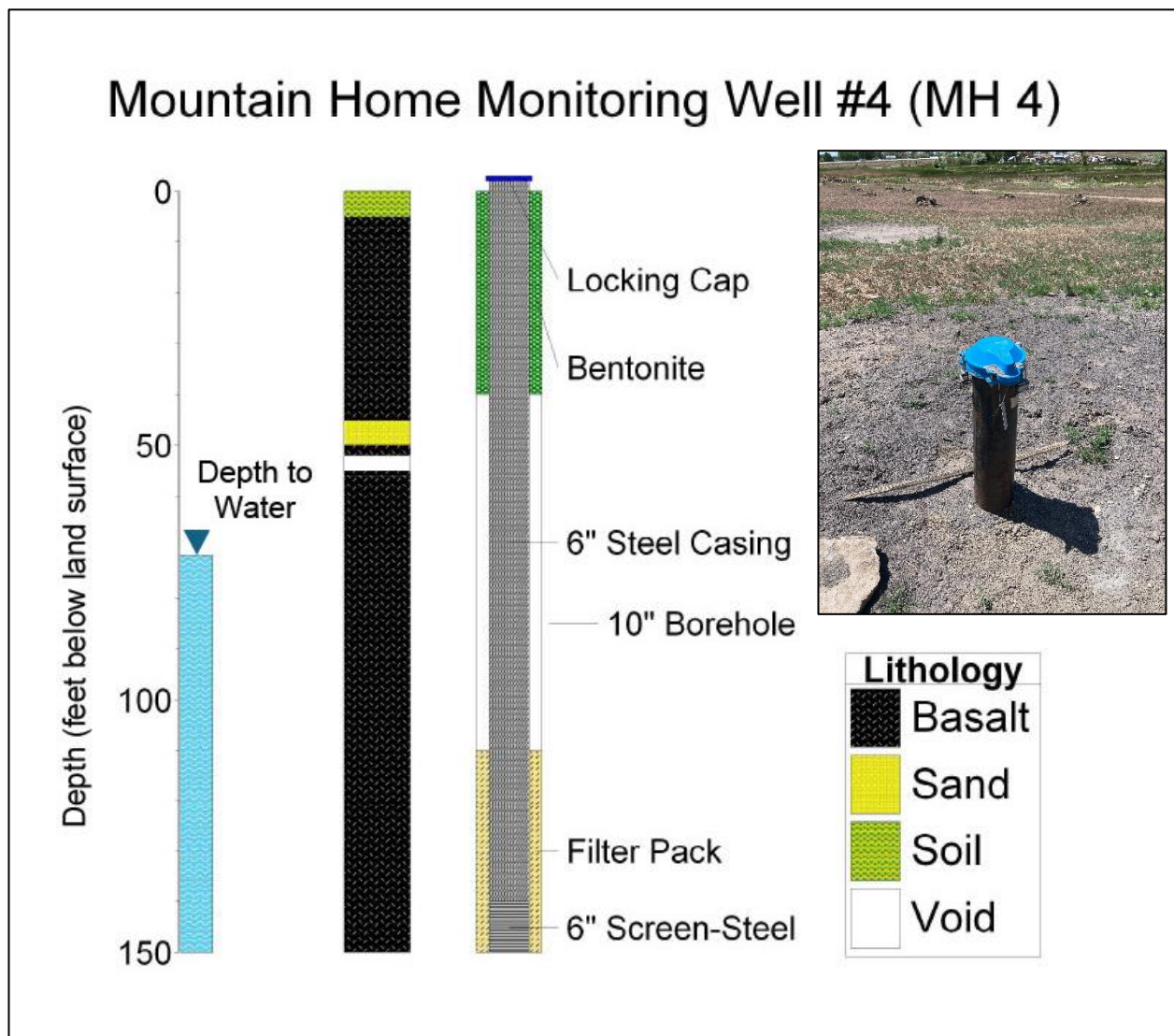


Figure 9: Depth to water, lithology, and construction details for MH 4 and a photo of the well.

Continuous monitoring has shown that the water levels in MH 3 fluctuate significantly during the summer, usually around 50 feet per day, and may be related to nearby pumping. Water levels stabilize during the winter months and peak around mid-May. Water levels in MH 4 have been more continuously stable, fluctuating annually by approximately 9.5 feet and peaking in late May (Figure 10).

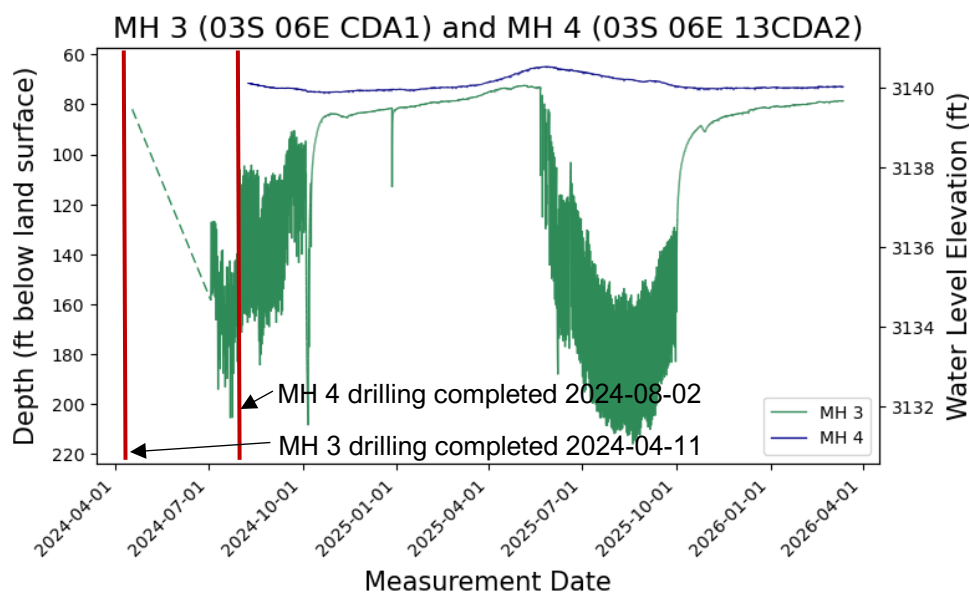
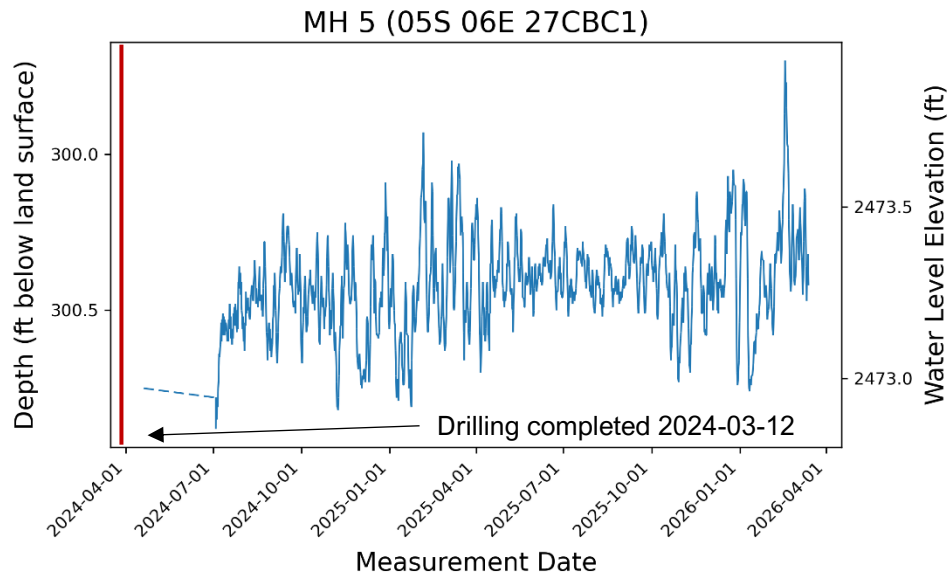


Figure 10: Hydrograph of groundwater levels for MH 3 and MH 4. The dashed lines indicate time gaps between measurements.

## MH 5

Mountain Home Monitoring Well #5 (MH 5) is located in Elmore County on State-owned land managed by the Idaho Department of Lands, approximately 12 miles south of the City of Mountain Home. This location was chosen because it is close to the Snake River, the likely boundary of the future Western Snake Plain Aquifer Model, but far enough away from the river to be informative on the groundwater gradient from the plateau to the Snake River in this area. Water levels have remained generally stable over the approximate two years of data collection, with no clear seasonal pattern and a difference of only 1.18 feet between the highest and lowest measurements obtained during this period of record (Figure 11).



*Figure 11: Hydrograph of groundwater levels for MH 5. The dashed lines indicate time gaps between measurements.*

The well was drilled by Cold Steel Drilling with air and dual rotary to a depth of 512 feet. However, due to layers of fine sand at the target depth, the completed measurable depth is 444 feet. The well is cased with 6-inch steel to the full depth of 512 feet. A manufactured stainless-steel screen was set in from 432 to 442 feet, and a 4.5-inch PVC liner was put in place from 444 to 512 feet. The well was sealed with bentonite down to 43 feet.

The borehole lithology consists of basalt in the top 104 feet. From 104 to 330 feet there are intermittent layers of sand, sandstone, clay, claystone, silt, siltstone, and small shells (Figure 12 and Figure 13). Static depth to water measured by IDWR staff shortly after well completion was 300.75 feet. The USGS conducted an independent borehole geophysics investigation in the well on November 13, 2024 (Appendix B).



*Figure 12: A sample of the small shells encountered from 285-290 feet during the drilling of MH 5. The dimensions of the tray compartment are 1x2 inches.*

# Mountain Home Monitoring Well #5 (MH 5)

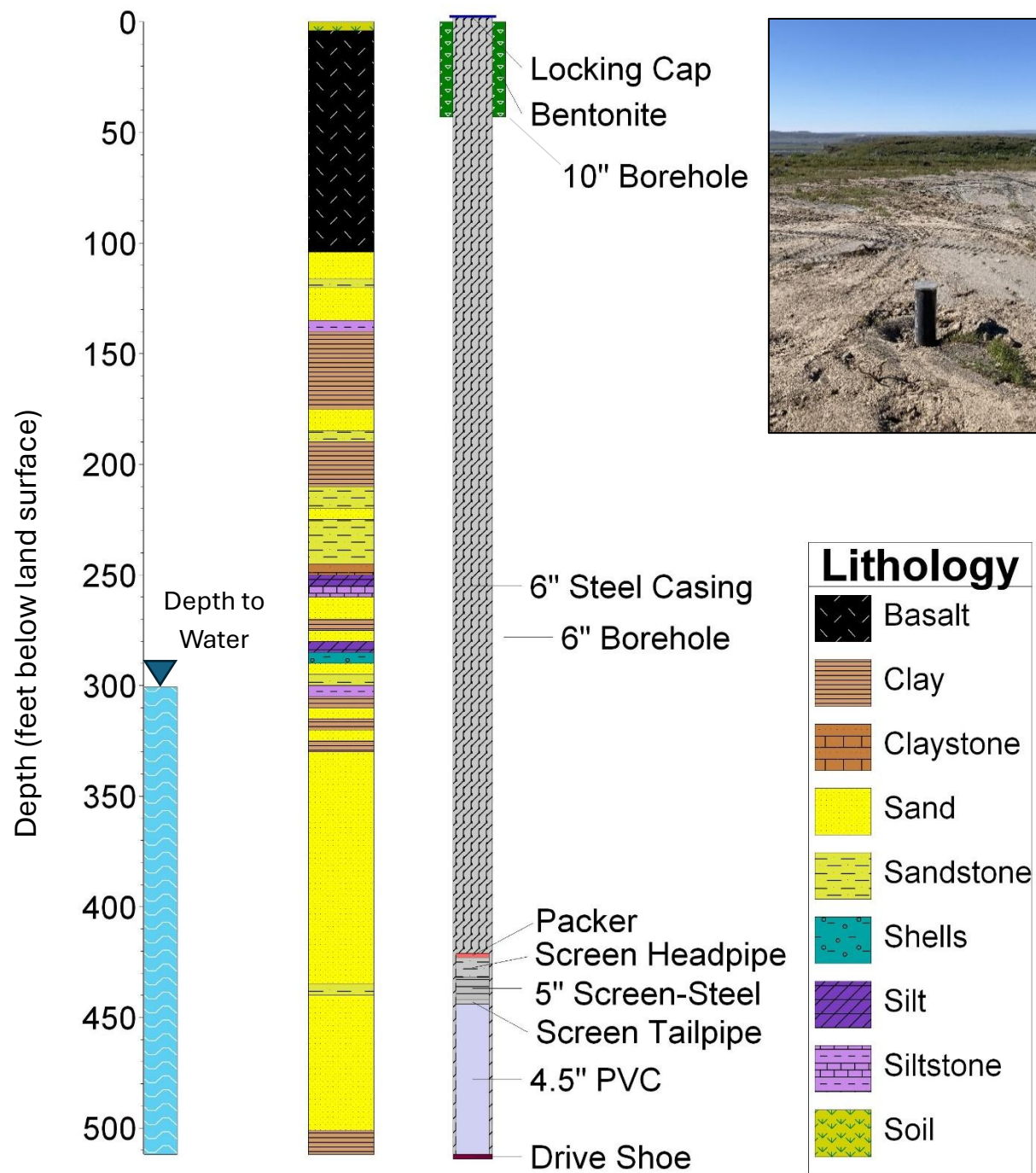


Figure 13: Depth to water, lithology, and construction details for MH 5 and a photo of the well.

## Future Work

IDWR plans to continue collecting continuous water level data for the wells described in this report along with maintaining the existing Mountain Home monitoring network. Water level data for these and all active wells in Idaho currently monitored by IDWR are publicly available through the [IDWR Groundwater Data Portal](#).

*Acknowledgements: Special thanks to the private landowners, City of Mountain Home, and Idaho Department of Lands for allowing access to their property, current and former IDWR staff (Amy Steimke, Dennis Owsley, Alex Moody, Matthew Wilken, Ryan McCutcheon, Megan Jenkins, Mac Beers, Heather Neace, and Ashden Field) who provided drilling oversight and lithologic logging, and all of the drillers who worked on this project.*

## References

- IDWR, 1981. *Order Establishing Cinder Cone Butte as Critical Ground Water Area*, <https://idwr.idaho.gov/wp-content/uploads/sites/2/legal/orders/1981/19810507-Order-Establishing-Cinder-Cone-Butte-CGWA.pdf>
- IDWR, 1982. *Order Establishing Mountain Home as a Groundwater Management Area*, <https://idwr.idaho.gov/wp-content/uploads/sites/2/legal/orders/1982/19821109-Order-Creating-Mountain-Home-GWMA.pdf>
- IWRB, 2022. Resolution No. 04-2022, Resolution to Authorize Funding for the Mountain Home Hydrologic Investigation. *Resolutions*, Jan. 21, 2022, pp. 21-22. [https://idwr.idaho.gov/wp-content/uploads/sites/2/iwrb/1-Meetings2022/Board-Meeting1-22\\_RESOLUTIONS.pdf](https://idwr.idaho.gov/wp-content/uploads/sites/2/iwrb/1-Meetings2022/Board-Meeting1-22_RESOLUTIONS.pdf)
- Steimke, A., 2025. *Update of Groundwater Conditions in the Mountain Home Ground Water Management Area and Cinder Cone Butte Critical Ground Water Area*, Idaho Department of Water Resources Open-File Report. <https://idwr.idaho.gov/wp-content/uploads/sites/2/publications/20250616-Mountain-Home-Water-Level-Monitoring-Update.pdf>
- Zingre, J.A., and Twining, B.V., 2025, Geophysical and video logs of four wells from the Mountain Home area, Idaho: U.S. Geological Survey data release, <https://doi.org/10.5066/P13USHFW>

## Appendix A: Drillers' Reports

IDAHO DEPARTMENT OF WATER RESOURCES  
WELL DRILLER'S REPORT

MH 1

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WATER RESOURCES  
WESTERN REGION

## 1. WELL TAG NO. D 104213

Drilling Permit No. 914167

Water right or injection well #

## 2. OWNER: Idaho Department of Water Resources

Name

Address 322 E Front St

City Boise State ID Zip 83702

## 3. WELL LOCATION:

Twp. 02 North ☐ or South ☒ Rge. 04 East ☒ or West ☐  
Sec. 36 1/4 SW 1/4 SW 1/4

Gov't Lot County Elmore

Lat. 43 12.1040 (Deg. and Decimal minutes)

Long. -115 56.2163 (Deg. and Decimal minutes)

Address of Well Site NW Carl Hickey Rd

City Mountain Home

(Give at least name of road + Distance to Road or Landmark)

Lot. Blk. Sub. Name

## 4. USE:

☐ Domestic ☐ Municipal ☒ Monitor ☐ Irrigation ☐ Thermal ☐ Injection  
☐ Other

## 5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well  
☐ Abandonment ☐ Other

## 6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other Dual Rotary

## 7. SEALING PROCEDURES:

| Seal material | From (ft) | To (ft) | Quantity (lbs or ft <sup>3</sup> ) | Placement method/procedure |
|---------------|-----------|---------|------------------------------------|----------------------------|
| Bentonite     | 0         | 50      | 1350                               | Pullback & Pour            |

## 8. CASING/LINER:

| Diameter (nominal) | From (ft) | To (ft) | Gauge/Schedule | Material | Casing                              | Linear                              | Threaded                 | Welded                              |
|--------------------|-----------|---------|----------------|----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 6                  | +2        | 640     | .250           | Steel    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4.5                | 608       | 648     | SDR17          | PVC      | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 640

## 9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N MethodManufactured screen ☒ Y ☐ N Type Certa-Lok

Method of installation Set In

| From (ft) | To (ft) | Slot size | Number/ft | Diameter (nominal) | Material | Gauge or Schedule |
|-----------|---------|-----------|-----------|--------------------|----------|-------------------|
| 648       | 708     | 20        |           | 4.5                | PVC      | SDR-17            |

Length of Headpipe Length of Tailpipe

Packer ☐ Y ☒ N Type

## 10. FILTER PACK:

| Filter Material | From (ft) | To (ft) | Quantity (lbs or ft <sup>3</sup> ) | Placement method |
|-----------------|-----------|---------|------------------------------------|------------------|
|-----------------|-----------|---------|------------------------------------|------------------|

## 11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG)

Describe control device

## 12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 436 Static water level (ft) 436

Water temp. (°F) 62 Bottom hole temp. (°F) 61

Describe access port Lockable Lid

## Well test:

| Drawdown (feet) | Discharge or yield (gpm) | Test duration (minutes) |
|-----------------|--------------------------|-------------------------|
| 55 at 708'      | 60                       |                         |

## Test method:

| Pump                     | Bailer                   | Air                                 | Flowing artesian         |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Water quality test or comments:

## 13. LITHOLOGIC LOG and/or repairs or abandonment:

| Bore Dia. (in) | From (ft) | To (ft) | Remarks, lithology or description of repairs or abandonment, water temp. | Water |   |
|----------------|-----------|---------|--------------------------------------------------------------------------|-------|---|
|                |           |         |                                                                          | Y     | N |
| 10             | 0         | 4       | Top Soil                                                                 |       | X |
| 10             | 4         | 19      | Clay Tan Sandy                                                           |       | X |
| 10             | 19        | 36      | Sand Tan Course                                                          |       | X |
| 10             | 36        | 44      | Clay Tan Sandy                                                           |       | X |
| 10/6           | 44        | 57      | Basalt Black                                                             |       | X |
| 6              | 57        | 214     | Clay Tan with Sand Streaks                                               |       | X |
| 6              | 214       | 234     | Basalt Black                                                             |       | X |
| 6              | 234       | 278     | Basalt Black Broken                                                      |       | X |
| 6              | 278       | 307     | Sand Tan with Clay Streaks                                               |       | X |
| 6              | 307       | 320     | Basalt Black Broken                                                      |       | X |
| 6              | 320       | 340     | Clay Tan                                                                 |       | X |
| 6              | 340       | 362     | Basalt Black                                                             |       | X |
| 6              | 362       | 365     | Sand Brown                                                               |       | X |
| 6              | 365       | 367     | Sand Black                                                               |       | X |
| 6              | 367       | 373     | Basalt Gravel                                                            |       | X |
| 6              | 373       | 404     | Basalt Gray                                                              |       | X |
| 6              | 404       | 406     | Basalt Brown                                                             |       | X |
| 6              | 406       | 410     | Cinders Red                                                              |       | X |
| 6              | 410       | 413     | Basalt Brown                                                             |       | X |
| 6              | 413       | 440     | Cinders Black                                                            | X     |   |
| 6              | 440       | 465     | Basalt Gray Broken                                                       | X     |   |
| 6              | 465       | 473     | Sand Black                                                               | X     |   |
| 6              | 473       | 475     | Basalt Gravel Black                                                      | X     |   |
| 6              | 475       | 480     | Basalt Gray                                                              |       | X |
| 6              | 480       | 495     | Basalt Gravel Black                                                      | X     |   |
| 6              | 495       | 499     | Basalt Gray                                                              |       | X |
| 6              | 499       | 549     | Basalt Gray Broken                                                       | X     |   |
| 6              | 549       | 555     | Cinders Red                                                              | X     |   |
| 6              | 555       | 595     | Basalt Gray Broken                                                       | X     |   |
| 6              | 595       | 599     | Basalt Red Broken                                                        | X     |   |
| 6              | 599       | 640     | Basalt Gray                                                              |       | X |
| (Continued)    |           |         |                                                                          |       |   |

Completed Depth (Measurable): 708

Date Started: 3/22/2024

Date Completed: 3/28/2024

## 14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Cold Steel Drilling

Co. No. 793

\*Principal Driller *Alan Hesseberger* Date 5/19/2024\*Driller *Matthew McV...* Date 5/19/2024

\*Operator II Date

Operator I Date

\* Signature of Principal Driller and rig operator are required.







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IDAHO DEPARTMENT OF WATER RESOURCES  
WELL DRILLER'S REPORT

MH 3

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MAY 19 2024

WATER RESOURCES  
WESTERN REGION

## 1. WELL TAG NO. D 104215

Drilling Permit No. 914169

Water right or injection well #

## 2. OWNER: Idaho Department of Water Resources

Name

Address 322 E Front St

City Boise State ID Zip 83702

## 3. WELL LOCATION:

Twp. 03 North ☐ or South ☒ Rge. 06 East ☒ or West ☐

Sec. 13 1/4 SE 1/4 SW 1/4

Gov't Lot County Elmore

Lat. 43 09.5445 (Deg. and Decimal minutes)

Long. -115 41.2690 (Deg. and Decimal minutes)

Address of Well Site NE Frontage Rd

City Mountain Home

(Give at least name of road + Distance to Road or Landmark)

Lot. Blk. Sub. Name

## 4. USE:

☐ Domestic ☐ Municipal ☒ Monitor ☐ Irrigation ☐ Thermal ☐ Injection  
☐ Other

## 5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well  
☐ Abandonment ☐ Other

## 6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other Dual Rotary

## 7. SEALING PROCEDURES:

| Seal material | From (ft) | To (ft) | Quantity (lbs or ft <sup>3</sup> ) | Placement method/procedure |
|---------------|-----------|---------|------------------------------------|----------------------------|
| Bentonite     | 0         | 150     | 3250                               | Pullback & Pour            |

## 8. CASING/LINER:

| Diameter (nominal) | From (ft) | To (ft) | Gauge/Schedule | Material | Casing                              | Liner                    | Threaded                 | Welded                              |
|--------------------|-----------|---------|----------------|----------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|
| 6                  | +2        | 440     | .250           | Steel    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 440

## 9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N MethodManufactured screen ☒ Y ☐ N Type Wire Wound

Method of installation Set in

| From (ft) | To (ft) | Slot size | Number/ft | Diameter (nominal) | Material  | Gauge or Schedule |
|-----------|---------|-----------|-----------|--------------------|-----------|-------------------|
| 441       | 456     | 10        |           | 5                  | Stainless | .250              |

Length of Headpipe 9' Length of Tailpipe 0

Packer ☒ Y ☐ N Type K

## 10. FILTER PACK:

| Filter Material | From (ft) | To (ft) | Quantity (lbs or ft <sup>3</sup> ) | Placement method |
|-----------------|-----------|---------|------------------------------------|------------------|
|-----------------|-----------|---------|------------------------------------|------------------|

## 11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG)

Describe control device

## 12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 87 Static water level (ft) 82

Water temp. (°F) 68 Bottom hole temp. (°F)

Describe access port Lockable Lid

## Well test:

| Drawdown (feet) | Discharge or yield (gpm) | Test duration (minutes) | Pump                     | Bailer                   | Air                                 | Flowing artesian         |
|-----------------|--------------------------|-------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 60 at 456       | 60                       |                         | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Test method:

Water quality test or comments: Ph=8.2, tds=116, Fe=.8mg/l, gpg=9

## 13. LITHOLOGIC LOG and/or repairs or abandonment:

| Bore Dia. (in) | From (ft) | To (ft) | Remarks, lithology or description of repairs or abandonment, water temp. | Water |   |
|----------------|-----------|---------|--------------------------------------------------------------------------|-------|---|
|                |           |         |                                                                          | Y     | N |
| 10             | 0         | 3       | Top Soil                                                                 |       | X |
| 10             | 3         | 60      | Basalt Broken                                                            |       | X |
| 10             | 60        | 66      | Clay Brown, Cinders Mixed                                                |       | X |
| 10             | 66        | 82      | Basalt Black                                                             |       | X |
| 10             | 82        | 126     | Basalt Black Broken                                                      | X     |   |
| 10             | 126       | 147     | Basalt Black                                                             |       | X |
| 10/6           | 147       | 153     | Basalt Red                                                               |       | X |
| 6              | 153       | 186     | Clay Red                                                                 |       | X |
| 6              | 186       | 214     | Basalt Black                                                             |       | X |
| 6              | 214       | 221     | Cinders Red                                                              | X     |   |
| 6              | 221       | 228     | Basalt Red                                                               |       | X |
| 6              | 228       | 252     | Basalt Black                                                             |       | X |
| 6              | 252       | 259     | Cinders Red                                                              | X     |   |
| 6              | 259       | 322     | Basalt Black Broken                                                      | X     |   |
| 6              | 322       | 325     | Basalt Brown                                                             |       | X |
| 6              | 325       | 363     | Claystone Brown                                                          |       | X |
| 6              | 363       | 366     | Cinders Brown and Black                                                  | X     |   |
| 6              | 366       | 378     | Brown & Black Basalt                                                     |       | X |
| 6              | 378       | 387     | Basalt Red                                                               |       | X |
| 6              | 387       | 392     | Clay Tan                                                                 |       | X |
| 6              | 392       | 394     | Cinders Black and Red                                                    | X     |   |
| 6              | 394       | 404     | Lite Tan Ashy Clay                                                       |       | X |
| 6              | 404       | 408     | Cinders Brown and Black                                                  | X     |   |
| 6              | 408       | 424     | Lite Gray Ashy Clay                                                      |       | X |
| 6              | 424       | 439     | Gray Siltstone                                                           |       | X |
| 6              | 439       | 445     | Cinders Multi Color                                                      | X     |   |
| 6              | 445       | 455     | Clay Brown Fractured                                                     | X     |   |
| 6              | 455       | 460     | Cinders Multi Color                                                      | X     |   |

Completed Depth (Measurable): 456  
Date Started: 4/8/2024 Date Completed: 4/11/2024

## 14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Cold Steel Drilling Co. No. 793

\*Principal Driller Alan Haneberg Date 5/19/2024

\*Driller Date

\*Operator II Date

Operator I Date

\* Signature of Principal Driller and rig operator are required.







## Appendix B: USGS Borehole Geophysics Results

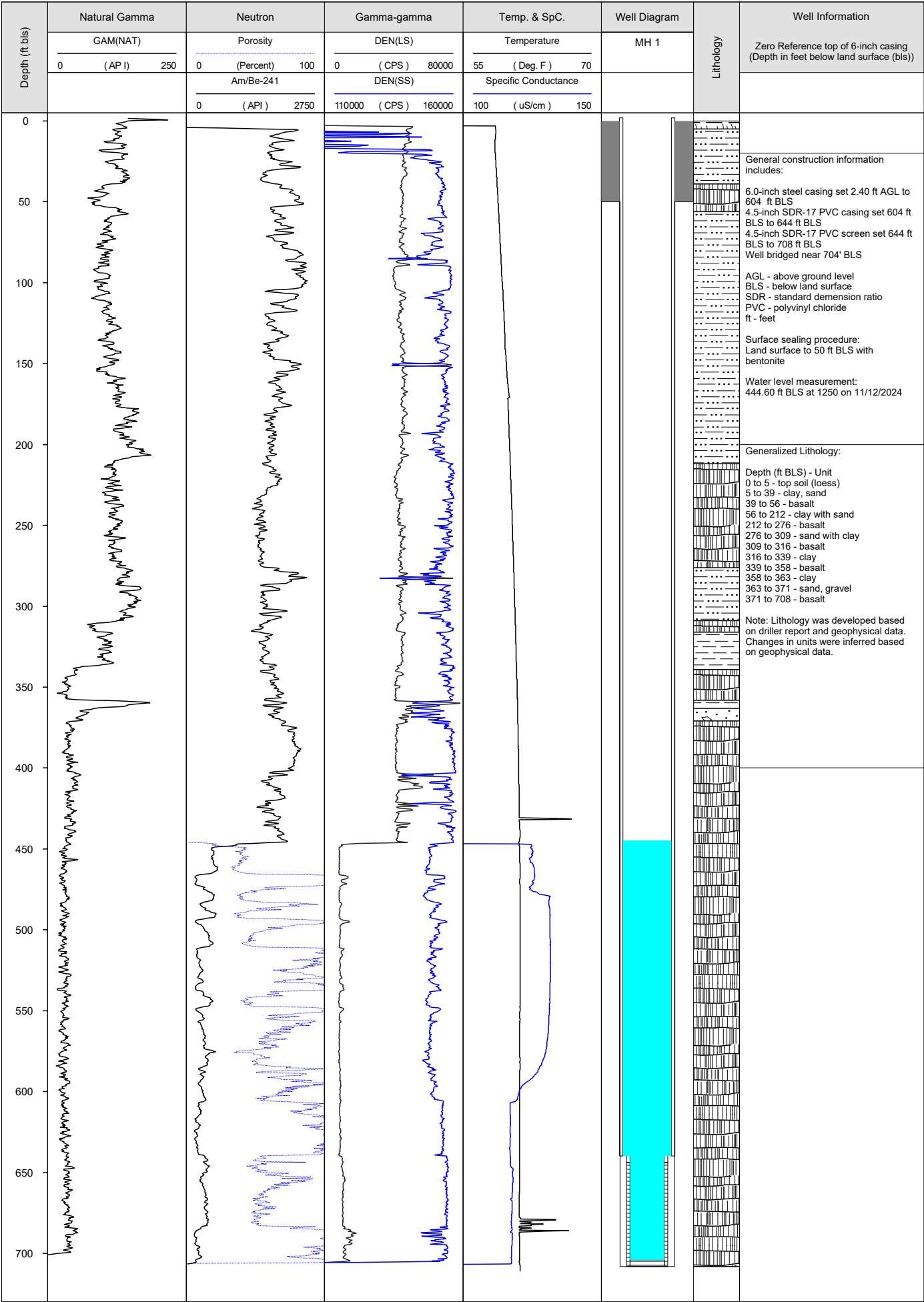


## BOREHOLE GEOPHYSICAL LOG

English/Metric units

English

|                                                                                                                                                                                                                                       |                                                      |                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|
| <b>SitelD (C1)</b> 431206115561301                                                                                                                                                                                                    | <b>Station name (C12)</b> 02S 04E 36CCC1             | <b>Other ID</b> MH 1                                   |
| <b>County</b> Elmore                                                                                                                                                                                                                  | <b>State</b> Idaho                                   | <b>Log date</b> 11/12/2024                             |
| <b>Owner</b> IDWR                                                                                                                                                                                                                     | <b>Project</b> Mountain Home                         |                                                        |
| <b>Location description</b> Mountain Home plateau, Idaho                                                                                                                                                                              |                                                      |                                                        |
| <b>Latitude</b> 43.20175                                                                                                                                                                                                              | <b>Longitude</b> -115.93707                          | <b>Lat/Long datum</b> NAD 83                           |
| <b>Altitude LMP</b> 3,081 feet                                                                                                                                                                                                        | <b>Altitude datum</b> NAVD 88                        | <b>Log measurement point (LMP)</b> 6-inch steel casing |
| <b>Height LMP</b> 2.00 feet                                                                                                                                                                                                           | <b>Description of LMP</b> Top of 6-inch steel casing |                                                        |
| <b>Borehole depth</b> 708 feet BLS                                                                                                                                                                                                    | <b>Borehole diameter</b> 10/6-inch                   | <b>Casing bottom</b> 708 ft BLS                        |
| <b>Casing diameter</b> 6/4.5-inch                                                                                                                                                                                                     | <b>Casing type</b> Steel/PVC                         | <b>Source of data</b> Well Driller Report              |
| <b>Logging unit</b> USGS                                                                                                                                                                                                              | <b>Log orientation</b> N/A                           | <b>Magnetic declination</b> 12.63 degrees              |
| <b>Recorded by</b> Jeff Zingre and Brian Twining                                                                                                                                                                                      |                                                      | <b>Observed by</b> Allison Vincent                     |
| <b>Software non-ASCII logs</b> Century                                                                                                                                                                                                |                                                      | <b>Type of log</b> Century                             |
| <b>Fluid type</b> Groundwater                                                                                                                                                                                                         | <b>Fluid depth below LMP</b> 446.60 feet BLS         | <b>at time</b> 1250                                    |
| <b>Hydrologic conditions</b> Borehole drilled and well constructed 3/28/2024. Monitoring well and in good condition. Obstruction at 704 feet BLS.<br>IDWR Well Tag D0104213.                                                          |                                                      |                                                        |
| <b>Tool manufacturer and model, tool serial number, log date and time, logging direction and speed, depth error after logging, log parameter(s) and date(s) of calibration check</b>                                                  |                                                      |                                                        |
| <b>Tool run 1</b> Tool ID: 9042A / Serial #: 864. Logs included: Specific Conductance, Temperature, and Natural Gamma. Log 9042A run inside of 6/4.5-inch casing. Up log run from bottom to land surface.                             |                                                      |                                                        |
| <b>Tool run 2</b> Tool ID: 9057A / Serial #: 1077. Logs included: Natural Gamma, Neutron, Porosity (relative change) - 1.0 Curie Am/Be-241 source. Log 9057A run inside of 6/4.5-inch casing. Up log run from bottom to land surface. |                                                      |                                                        |
| <b>Tool run 3</b> Tool ID: 0024C / Serial #: 776. Logs included: Short Spaced (SS) Density, Long Spaced (LS) Density - 0.2 Curie Cs-137 source. Log 0024C run inside of 6/4.5-inch casing. Up log run from bottom to land surface.    |                                                      |                                                        |
| <b>Remarks</b> Logs shown below scaled to reflect response after entering groundwater. Three LAS files generated for MH 1.                                                                                                            |                                                      |                                                        |



# PLAN VIEW

## COMPU-LOG DEVIATION

CLIENT: USGS  
LOCATION: ELMORE  
HOLE ID: MH1  
DATE OF LOG: 11/12/24  
PROBE: 9095 1203

  
MAG DECL: 12.6

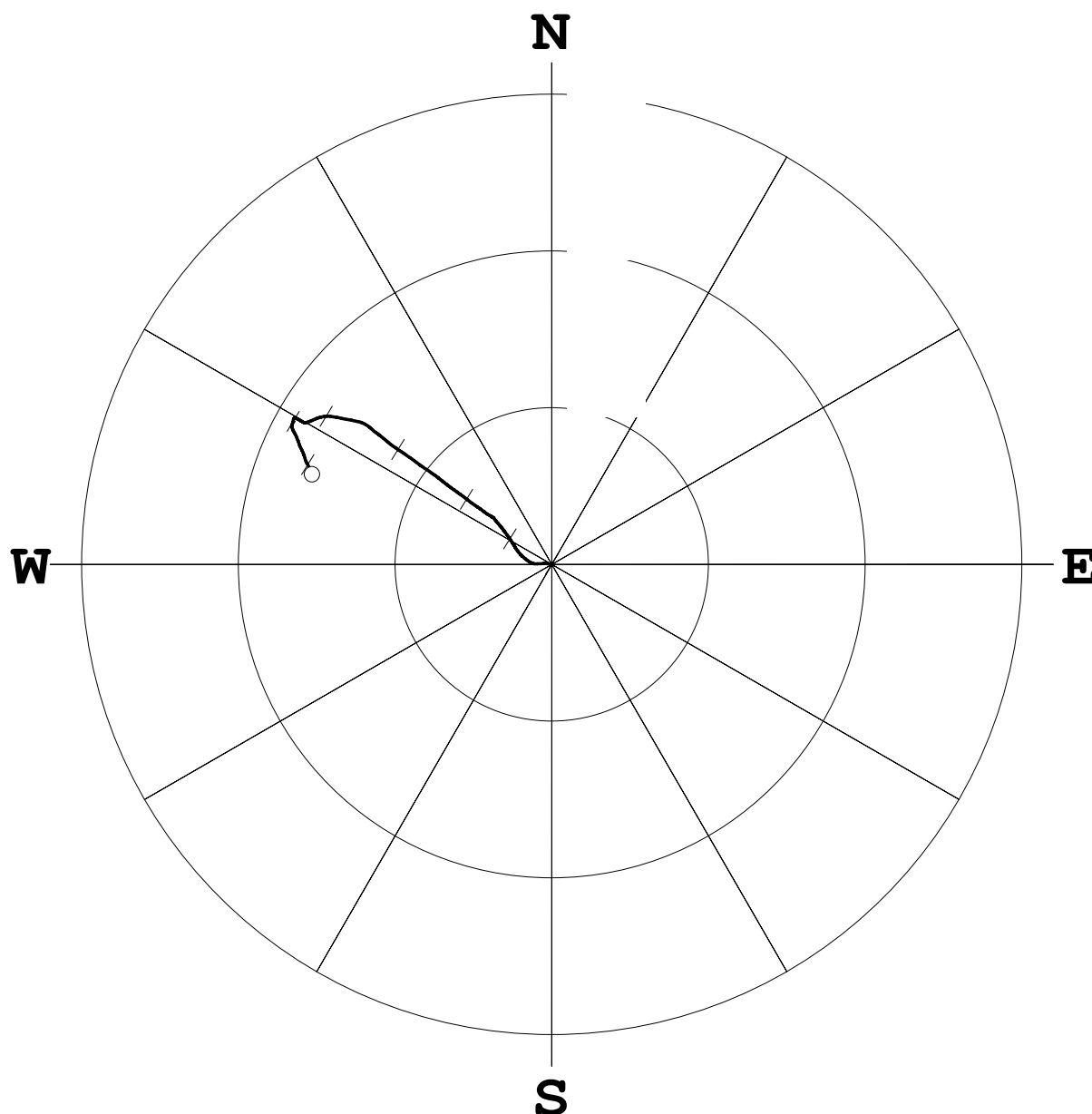
SCALE: 2 FT/IN

AZIMUTH: 290.6

DISTANCE: 3.3 FT

+ = 100 FT INCR

○ = BOTTOM OF HOLE

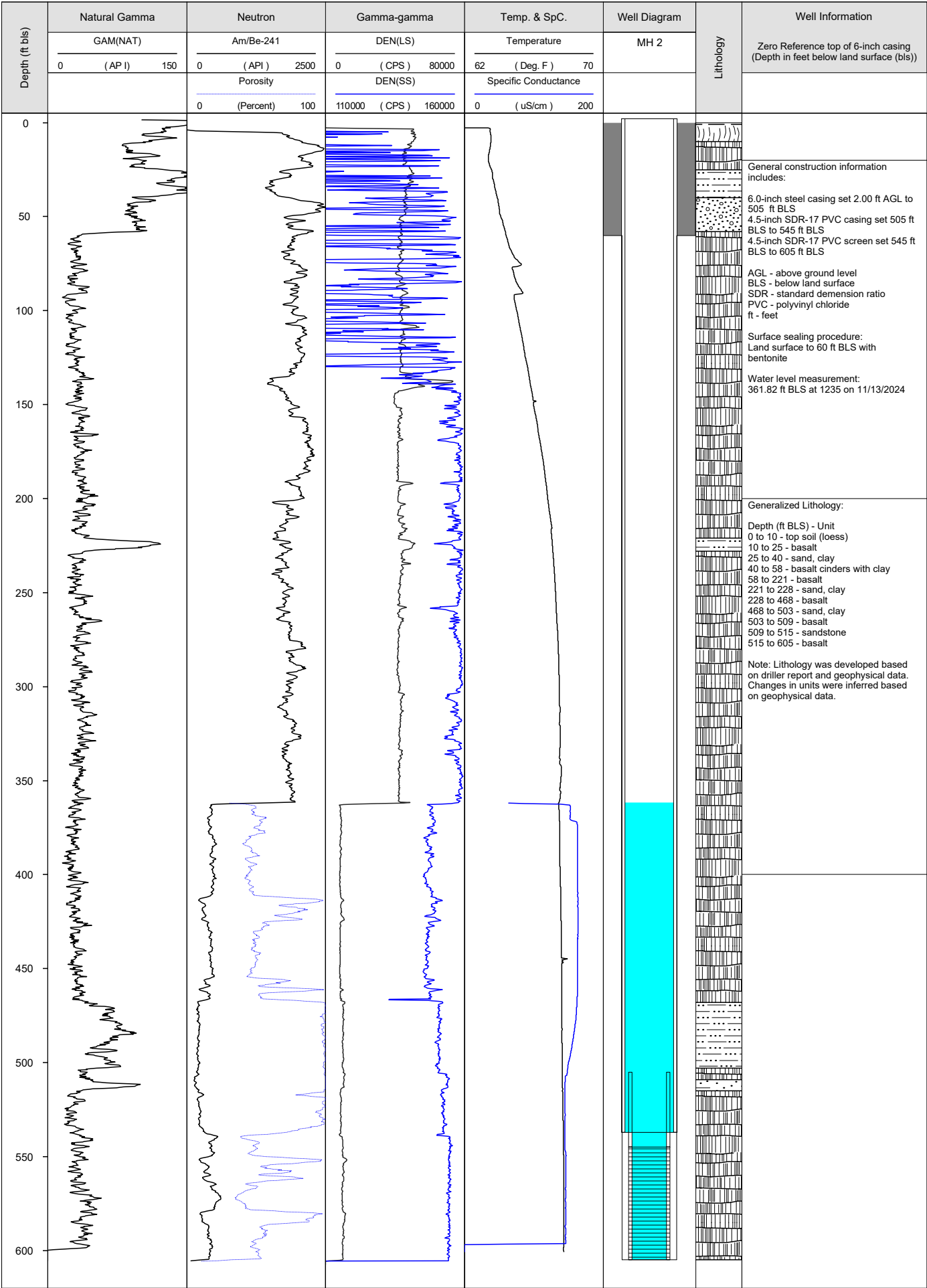




## BOREHOLE GEOPHYSICAL LOG

English/Metric units English

|                                                                                                                                                                                                                                       |  |                                                      |                    |                                                        |                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|--------------------|--------------------------------------------------------|----------------------------|
| <b>SitelD (C1)</b> 430524115565701                                                                                                                                                                                                    |  | <b>Station name (C12)</b> 04S 04E 11CAD1             |                    | <b>Other ID</b> MH 2                                   |                            |
| <b>County</b> Elmore                                                                                                                                                                                                                  |  |                                                      | <b>State</b> Idaho |                                                        | <b>Log date</b> 11/13/2024 |
| <b>Owner</b> IDWR                                                                                                                                                                                                                     |  |                                                      |                    | <b>Project</b> Mountain Home                           |                            |
| <b>Location description</b> Mountain Home plateau, Idaho                                                                                                                                                                              |  |                                                      |                    |                                                        |                            |
| <b>Latitude</b> 43.08989                                                                                                                                                                                                              |  | <b>Longitude</b> -115.94904                          |                    | <b>Lat/Long datum</b> NAD 83                           |                            |
| <b>Altitude LMP</b> 2,983 feet                                                                                                                                                                                                        |  | <b>Altitude datum</b> NAVD 88                        |                    | <b>Log measurement point (LMP)</b> 6-inch steel casing |                            |
| <b>Height LMP</b> 2.00 feet                                                                                                                                                                                                           |  | <b>Description of LMP</b> Top of 6-inch steel casing |                    |                                                        |                            |
| <b>Borehole depth</b> 605 feet BLS                                                                                                                                                                                                    |  | <b>Borehole diameter</b> 10/6-inch                   |                    | <b>Casing bottom</b> 605 feet BLS                      |                            |
| <b>Casing diameter</b> 6/4.5-inch                                                                                                                                                                                                     |  | <b>Casing type</b> Steel/PVC                         |                    | <b>Source of data</b> Well Driller Report              |                            |
| <b>Logging unit</b> USGS                                                                                                                                                                                                              |  | <b>Log orientation</b> N/A                           |                    | <b>Magnetic declination</b> 12.61 degrees              |                            |
| <b>Recorded by</b> Jeff Zingre and Brian Twining                                                                                                                                                                                      |  |                                                      |                    | <b>Observed by</b> N/A                                 |                            |
| <b>Software non-ASCII logs</b> Century                                                                                                                                                                                                |  |                                                      |                    | <b>Type of log</b> Century                             |                            |
| <b>Fluid type</b> Groundwater                                                                                                                                                                                                         |  | <b>Fluid depth below LMP</b> 363.82 feet BLS         |                    | <b>at time</b> 1235                                    |                            |
| <b>Hydrologic conditions</b> Borehole drilled and well constructed 3/21/2024. Monitoring well and in good condition, no obstructions. IDWR Tag D0104214.                                                                              |  |                                                      |                    |                                                        |                            |
| <b>Tool manufacturer and model, tool serial number, log date and time, logging direction and speed, depth error after logging, log parameter(s) and date(s) of calibration check</b>                                                  |  |                                                      |                    |                                                        |                            |
| <b>Tool run 1</b> Tool ID: 9042A / Serial #: 864. Logs included: Specific Conductance, Temperature, and Natural Gamma. Log 9042A run inside of 6/4.5-inch casing. Up log run from bottom to land surface.                             |  |                                                      |                    |                                                        |                            |
| <b>Tool run 2</b> Tool ID: 9057A / Serial #: 1077. Logs included: Natural Gamma, Neutron, Porosity (relative change) - 1.0 Curie Am/Be-241 source. Log 9057A run inside of 6/4.5-inch casing. Up log run from bottom to land surface. |  |                                                      |                    |                                                        |                            |
| <b>Tool run 3</b> Tool ID: 0024C / Serial #: 776. Logs included: Short Spaced (SS) Density, Long Spaced (LS) Density - 0.2 Curie Cs-137 source. Log 0024C run inside of 6/4.5-inch casing. Up log run from bottom to land surface.    |  |                                                      |                    |                                                        |                            |
| <b>Remarks</b> Logs shown below scaled to reflect response after entering groundwater. Three LAS files generated for MH 2.                                                                                                            |  |                                                      |                    |                                                        |                            |



# PLAN VIEW COMPU-LOG DEVIATION

CLIENT: USGS  
LOCATION: ELMORE  
HOLE ID: MH2  
DATE OF LOG: 11/13/24  
PROBE: 9095C 1203

  
MAG DECL: 12.6

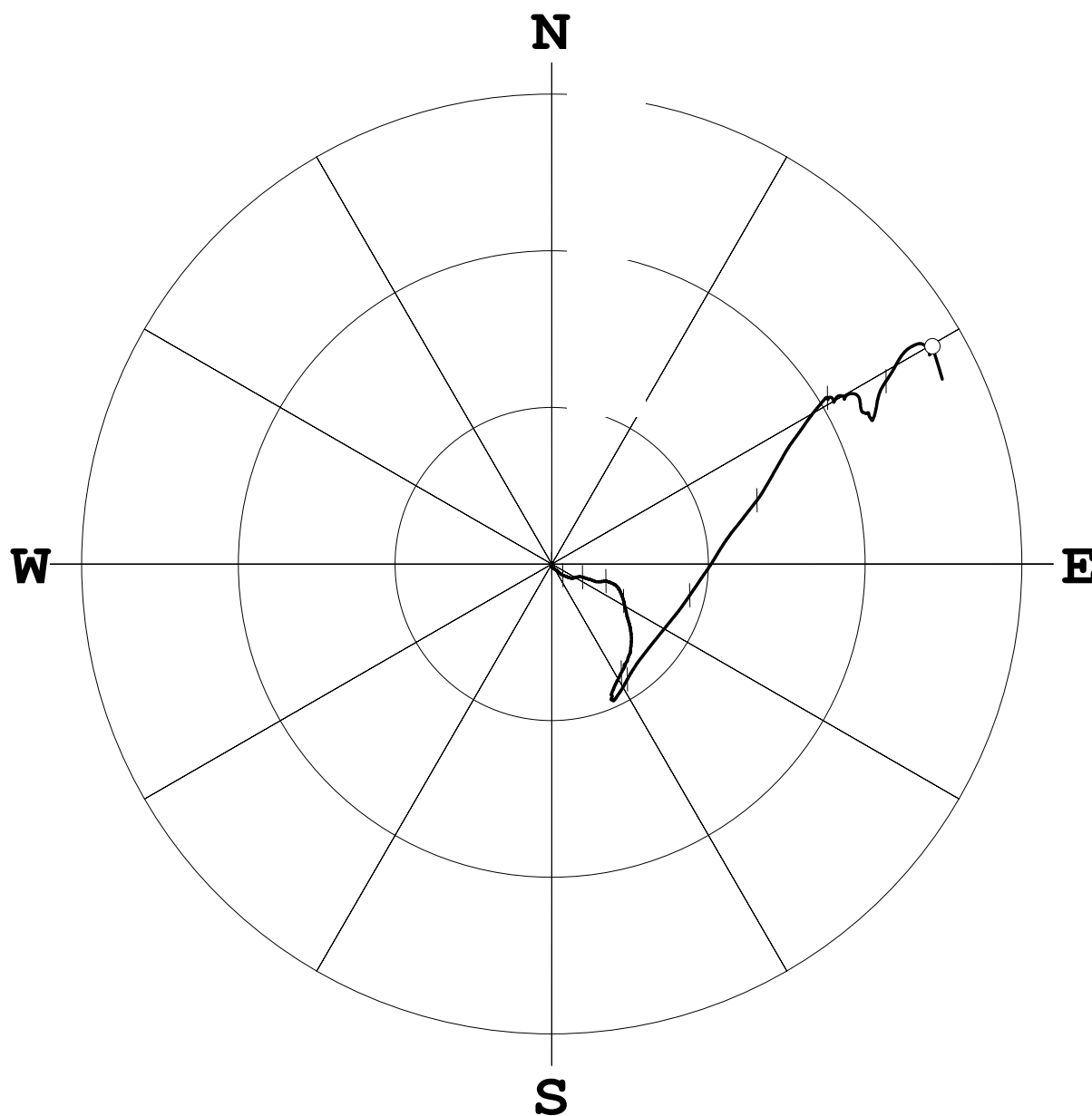
SCALE: 2 FT/IN

AZIMUTH: 60.3

DISTANCE: 5.6 FT

+ = 50 FT INCR

○ = BOTTOM OF HOLE



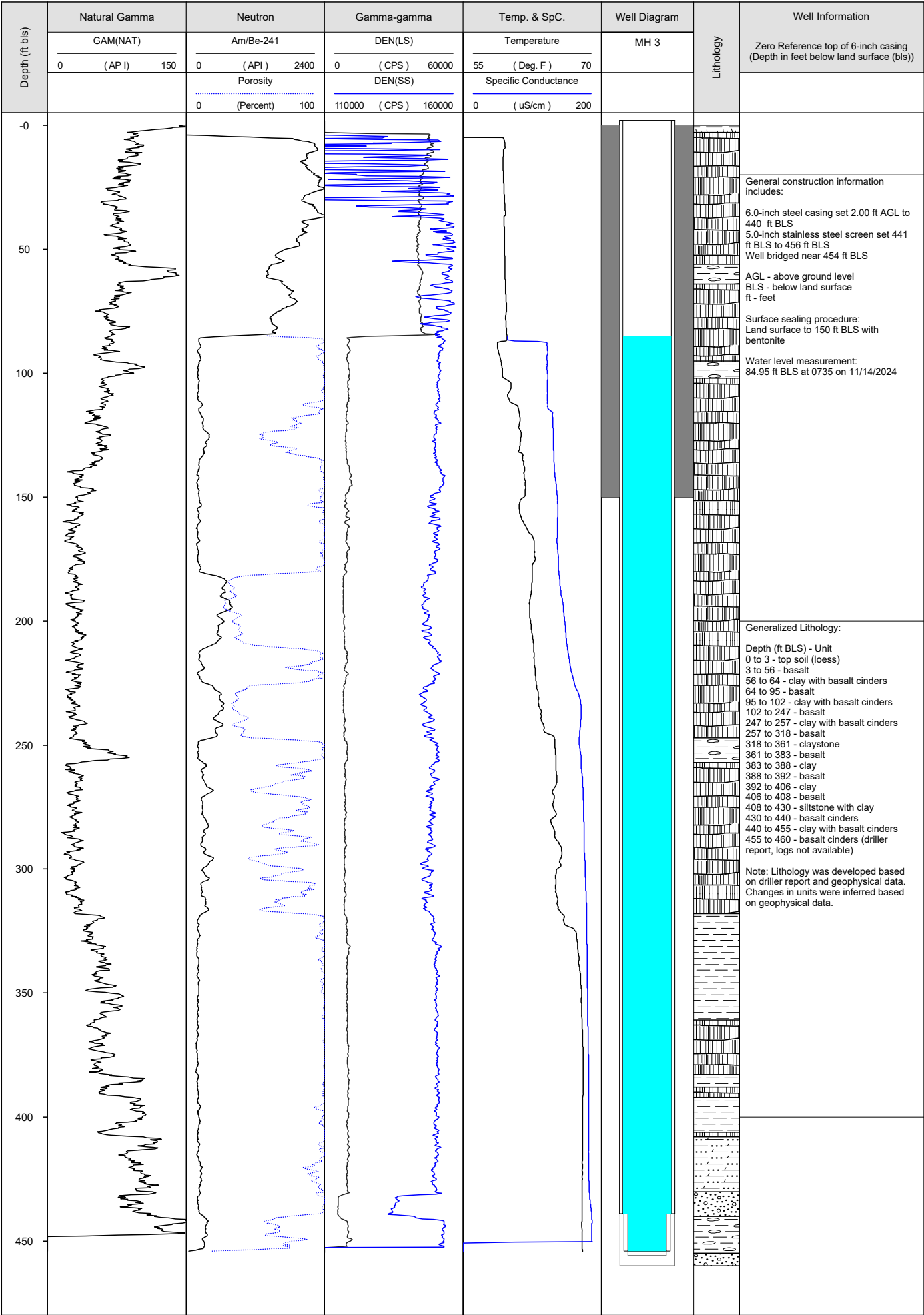


## BOREHOLE GEOPHYSICAL LOG

English/Metric units

English

|                                                                                                                                                                                                                                     |                                                      |                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|
| <b>SitelD (C1)</b> 430930115411601                                                                                                                                                                                                  | <b>Station name (C12)</b> 03S 06E 13CDA1             | <b>Other ID</b> MH 3                                   |
| <b>County</b> Elmore                                                                                                                                                                                                                | <b>State</b> Idaho                                   | <b>Log date</b> 11/14/2024                             |
| <b>Owner</b> IDWR                                                                                                                                                                                                                   | <b>Project</b> Mountain Home                         |                                                        |
| <b>Location description</b> Mountain Home plateau, Idaho                                                                                                                                                                            |                                                      |                                                        |
| <b>Latitude</b> 43.15828                                                                                                                                                                                                            | <b>Longitude</b> -115.68785                          | <b>Lat/Long datum</b> NAD 83                           |
| <b>Altitude LMP</b> 3,207 feet BLS                                                                                                                                                                                                  | <b>Altitude datum</b> NAVD 88                        | <b>Log measurement point (LMP)</b> 6-inch steel casing |
| <b>Height LMP</b> 2.00 feet                                                                                                                                                                                                         | <b>Description of LMP</b> Top of 6-inch steel casing |                                                        |
| <b>Borehole depth</b> 460 feet BLS                                                                                                                                                                                                  | <b>Borehole diameter</b> 10/6-inch                   | <b>Casing bottom</b> 456 feet BLS                      |
| <b>Casing diameter</b> 6/5-inch                                                                                                                                                                                                     | <b>Casing type</b> Steel/SS                          | <b>Source of data</b> Well Driller Report              |
| <b>Logging unit</b> USGS                                                                                                                                                                                                            | <b>Log orientation</b> N/A                           | <b>Magnetic declination</b> 12.54 degrees              |
| <b>Recorded by</b> Jeff Zingre and Brian Twining                                                                                                                                                                                    |                                                      | <b>Observed by</b> N/A                                 |
| <b>Software non-ASCII logs</b> Century                                                                                                                                                                                              |                                                      | <b>Type of log</b> Century                             |
| <b>Fluid type</b> Groundwater                                                                                                                                                                                                       | <b>Fluid depth below LMP</b> 86.95 feet BLS          | <b>at time</b> 0735                                    |
| <b>Hydrologic conditions</b> Borehole drilled and well constructed 4/11/2024. Monitoring well and in good condition. Obstruction at 454 feet BLS.<br>IDWR Well Tag D0104215.                                                        |                                                      |                                                        |
| <b>Tool manufacturer and model, tool serial number, log date and time, logging direction and speed, depth error after logging, log parameter(s) and date(s) of calibration check</b>                                                |                                                      |                                                        |
| <b>Tool run 1</b> Tool ID: 9042A / Serial #: 864. Logs included: Specific Conductance, Temperature, and Natural Gamma. Log 9042A run inside of 6/5-inch casing. Up log run from bottom to land surface.                             |                                                      |                                                        |
| <b>Tool run 2</b> Tool ID: 9057A / Serial #: 1077. Logs included: Natural Gamma, Neutron, Porosity (relative change) - 1.0 Curie Am/Be-241 source. Log 9057A run inside of 6/5-inch casing. Up log run from bottom to land surface. |                                                      |                                                        |
| <b>Tool run 3</b> Tool ID: 0024C / Serial #: 776. Logs included: Short Spaced (SS) Density, Long Spaced (LS) Density - 0.2 Curie Cs-137 source. Log 0024C run inside of 6/5-inch casing. Up log run from bottom to land surface.    |                                                      |                                                        |
| <b>Remarks</b> Logs shown below scaled to reflect response after entering groundwater. Three LAS files generated for MH 3.                                                                                                          |                                                      |                                                        |



# PLAN VIEW

## COMPU-LOG DEVIATION

CLIENT: USGS  
LOCATION: ELMORE  
HOLE ID: MH3  
DATE OF LOG: 11/14/24  
PROBE: 9095C 1203

  
MAG DECL: 12.5

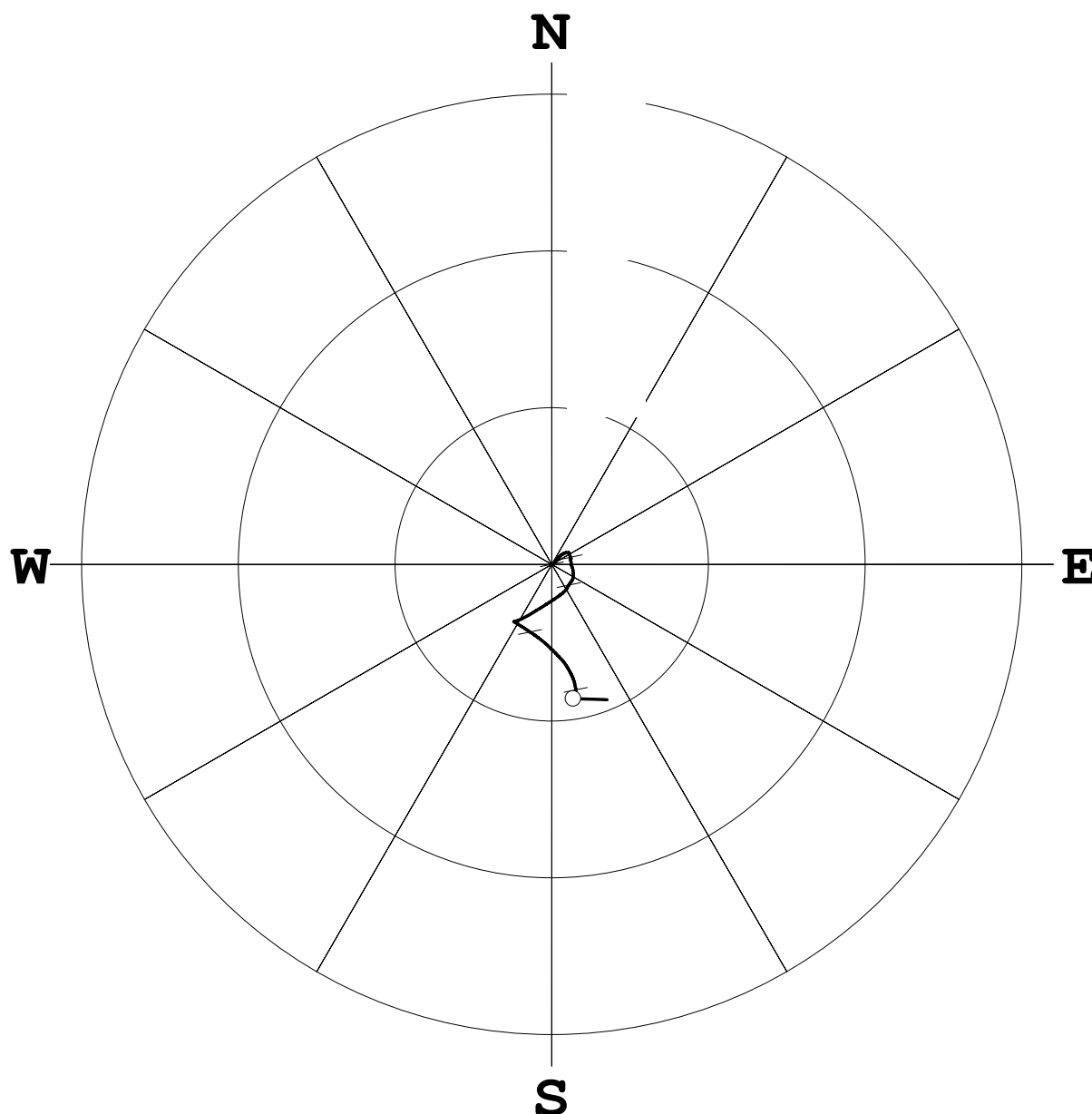
SCALE: 2 FT/IN

AZIMUTH: 171.0

DISTANCE: 1.7 FT

+ = 100 FT INCR

○ = BOTTOM OF HOLE



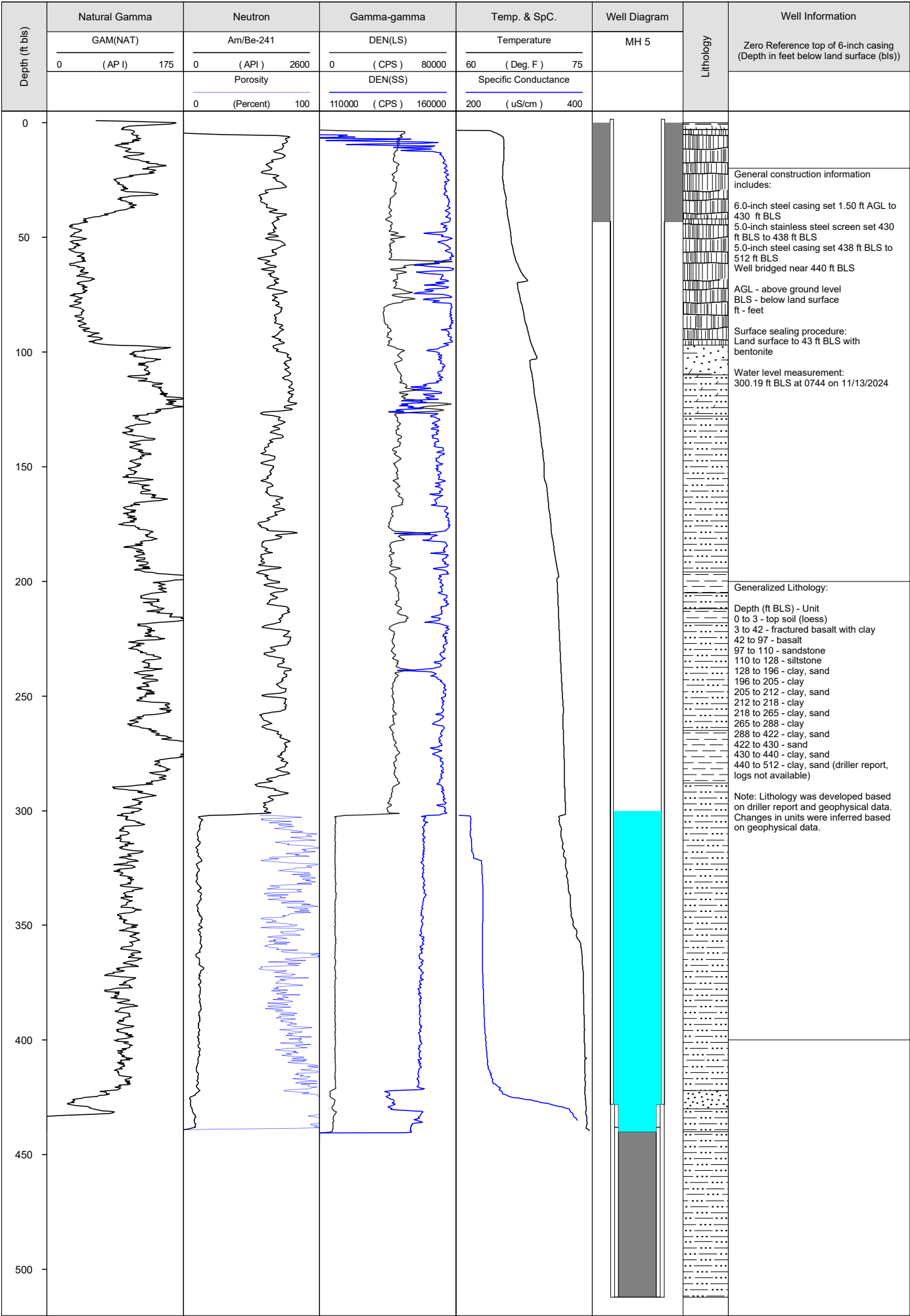


## BOREHOLE GEOPHYSICAL LOG

English/Metric units

English

|                                                                                                                                                                                                                                     |  |                                                                  |                    |                                                        |                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------|--------------------|--------------------------------------------------------|----------------------------|
| <b>SitelD (C1)</b> 425728115425701                                                                                                                                                                                                  |  | <b>Station name (C12)</b> 05S 06E 26CBC1                         |                    | <b>Other ID</b> MH 5                                   |                            |
| <b>County</b> Elmore                                                                                                                                                                                                                |  |                                                                  | <b>State</b> Idaho |                                                        | <b>Log date</b> 11/13/2024 |
| <b>Owner</b> IDWR                                                                                                                                                                                                                   |  |                                                                  |                    | <b>Project</b> Mountain Home                           |                            |
| <b>Location description</b> Mountain Home plateau, Idaho                                                                                                                                                                            |  |                                                                  |                    |                                                        |                            |
| <b>Latitude</b> 42.95765                                                                                                                                                                                                            |  | <b>Longitude</b> -115.71581                                      |                    | <b>Lat/Long datum</b> NAD 83                           |                            |
| <b>Altitude LMP</b> 2,775 feet BLS                                                                                                                                                                                                  |  | <b>Altitude datum</b> NAVD 88                                    |                    | <b>Log measurement point (LMP)</b> 6-inch steel casing |                            |
| <b>Height LMP</b> 1.50 feet                                                                                                                                                                                                         |  | <b>Description of LMP</b> Top of 6-inch steel casing             |                    |                                                        |                            |
| <b>Borehole depth</b> 512 feet BLS                                                                                                                                                                                                  |  | <b>Borehole diameter</b> 10/6-incj                               |                    | <b>Casing bottom</b> 512 feet BLS                      |                            |
| <b>Casing diameter</b> 6/5-inch                                                                                                                                                                                                     |  | <b>Casing type</b> Steel/SS                                      |                    | <b>Source of data</b> Well Driller Report              |                            |
| <b>Logging unit</b> USGS                                                                                                                                                                                                            |  | <b>Log orientation</b> N/A                                       |                    | <b>Magnetic declination</b> 12.51 degrees              |                            |
| <b>Recorded by</b> Jeff Zingre and Brian Twining                                                                                                                                                                                    |  |                                                                  |                    | <b>Observed by</b> N/A                                 |                            |
| <b>Software non-ASCII logs</b> Century                                                                                                                                                                                              |  |                                                                  |                    | <b>Type of log</b> Century                             |                            |
| <b>Fluid type</b> Groundwater                                                                                                                                                                                                       |  | <b>Fluid depth below LMP</b> 301.69 feet BLS <b>at time</b> 0744 |                    |                                                        |                            |
| <b>Hydrologic conditions</b> Borehole drilled and well constructed 3/12/2024. Monitoring well and in good condition. Obstruction at 440 feet BLS.<br>IDWR Well Tag D0104216.                                                        |  |                                                                  |                    |                                                        |                            |
| <b>Tool manufacturer and model, tool serial number, log date and time, logging direction and speed, depth error after logging, log parameter(s) and date(s) of calibration check</b>                                                |  |                                                                  |                    |                                                        |                            |
| <b>Tool run 1</b> Tool ID: 9042A / Serial #: 864. Logs included: Specific Conductance, Temperature, and Natural Gamma. Log 9042A run inside of 6/5-inch casing. Up log run from bottom to land surface.                             |  |                                                                  |                    |                                                        |                            |
| <b>Tool run 2</b> Tool ID: 9057A / Serial #: 1077. Logs included: Natural Gamma, Neutron, Porosity (relative change) - 1.0 Curie Am/Be-241 source. Log 9057A run inside of 6/5-inch casing. Up log run from bottom to land surface. |  |                                                                  |                    |                                                        |                            |
| <b>Tool run 3</b> Tool ID: 0024C / Serial #: 776. Logs included: Short Spaced (SS) Density, Long Spaced (LS) Density - 0.2 Curie Cs-137 source. Log 0024C run inside of 6/5-inch casing. Up log run from bottom to land surface.    |  |                                                                  |                    |                                                        |                            |
| <b>Remarks</b> Logs shown below scaled to reflect response after entering groundwater. Three LAS files generated for MH 5.                                                                                                          |  |                                                                  |                    |                                                        |                            |



# PLAN VIEW

## COMPU-LOG DEVIATION

CLIENT: USGS  
LOCATION: ELMORE  
HOLE ID: MH5  
DATE OF LOG: 11/13/24  
PROBE: 9095C 1203

  
MAG DECL: 12.5

SCALE: 2 FT/IN

AZIMUTH: 141.9  
DISTANCE: 4.9 FT  
+ = 50 FT INCR  
○ = BOTTOM OF HOLE

