## SECTION 7

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## GROUND WATER MONITORING FOR HOMESTAKE'S GRANTS PROJECT



## FIGURES

## SECTION 7

## TABLE OF CONTENTS

## GROUND WATER MONITORING FOR HOMESTAKE'S GRANTS PROJECT

### FIGURES (continued)

# 7.0 LOWER CHINLE AQUIFER MONITORING

## 7.1 LOWER CHINLE WELL COMPLETION

The Lower Chinle aquifer is a permeable zone in the Chinle shale which exists below the Middle Chinle sandstone and above the San Andres aquifer. The Lower Chinle aquifer becomes important west and southwest of the Homestake Grants Project area where this unit is present at shallower depths. The general permeability of the Lower Chinle aquifer can vary dramatically, because the transmitting ability of this aquifer depends on the presence of fractured or altered shale that provides secondary permeability. Tables 5.1-1 through 5.1-4 present the Lower Chinle basic well data along with the other Chinle aquifer wells.

Wells that are completed in the Lower Chinle aquifer are shown on Figures 7.1-1 and 7.1-1A. Chinle shale exists above the top of the Lower Chinle aquifer in the area with the dot pattern. This figure also shows the location of the Lower Chinle aquifer subcrop underlying the alluvium. The cyan horizontal hatched pattern shows where the alluvium is saturated in the subcrop area, while the plus-sign pattern shows where the alluvium is not saturated in the subcrop area. Thirty four new R and V Lower Chinle wells were drilled in Section 3 (see Figure 7.1-1A for location) in 2015. No Lower Chinle wells were used for south collection in 2015.

WEST FAULT

EAST FAULT

COUNTY ROAD 63

COUNTY ROAD 25

LARGE-TAILINGS-PILE
(RECLAMATION IN PROGRESS)

HWC OFFICE

COLLECTION POND

LINED EVAP POND NO. 2

LINED EVAP. POND 01

SMALL TAILINGS PILE

HIGHWAY-605

PLEASANT-VALLEY ESTATES

MURRAY-ACRES

VALLE VERDE

BROADVIEW ACRES

FELICE-ACRES

THUNDERBIRD LANE

RALPH CARR ROAD

RAILROAD

HIGHWAY-122

WEST FAULT

HIGHWAY-605

SOS MAP, SEE FIGURE 7.1-1A

CV32 CV33 CV31 CV36 CV38 CV39 CV37 CV43 CV26 CV41 CV29

536R 900 837 530 832 988 990 908 954 961 963

1545500 1543500 1541500 1539500 1537500 1535500 1533500

19,20 30,29 20,21 29,28 21,22 28,27 22,23 27,26 23,24 26,25 26,25 35,36 30,29 31,32 29,28 32,33 32,33 5,4 33,34 3,4 33,34 3,2 35,36 1,2 27,26 34,35 27,26 34,35

473400 475400 477400 479400 481400 485400 487400 489400 491400

1520'

NOTE: AQUIFER NOT CONTINUOUS IN SOME AREAS

--LEGEND--

- LOWER CHINLE WELLS
- LOWER CHINLE OFF-SITE COLLECTION
- OFFSET WELL

LOWER CHINLE

SUBCROP OF LOWER CHINLE ALLUVIUM OVERLIES SANDSTONE

UNSATURATED ALLUVIUM SATURATED ALLUVIUM

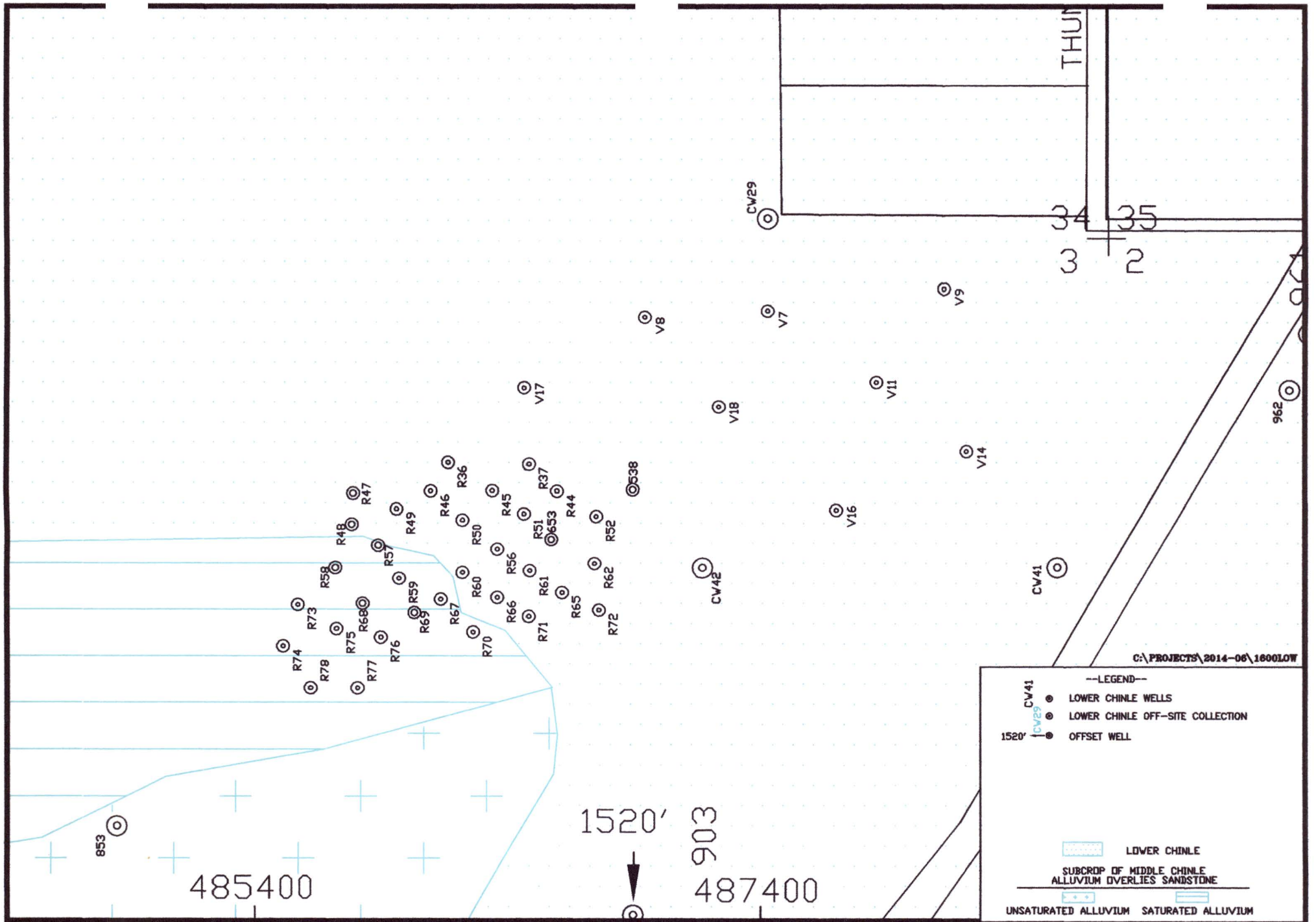
N W E S

SCALE: 1" = 1600'

C:\PROJECTS\2016-06\1600LOW

DATE: 2/10/16

**FIGURE 7.1-1. LIMITS OF LOWER CHINLE AQUIFER AND WELL LOCATIONS, 2015**




HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

DATE: 2/10/16

SCALE: 1"=500'

PAGE: 7.1-3

**FIGURE 7.1-1A. LIMITS OF LOWER CHINLE AQUIFER AND WELL LOCATIONS, SOS, 2015**

## 7.2 LOWER CHINLE WATER LEVELS

Water-level elevations in the Lower Chinle wells are presented along with the data for the Upper and Middle Chinle wells in Appendix A. Figures 7.2-1 and 7.2-1A presents water-level elevations in the Lower Chinle wells and the fall of 2015 water-level elevation contours. The West and East Faults are also shown on this figure. The approximate alluvial-Lower Chinle subcrop areas are also shown on this figure. Flow west of the West Fault in the Lower Chinle is mainly to the northeast. Flow between the two faults is to the northeast in the area of the tailings. The flow is to the northwest in the southern portion of the Lower Chinle aquifer between the faults. The northwesterly flow direction in this area indicates that the Lower Chinle water moves across the West Fault in the area west of Broadview Acres. Lower Chinle water levels in 2015 were similar to the 2014 values in Section 3 but slightly higher. The highest water-level elevations in Section 3 are in or near the subcrop area of the Lower Chinle showing that the alluvial aquifer is recharging the Lower Chinle aquifer in this area. Ground water in the Lower Chinle in the area of well CW42 is mainly moving to the north toward well CW29.

The Lower Chinle wells for which water-level time plots were prepared are shown on Figure 7.2-2. Water levels are presented for Lower Chinle wells 653, 853, CW29, CW41 and CW42 on Figure 7.2-3. Water levels in each of these Lower Chinle wells rose in 2015. Small overall water-level decreases had been observed over the last few years in Lower Chinle wells 653, 853, CW41 and CW42 but the 2010 through 2015 water levels very gradually rose.

Figure 7.2-4 presents water-level elevations versus time for Lower Chinle wells CW31, CW32, CW33, CW36, CW37 and CW43 (see Figure 7.2-2 for location of these wells). Water levels had gradually declined over the last few years in wells CW31, CW36, CW37 and CW43 but gradually rose in 2010 through 2015. Water levels have very gradually increased in well CW33 with time.

Water levels have decreased in Lower Chinle well CW32 for several years, and this trend may have ceased in 2015 with fairly steady levels. The rate and magnitude of decrease in this Lower Chinle well is similar to that observed in the alluvial and San Andres aquifers to the west in Sections 29, 32 and 33. These declines are different than the fairly steady alluvial water levels near well CW33. This indicates that the Lower Chinle aquifer near well CW32 is

hydrologically connected to the alluvial aquifer west of this area but is isolated from the alluvial aquifer in its immediate area.

WEST FAULT

EAST FAULT

COUNTY ROAD 63

COUNTY ROAD 25

LARGE-TAILINGS-PILE
(RECLAMATION IN PROGRESS)

NMC OFFICE

COLLECTION POND

LINED EVAP POND NO. 2

LINED EVAP. POND #1

SMALL TAILINGS PILE

HIGHWAY-605

PLEASANT-VALLEY ESTATES

MURRAY-ACRES

VALLE VERDE

BROADVIEW ACRES

FELICE-ACRES

THUNDERBIRD LANE

RAILROAD

HIGHWAY-122

WEST FAULT

6465

6469.19

6419.18

6470

6475.81

6475.24

6475

6480

6481.99

6485

6488.38

6490

6450

6460

6455

6465

6475

6470

CV32

CV33

CV31

CV36

CV38

CV34

CV35

CV37

536R

900

837

530

832

988

960

956

906

903

961

CV26

1545500

1543500

1541500

1539500

1537500

1535500

1533500

19,20 / 30,29

20,21 / 29,28

21,22 / 28,27

22,23 / 27,26

23,24 / 26,25

30,29 / 31,32

29,28 / 32,33

28,27 / 33,34

27,26 / 34,35

26,25 / 35,36

32,33 / 5,4

33,34 / 3,2

473400

475400

477400

479400

481400

485400

487400

489400

491400

1520'

SOS MAP, SEE FIGURE 7.2-1A

N

W

E

S

--LEGEND--

CV41 / CV29 — LOWER CHINLE WELLS

LOWER CHINLE OFF-SITE COLLECTION

1520' — OFFSET WELL

6469.9 DATA

6460 CONTOUR AND LABEL

LOWER CHINLE FLOW

SUBCROP OF LOWER CHINLE ALLUVIUM OVERLIES SANDSTONE

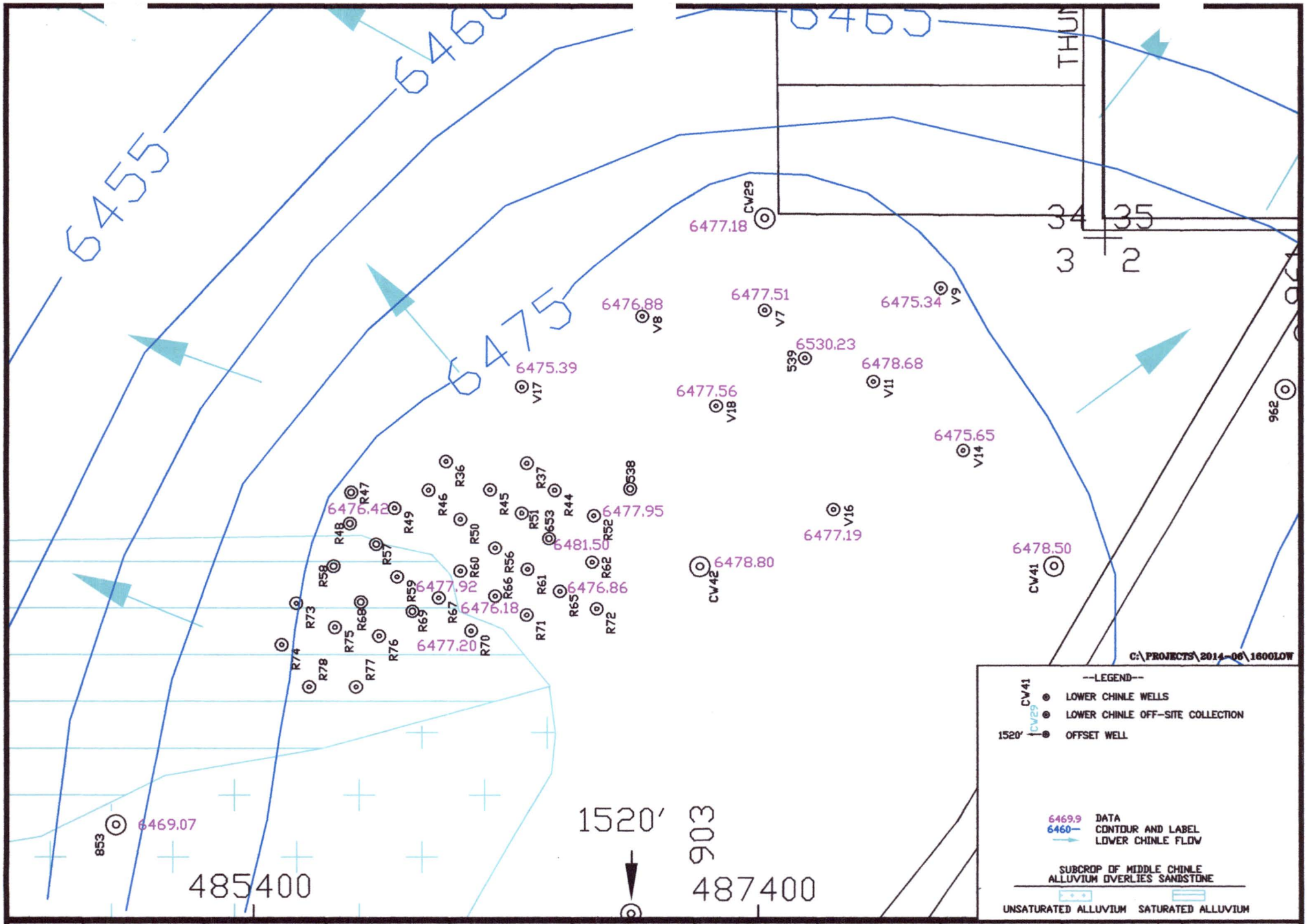
UNSATURATED ALLUVIUM SATURATED ALLUVIUM

SCALE: 1" = 1600'

C:\PROJECTS\2016-06\1600LOW

DATE: 2/10/16

FIGURE 7.2-1 WATER LEVEL ELEVATIONS OF THE LOWER CHINLE AQUIFER, 2015, FT-MSL

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DATE: 2/10/16

**FIGURE 7.2-1A. WATER LEVEL ELEVATIONS OF THE LOWER CHINLE AQUIFER, SOS, 2015, FT-MSL**

SCALE: 1"=500'

PAGE: 7.2-4

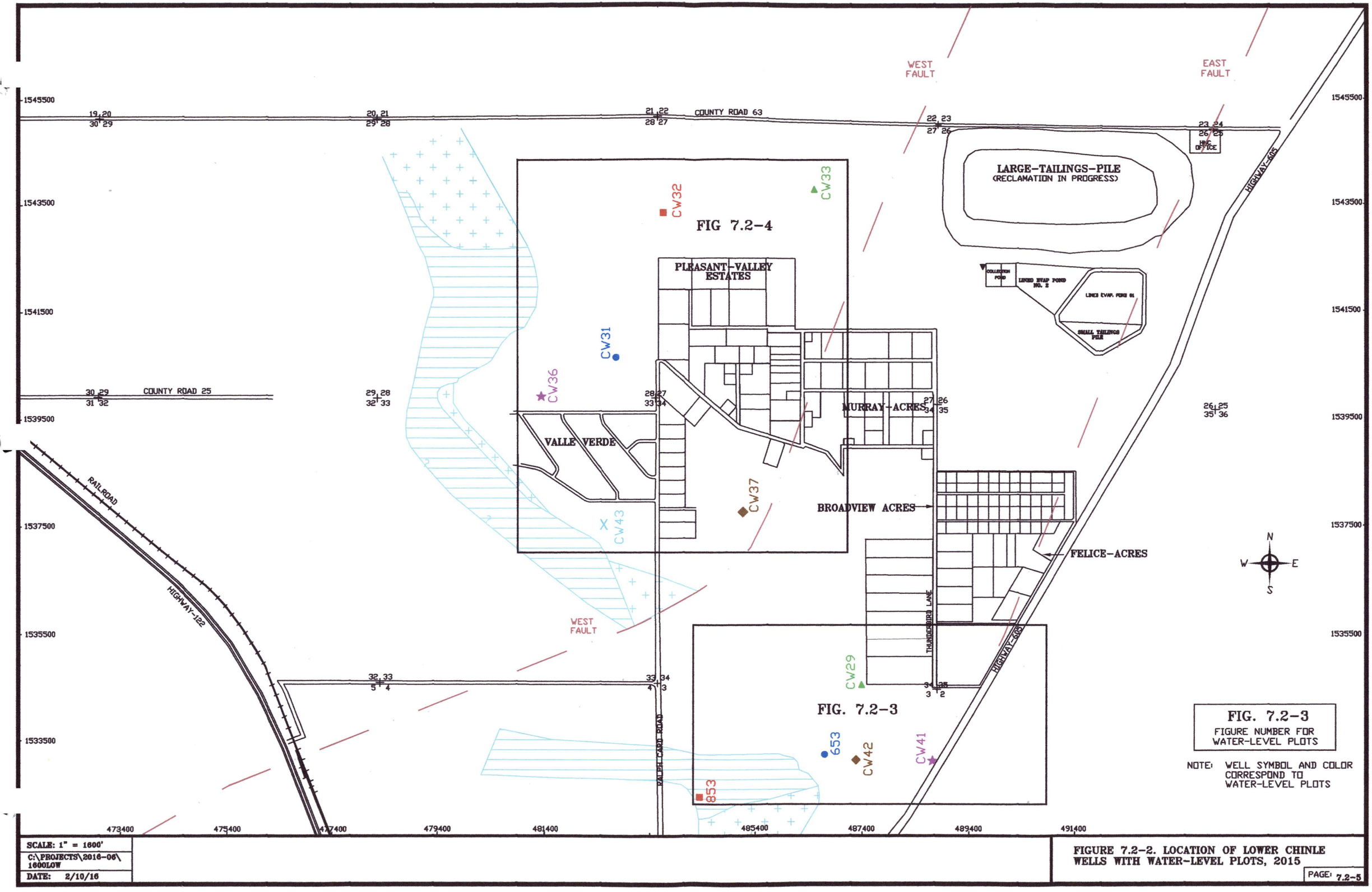



FIGURE 7.2-2. LOCATION OF LOWER CHINLE WELLS WITH WATER-LEVEL PLOTS, 2015

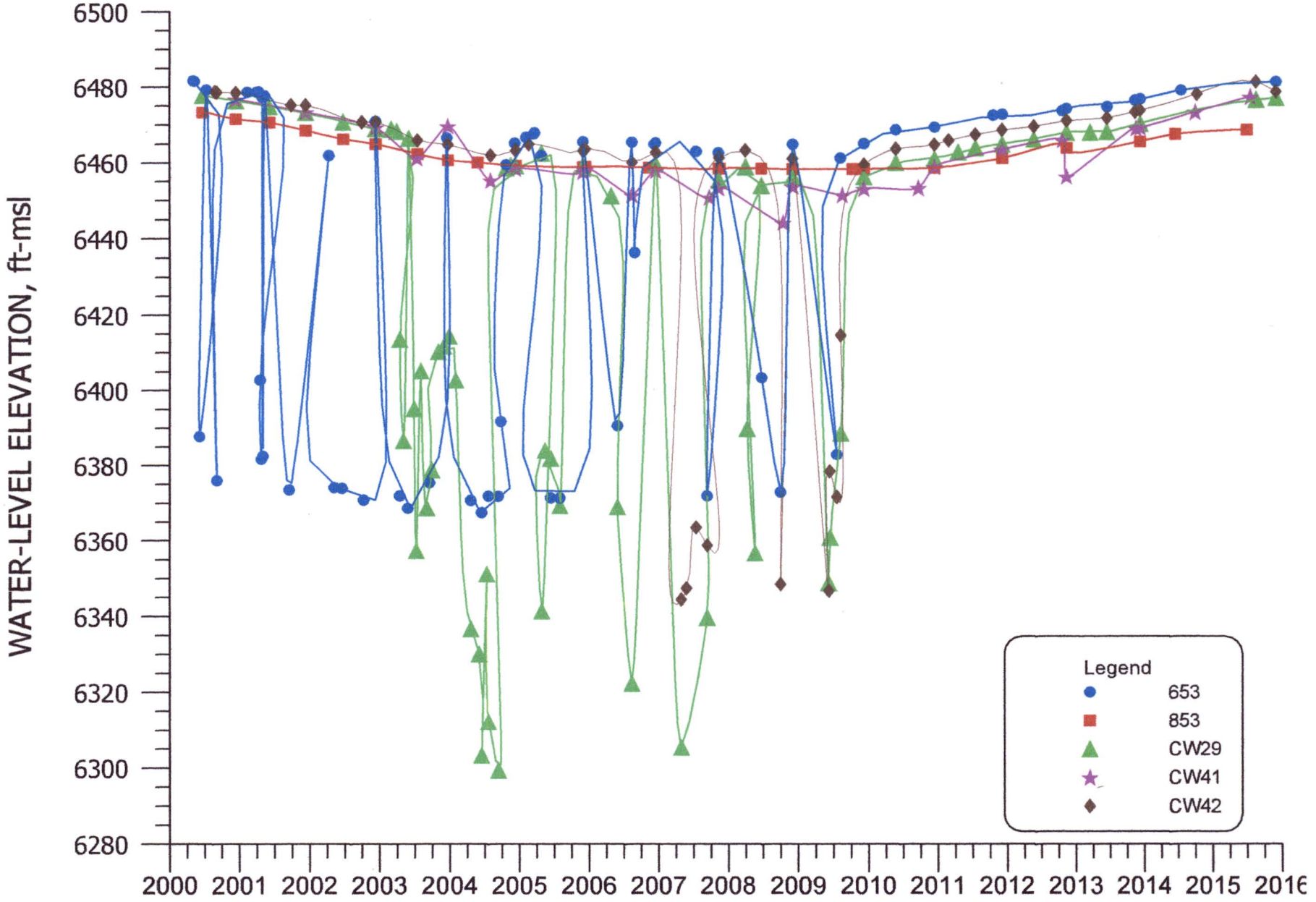



**FIGURE 7.2-3. WATER-LEVEL ELEVATION FOR WELLS 653, 853, CW29, CW41, AND CW42.**

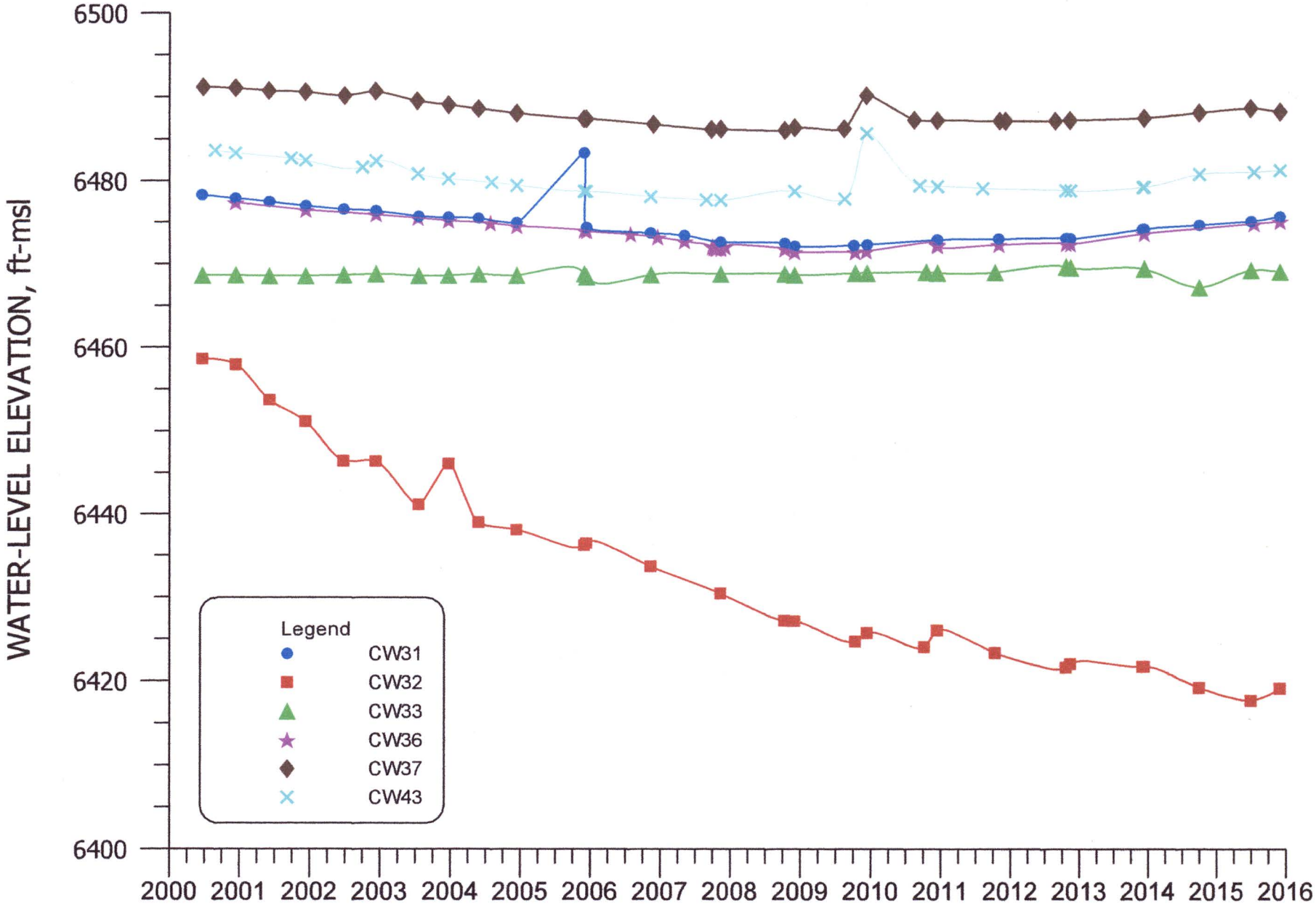



**FIGURE 7.2-4. WATER-LEVEL ELEVATION FOR WELLS CW31, CW32, CW33, CW36, CW37, AND CW43.**

## 7.3 LOWER CHINLE WATER QUALITY

Water-quality data for 2015 for the Lower Chinle aquifer are presented in Tables B.5-1 and B.5-2 of Appendix B along with water-quality data for the other Chinle aquifer wells. The basic well data presented in Tables 5.1-1 through 5.1-4, and the orientation of the well name on Figure 5.1-1 indicates which of the Chinle wells are completed in the Lower Chinle.

Constituent concentrations in the Lower Chinle aquifer exceed background conditions only in Section 3, except for some natural exceedances in the far down-gradient wells. Sulfate concentrations in the Lower Chinle aquifer are within the NRC standards except in far down-gradient where concentrations exceed the relevant non-mixing background value. Uranium concentrations exceed the NRC site standards only in the northeastern and central portions of Section 3. Molybdenum concentrations in the Lower Chinle aquifer are all less than the limit of detection.

### 7.3.1 SULFATE – LOWER CHINLE

Figures 7.3-1 and 7.3-1A presents contours of sulfate concentrations in the Lower Chinle aquifer during 2015. Lower Chinle standards based on background data are presented for sulfate in the legend of Figures 7.3-1 and 7.3-1A. The Lower Chinle concentrations varied from 257 to 2160 mg/l. None of the Lower Chinle concentrations in the mixing zone (see Section 3 and Figure 3.3-3 for zone areas) exceeded the mixing-zone sulfate site standard of 1750 mg/l. Therefore, the Lower Chinle aquifer does not require any restoration with respect to sulfate.

The locations of wells used in the plots of water quality for the Lower Chinle are presented on Figure 7.3-2. Figure 7.3-2 shows that data for mixing zone Lower Chinle wells CW37, CW42, CW43 and R67 are grouped together on the water-quality time plots, and data for non-mixing zone wells CW29, CW31, CW32, and CW41 are presented on a second plot.

Figure 7.3-3 presents sulfate concentrations plotted versus time for the Lower Chinle mixing-zone wells. The sulfate concentrations in water collected from each of these wells are less than the mixing-zone site standard, showing that sulfate restoration of the Lower Chinle is not needed in the southern portion of the aquifer. Sulfate concentrations in well CW43 have increased to a level larger than other Lower Chinle wells in the area.

Sulfate concentrations plotted for Lower Chinle wells CW29, CW31, CW32, and CW41 are presented on Figure 7.3-4 (see Figure 7.3-2 for location of these wells). Sulfate concentrations were fairly steady in 2015 in these Lower Chinle wells. The data collected since mid-2003 was not available when the background level was calculated.

### 7.3.2 TOTAL DISSOLVED SOLIDS – LOWER CHINLE

Figures 7.3-5 and 7.3-5A presents the total dissolved solids (TDS) concentrations in the Lower Chinle aquifer during 2015. All concentrations for 2015 sampled wells are less than the non-mixing zone site standard value of 4140 mg/l. Concentrations are thought to naturally exceed this level farther down-gradient as shown by the cyan pattern. The TDS concentration naturally increases down-gradient due to the low permeability and correspondingly slow movement of water through this shale aquifer.

Figure 7.3-6 presents TDS concentrations for Upper Chinle wells CW37, CW42, CW43 and R67. TDS concentrations in these wells have been fairly steady in 2015 except the increase observed in well CW43. The TDS in well CW43 has increased to a level that is above the remainder of the Lower Chinle aquifer wells in this area. TDS concentrations increase in well CW43 started prior to the Section 33 Flood irrigation which was initially done in 2004. All of these concentrations are below the mixing-zone site standard of 3140 mg/l.

TDS concentrations for wells CW29, CW31, CW32, and CW41 are presented on Figure 7.3-7. This figure demonstrates that, overall, TDS concentrations have remained fairly stable during 2015. Additionally, these historical TDS concentrations are well within the range of natural fluctuation in the non-mixing zone of the Lower Chinle aquifer, except for the value from well CW32 being near the top of the natural observed concentrations.

### 7.3.3 CHLORIDE – LOWER CHINLE

Chloride concentration data in the Lower Chinle aquifer were updated during 2003 to confirm that restoration for this constituent is not necessary in the Lower Chinle aquifer. The chloride concentrations measured during 2015 continue to support this conclusion and are all less than the NRC standard except in the down gradient area where values naturally exceed the standard.

### 7.3.4 URANIUM – LOWER CHINLE

Uranium concentration in the Lower Chinle aquifer is an important constituent with respect to aquifer restoration in Section 3. Figures 7.3-8 and 7.3-8A presents the uranium concentrations in the Lower Chinle aquifer for 2015. Uranium concentrations in the Lower Chinle exceeded the mixing-zone background concentration in the central portion of Section 3, and two exceeded the non-mixing zone background concentration. The highest values are in the central portion of Section 3 near the Lower Chinle subcrop area. These concentrations should gradually decrease to less than background concentrations with the restoration program planned for the Lower Chinle aquifer.

Uranium concentrations plotted versus time for Lower Chinle wells CW37, CW42, CW43 and R67 are presented on Figure 7.3-9. The overall decline in uranium concentration in well CW42 is due to pumping of Lower Chinle wells for the irrigation system. The uranium concentration in well CW42 was declining until 2008 and has overall been fairly steady the last seven years. Additional results with time will be needed to show when the restoration of the area of wells CW42 and R67 is adequate. Uranium concentrations in well CW43 have remained low.

The uranium concentrations in all of the Lower Chinle wells with data presented on Figure 7.3-10 have remained at low levels with steady and higher values in well CW29 for the last twelve years.

### 7.3.5 SELENIUM – LOWER CHINLE

Selenium concentrations in the Lower Chinle aquifer for 2015 are presented on Figures 7.3-11 and 7.3-11A. None of the selenium concentrations in water from the Lower Chinle wells exceeded the site standards. The mixing and non-mixing zone site standards are 0.14 and 0.32 mg/l, respectively, for the Lower Chinle aquifer.

Figure 7.3-12 presents selenium concentration versus time plots for wells CW37, CW42, CW43 and R67. The selenium concentrations in these Lower Chinle aquifer wells were steady in 2015.

Figure 7.3-13 presents selenium concentrations plotted versus time for Lower Chinle wells CW29, CW31, CW32 and CW41. Selenium concentrations measured during 2015 were consistent with the 2014 levels for each of these wells.

### 7.3.6 MOLYBDENUM – LOWER CHINLE

Molybdenum concentrations in water samples collected from the Lower Chinle wells in 2015 were all low at levels near the detection limit and, therefore, no areal molybdenum concentration figures or time plots were prepared. The 2015 results are consistent with historical measurements of molybdenum in the Lower Chinle aquifer. Molybdenum is not a constituent of concern in the Lower Chinle aquifer.

### 7.3.7 NITRATE – LOWER CHINLE

Nitrate monitoring of the Lower Chinle aquifer was updated in 2003 to confirm that concentrations remain significantly below the site standard of 15 mg/l for the mixing zone. Nitrate concentrations measured in 2015 are presented in Figure 7.3-14 and are all significantly below the site standard.

Plots of nitrate concentrations versus time were not prepared, because historically, values measured in Lower Chinle wells contained very low concentrations, similar to those measured in 2015. Nitrate concentrations from the tailings seepage are not expected to be significant in the future and therefore the potential in the Lower Chinle aquifer does not exist due to the very limited extent of elevated concentrations in the alluvial aquifer. Establishment of a site standard for nitrate in the Lower Chinle non-mixing zone therefore has not been set.

### 7.3.8 RADIUM-226 AND RADIUM-228 – LOWER CHINLE

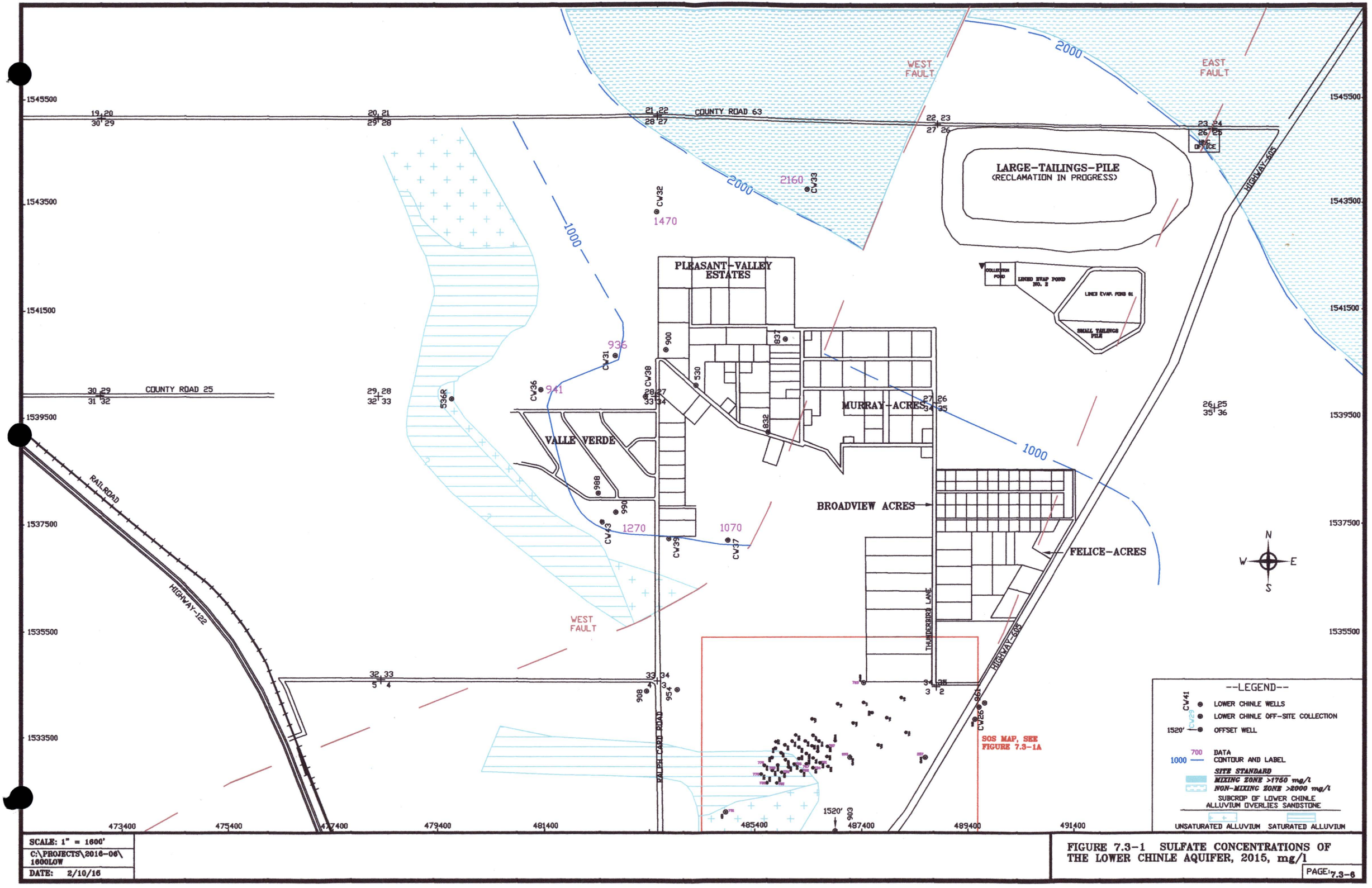
All radium concentrations have been low in past years in the Lower Chinle aquifer. Radium-226 and radium-228 are not important parameters relative to the Lower Chinle aquifer; therefore a site standard for the Lower Chinle has not been set. Radium concentrations were analyzed in all Lower Chinle wells in the 2003 update. These low levels of radium do not warrant the development of a figure presenting areal distribution of radium. Radium-228 analysis is typically more erratic than other constituents but the available data shows that radium-226 and radium-228 are not significant constituents in the Lower Chinle aquifer at the Homestake site.

### 7.3.9 VANADIUM - LOWER CHINLE

Vanadium concentrations have always been low in the Lower Chinle aquifer. Significant concentrations in the Lower Chinle aquifer would not be expected because concentrations of this constituent have only been slightly elevated in the alluvial aquifer near the tailings. Vanadium concentrations in the Lower Chinle aquifer have never been large enough to support consideration of this constituent for setting a site standard. The vanadium concentration data was updated in 2003 for the Lower Chinle aquifer.

### 7.3.10 THORIUM-230 – LOWER CHINLE

Thorium-230 concentrations have never been significant in the Lower Chinle aquifer and, therefore, should be dropped from the Lower Chinle monitoring list and eliminated from consideration as a Lower Chinle standard. The thorium-230 concentrations measured in the Lower Chinle aquifer during 2003 were all very small. No plots of thorium-230 concentrations with time were prepared, because concentrations have historically been low.




| | |
|---|---|
| SCALE: 1" = 1600' | |
| C:\PROJECTS\2016-06\1600LOW | |
| DATE: 2/10/16 | |

FIGURE 7.3-1 SULFATE CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, 2015, mg/l

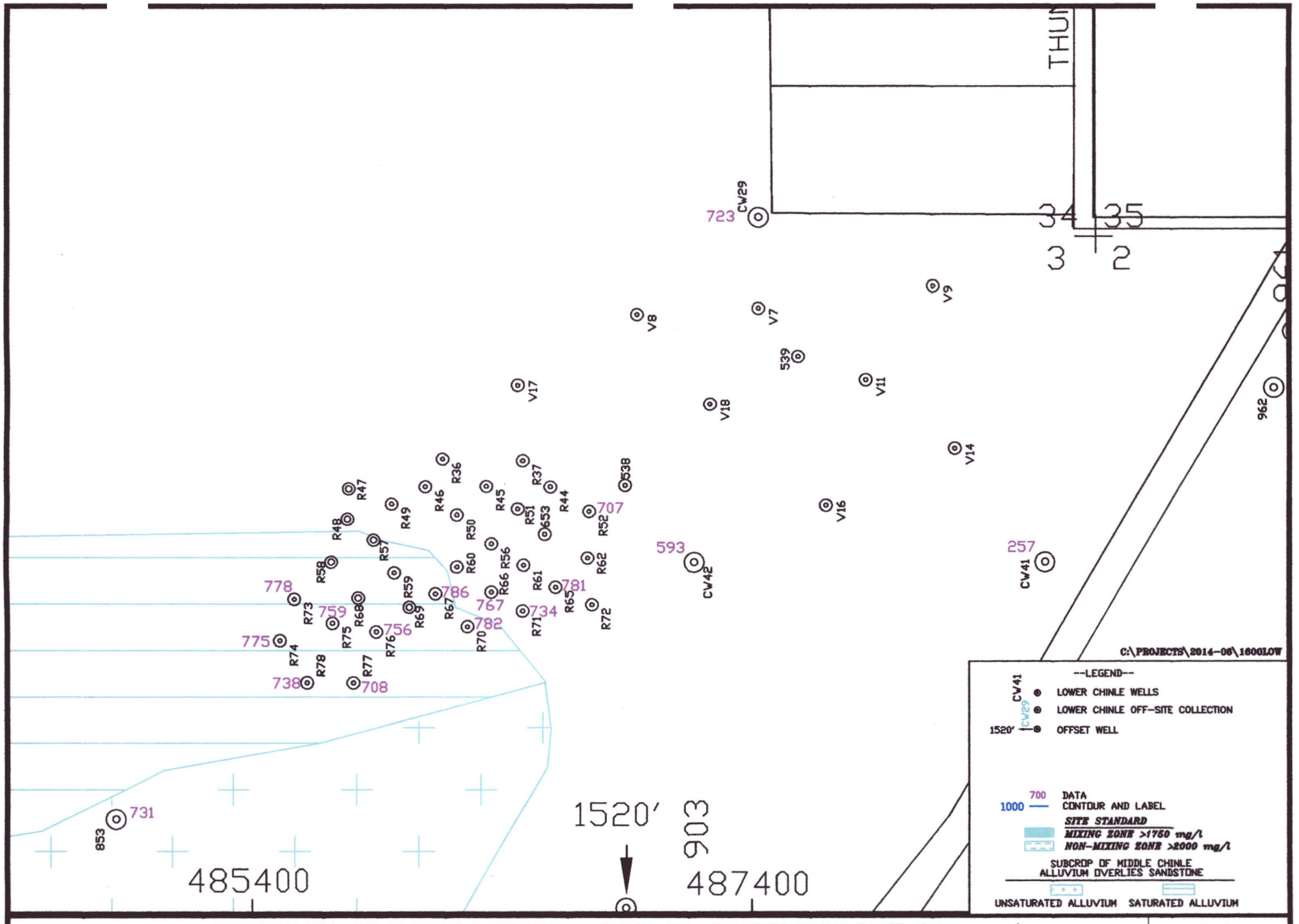



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**FIGURE 7.3-1A. SULFATE CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, SOS, 2015, mg/l**

DATE: 2/10/16

SCALE: 1"=500'

PAGE: 7.3-7

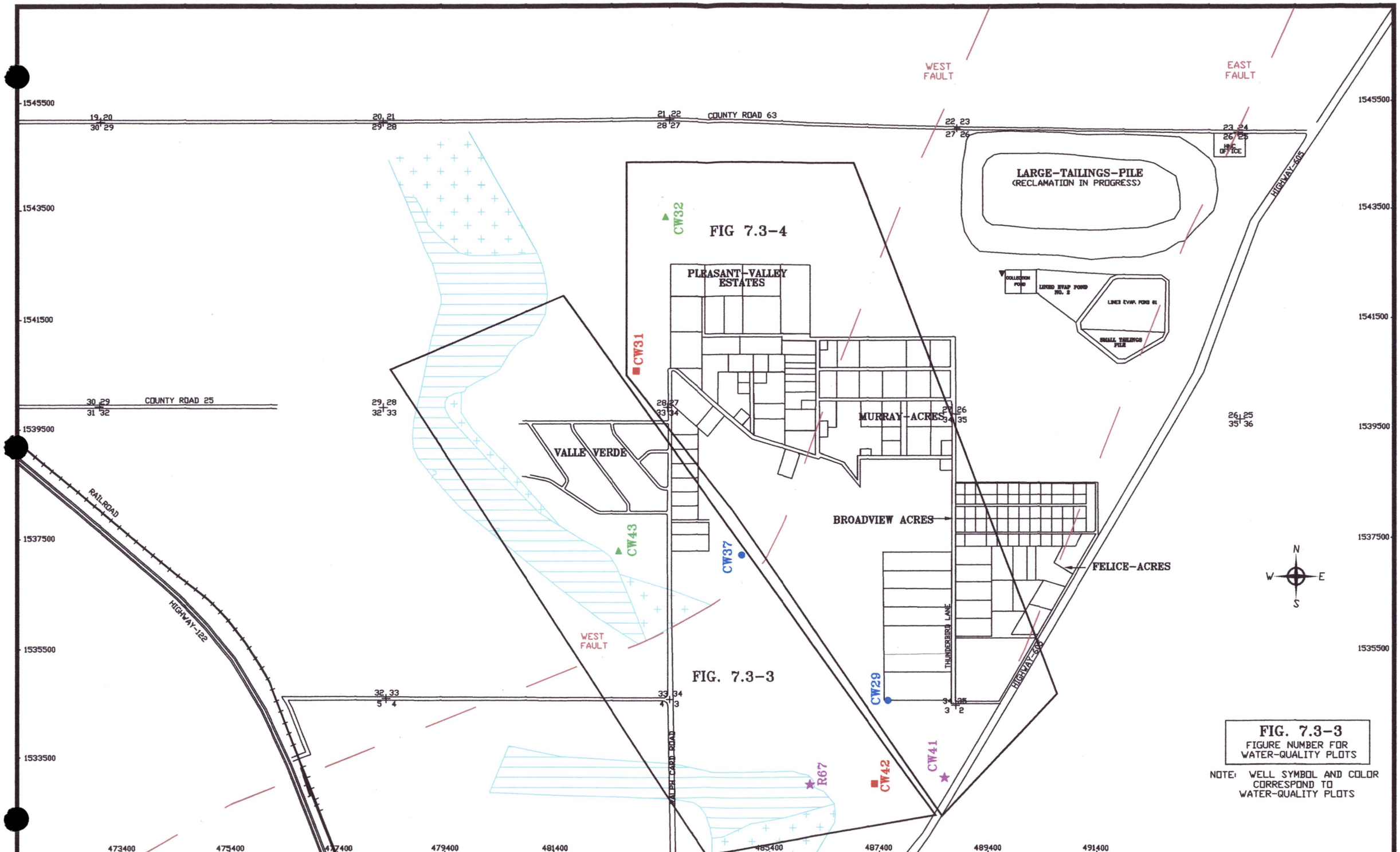



**FIG. 7.3-3**
FIGURE NUMBER FOR WATER-QUALITY PLOTS

NOTE: WELL SYMBOL AND COLOR CORRESPOND TO WATER-QUALITY PLOTS

| | |
|---|---|
| SCALE: 1" = 1600' | |
| C:\PROJECTS\2016-06\1600LOW | |
| DATE: 2/10/16 | |

**FIGURE 7.3-2. LOCATION OF LOWER CHINLE WELLS WITH WATER-QUALITY PLOTS, 2015**

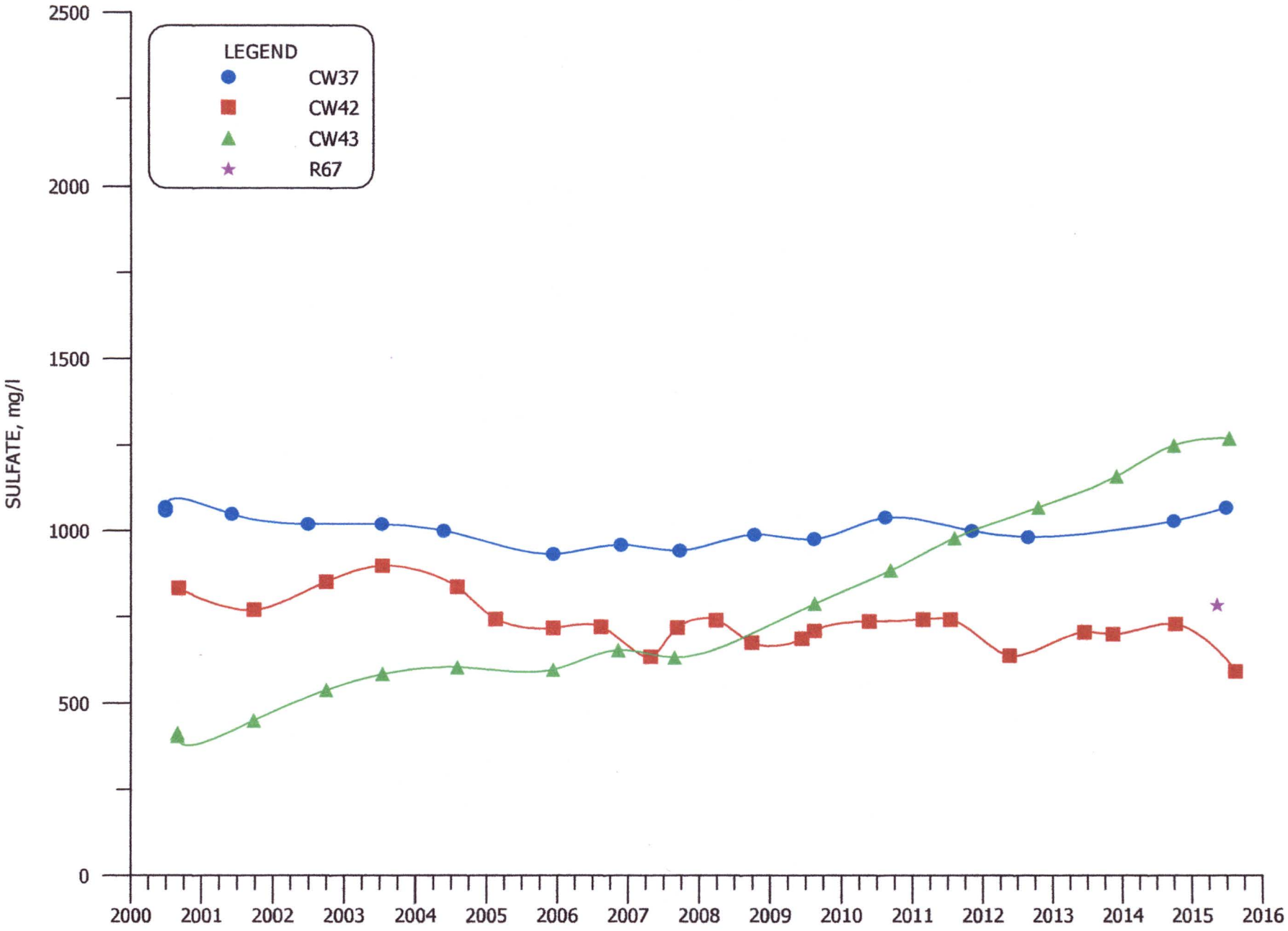



**FIGURE 7.3-3. SULFATE CONCENTRATIONS FOR MIXING ZONE WELLS CW37, CW42, CW43, AND R67**

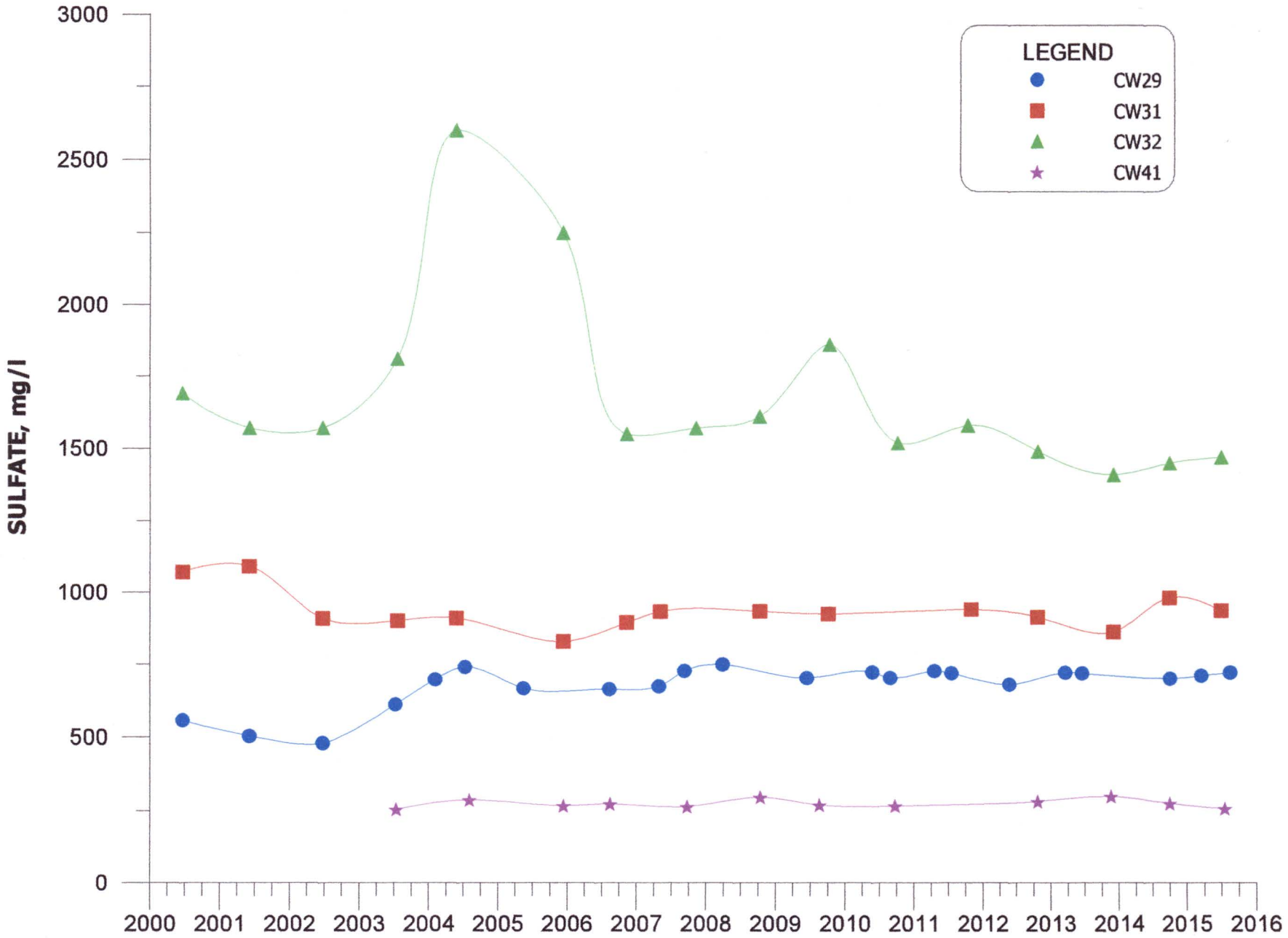



**FIGURE 7.3-4. SULFATE CONCENTRATIONS FOR NON-MIXING WELLS CW29, CW31, CW32, AND CW41**

COUNTY ROAD 63

COUNTY ROAD 25

RAILROAD

HIGHWAY-122

HIGHWAY-395

WEST FAULT

EAST FAULT

LARGE-TAILINGS-PILE
(RECLAMATION IN PROGRESS)

PLEASANT-VALLEY ESTATES

VALLE VERDE

MURRAY-ACRES

BROADVIEW ACRES

FELICE-ACRES

THUNDERBIRD LANE

RALPH CARD ROAD

COLLECTION POND

LINED EVAP POND NO. 2

LINED EVAP. POND #1

SMALL TAILINGS PILE

SOS MAP, SEE FIGURE 7.3-5A

1545500 1543500 1541500 1539500 1537500 1535500 1533500

473400 475400 477400 479400 481400 485400 487400 489400 491400

4000 3000 2000

3820 3270 1630 1780 2580 1910 1520' 903

--LEGEND--

- LOWER CHINLE WELLS
- LOWER CHINLE OFF-SITE COLLECTION
- 1520' OFFSET WELL
- 1580 DATA
- 3000 CONTOUR AND LABEL

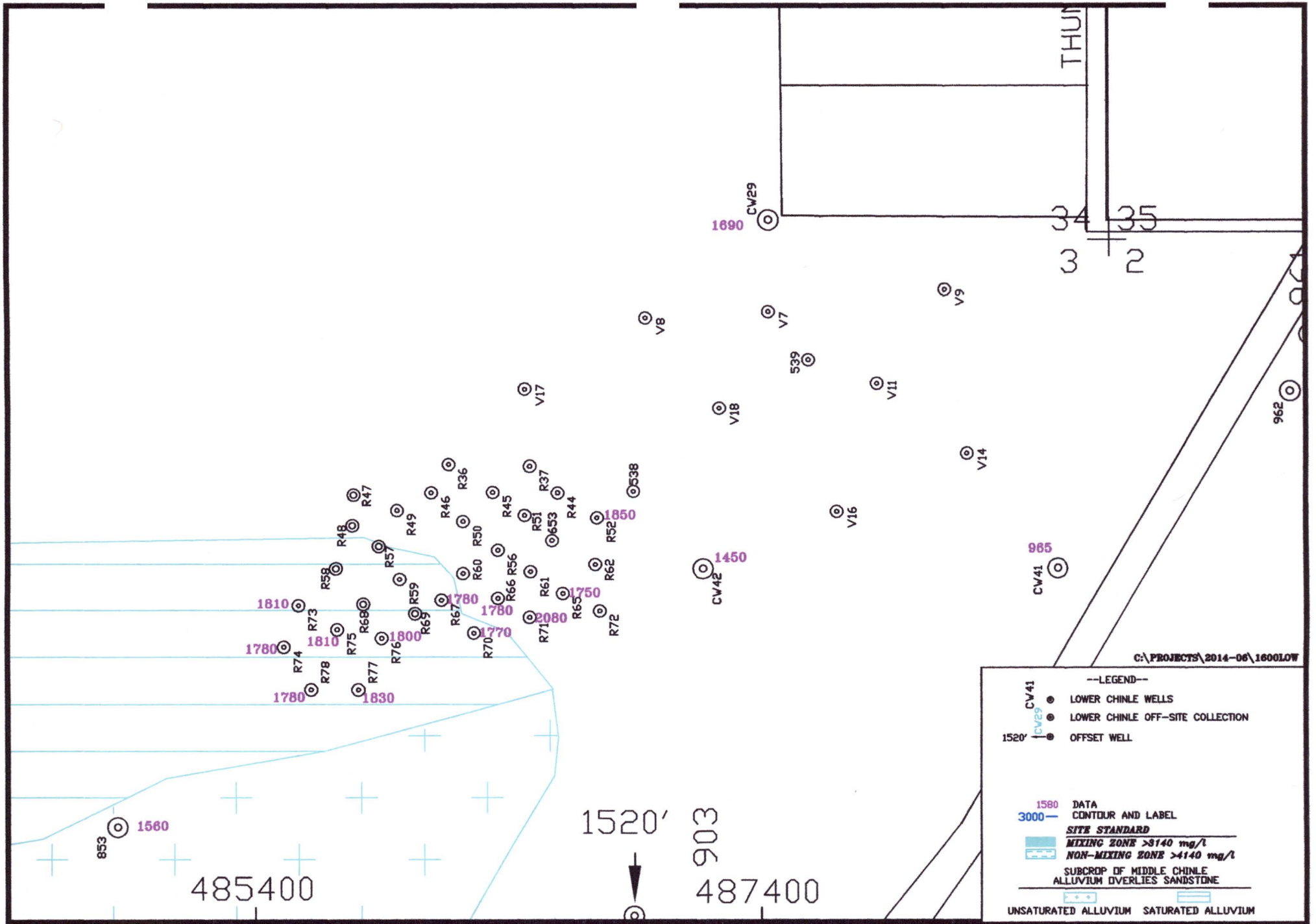
SITE STANDARD
MIXING ZONE >3140 mg/l
NON-MIXING ZONE >4140 mg/l

SUBCROP OF LOWER CHINLE ALLUVIUM OVERLIES SANDSTONE

UNSATURATED ALLUVIUM SATURATED ALLUVIUM

SCALE: 1" = 1600'
C:\PROJECTS\2016-06\1600LOW
DATE: 2/10/16

FIGURE 7.3-5. TDS CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, 2015, mg/l




HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

**FIGURE 7.3-5A. TDS CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, SOS, 2015, mg/l**

DATE: 2/10/16

SCALE: 1"=500'

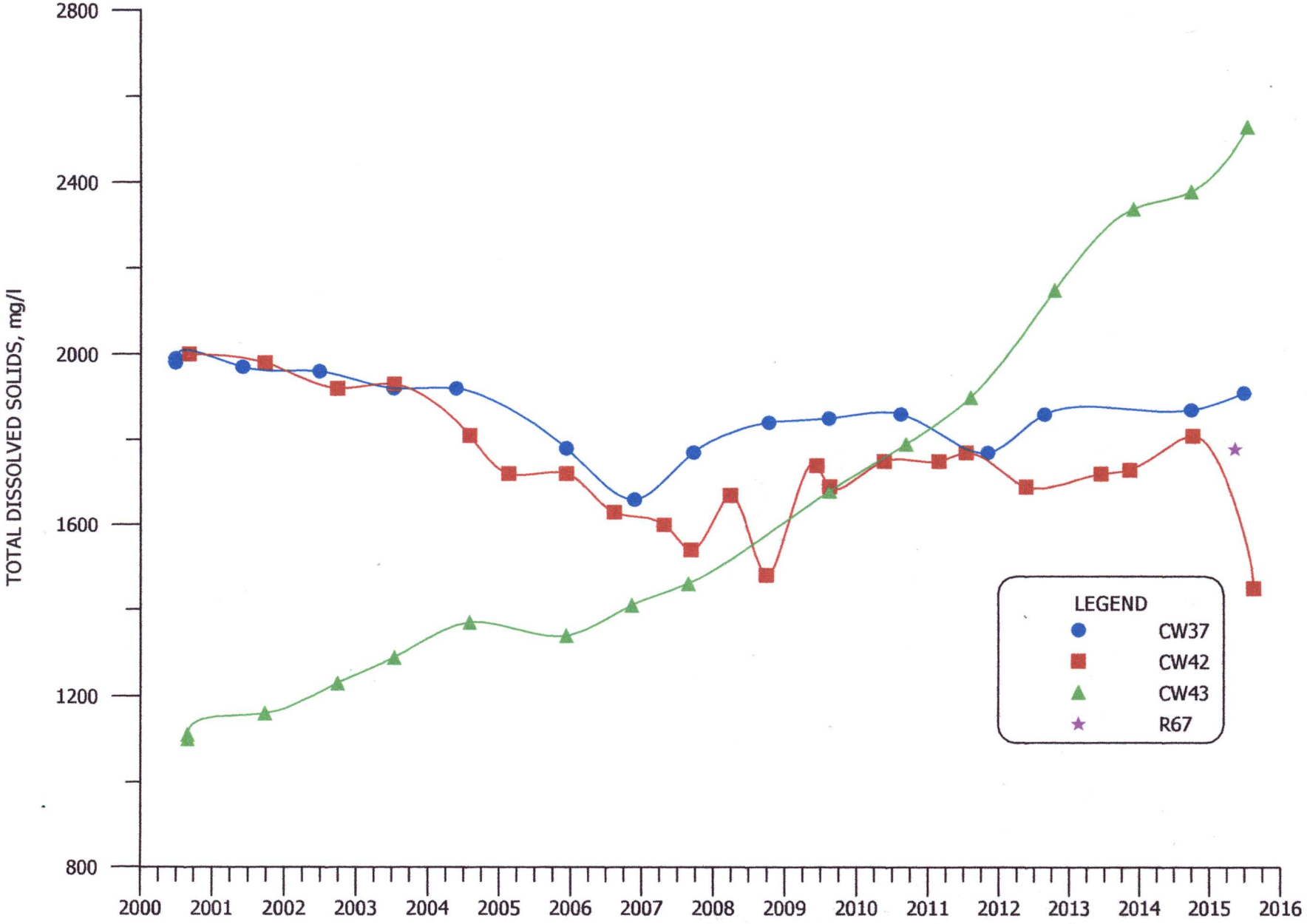



**FIGURE 7.3-6. TDS CONCENTRATIONS FOR MIXING ZONE WELLS CW37, CW42, CW43, AND R67**

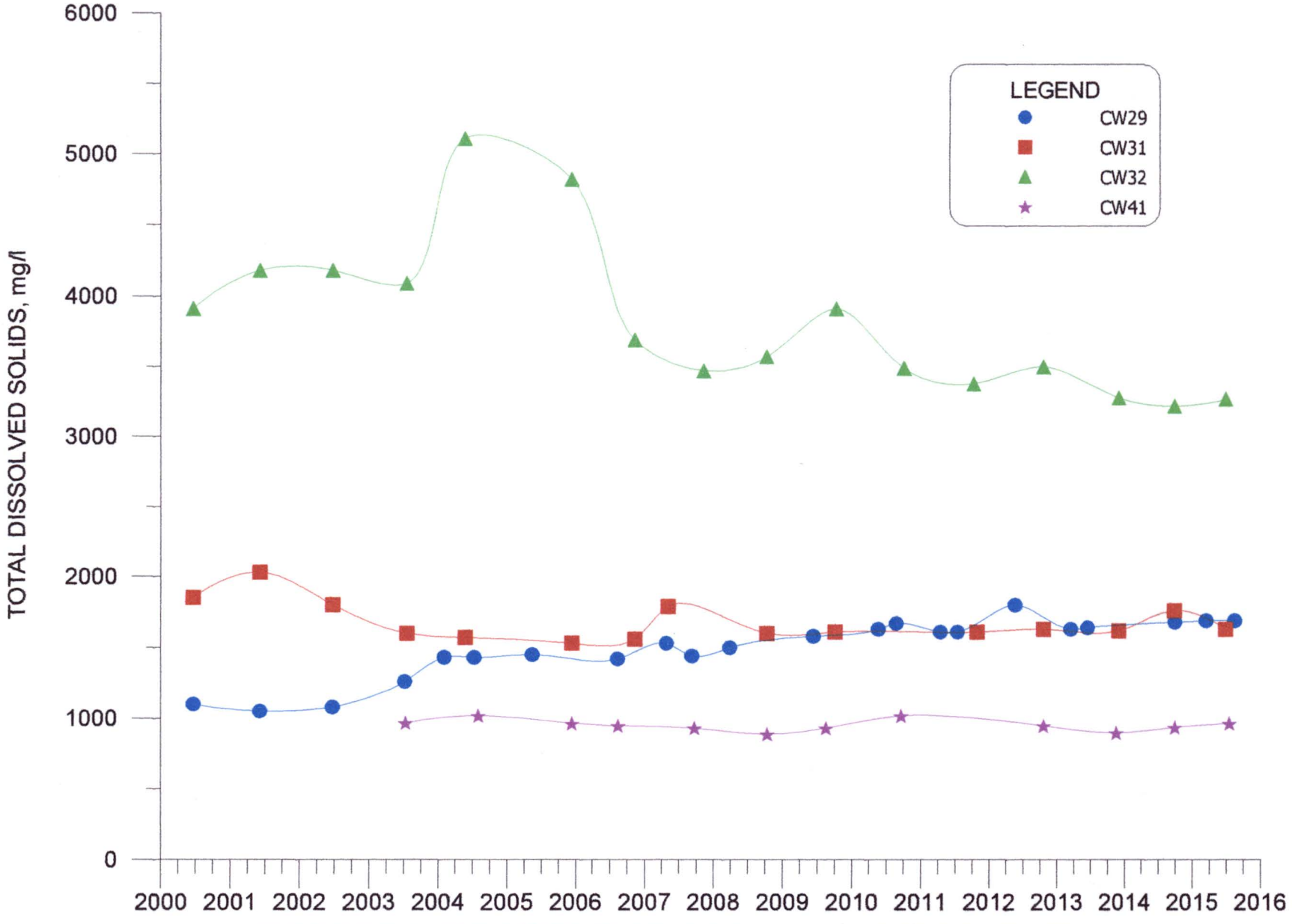



**FIGURE 7.3-7. TDS CONCENTRATIONS FOR NON-MIXING ZONE WELLS CW29, CW31, CW32, AND CW41**

WEST FAULT

EAST FAULT

COUNTY ROAD 63

COUNTY ROAD 25

LARGE-TAILINGS-PILE
(RECLAMATION IN PROGRESS)

HMC OFFICE

HIGHWAY-605

COLLECTION POND

LINED EVAP POND NO. 2

LINED EVAP POND #1

SMALL TAILINGS PILE

PLEASANT-VALLEY ESTATES

MURRAY-ACRES

VALLE VERDE

BROADVIEW ACRES

FELICE-ACRES

THUNDERBIRD LANE

RAILROAD

HIGHWAY-122

RALPH-CARD ROAD

SOS MAP, SEE FIGURE 7.3-8A

0.02 CV33

0.003 CV32

0.01 CV31

0.006 CV36

0.05 CV43

0.03 CV37

CV38

CV39

CV26

536R

900

837

530

832

988

990

908

954

903

1520'

1545500

1543500

1541500

1539500

1537500

1535500

1533500

473400

475400

477400

479400

481400

485400

487400

489400

491400

N

W

E

S

--LEGEND--

CV41 CV29 LOWER CHINLE WELLS

LOWER CHINLE OFF-SITE COLLECTION

1520' OFFSET WELL

0.22 DATA

0.1 CONTOUR AND LABEL

SITE STANDARD

MIXING ZONE >0.18 mg/l

NON-MIXING ZONE >0.03 mg/l

SUBCROP OF LOWER CHINLE ALLUVIUM OVERLIES SANDSTONE

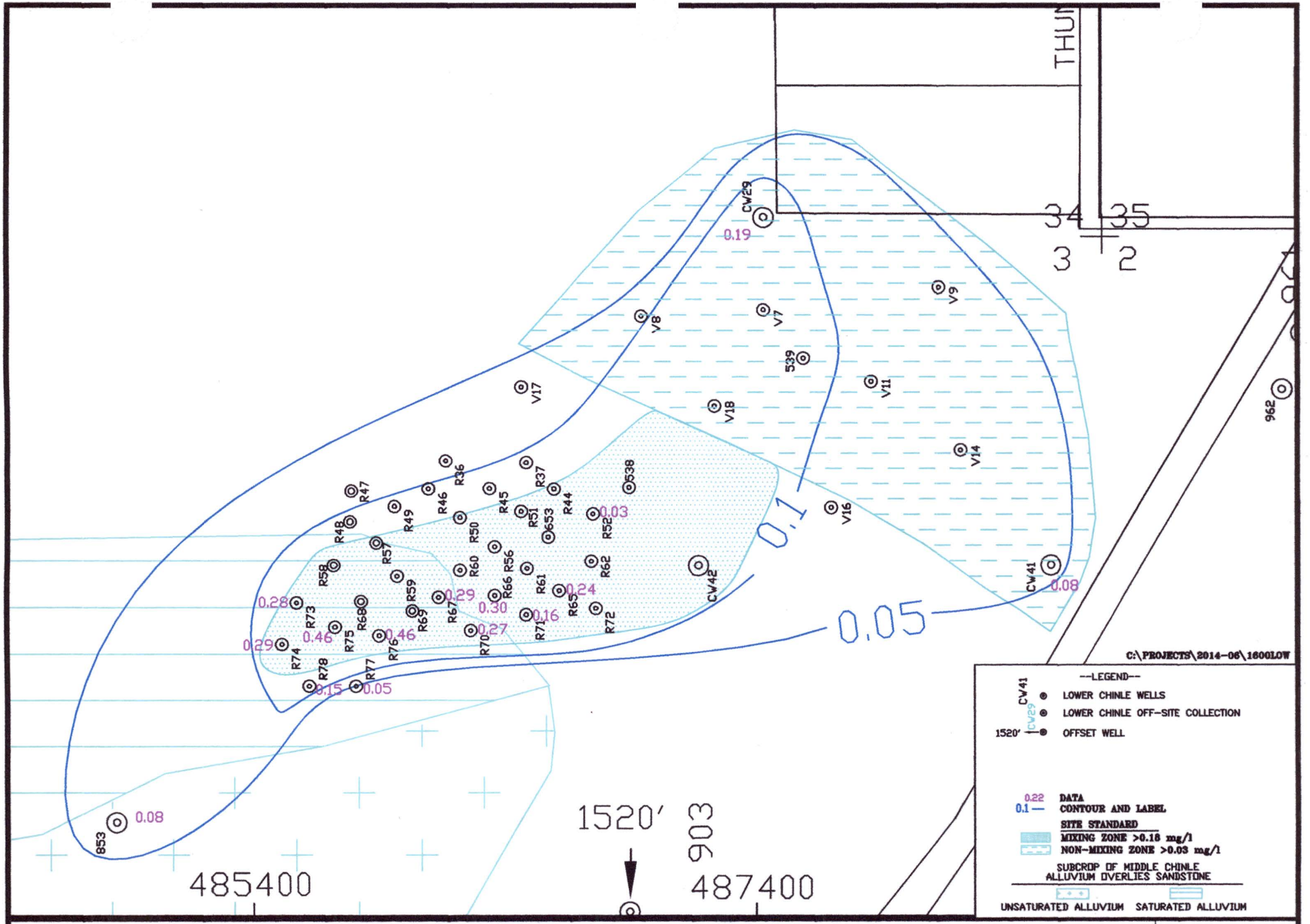
UNSATURATED ALLUVIUM SATURATED ALLUVIUM

SCALE: 1" = 1600'

C:\PROJECTS\2016-06\1600LOW

DATE: 2/10/16

**FIGURE 7.3-8. URANIUM CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, 2015, mg/l**




HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

DATE: 2/10/16

**FIGURE 7.3-8A. URANIUM CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, SOS, 2015, mg/l**

SCALE: 1"=500'

PAGE: 7.3-16

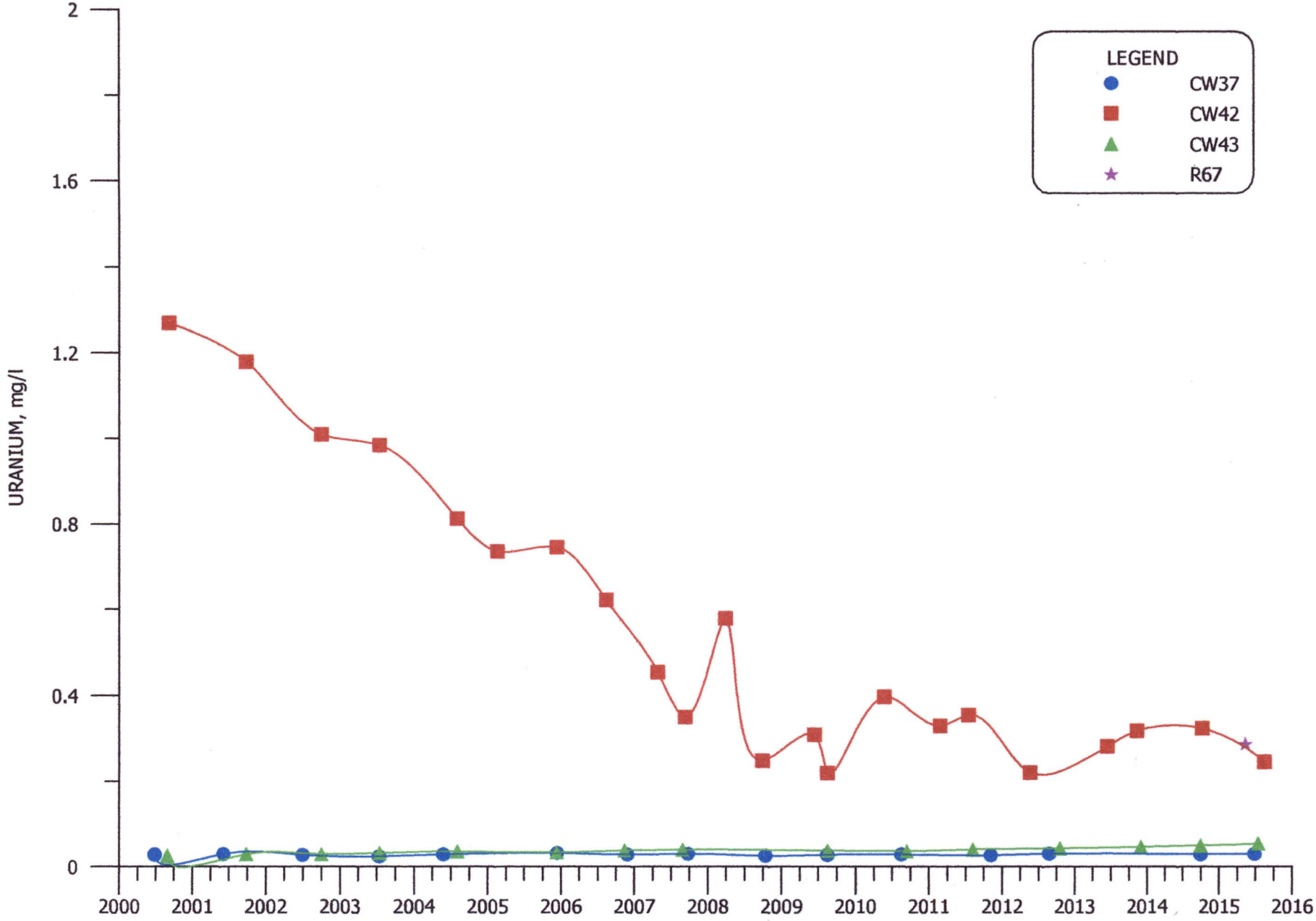



**FIGURE 7.3-9. URANIUM CONCENTRATIONS FOR MIXING ZONE WELLS CW37 , CW42, CW43, AND R67**

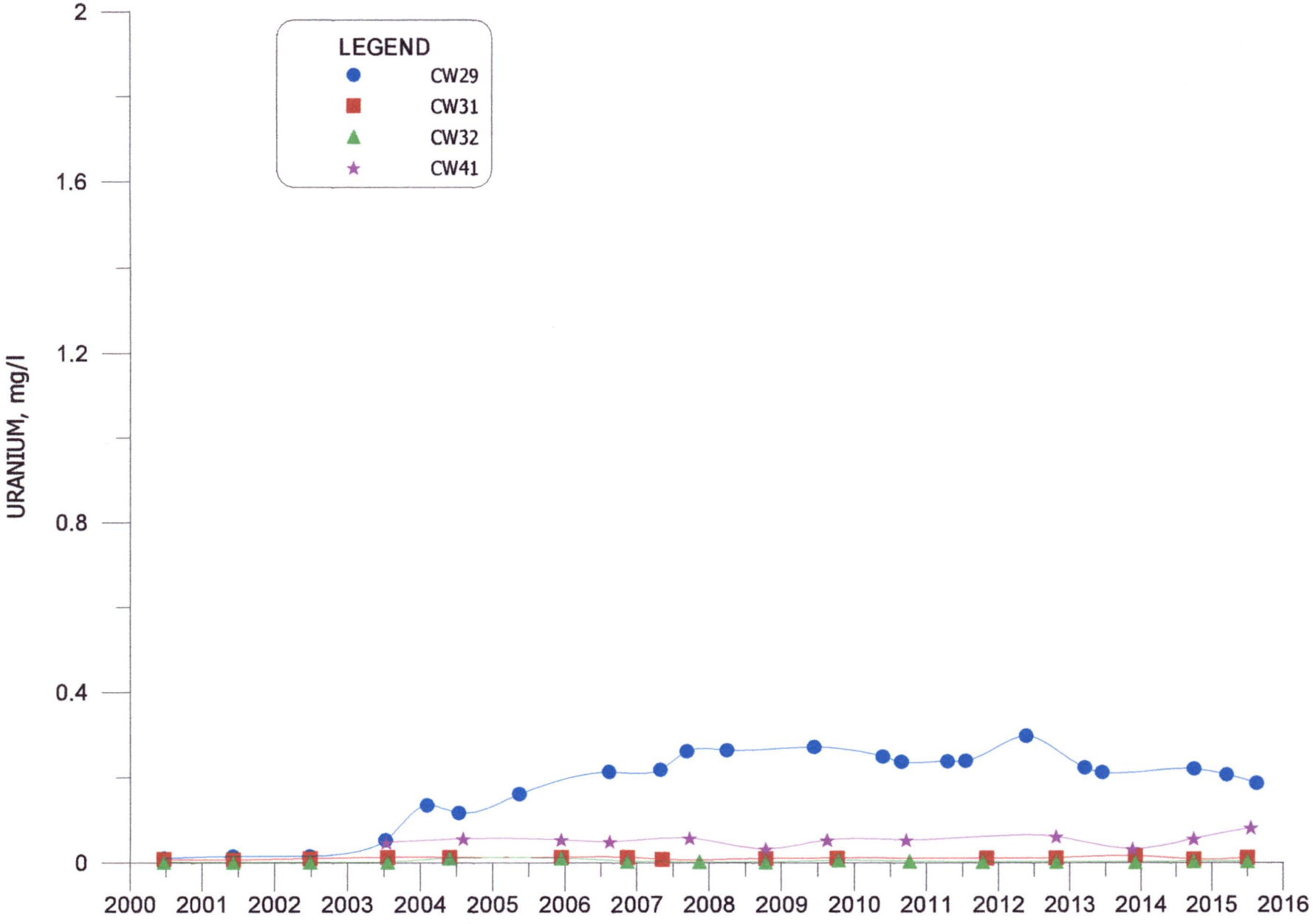



**FIGURE 7.3-10. URANIUM CONCENTRATIONS FOR NON-MIXING WELLS CW29, CW31, CW32, AND CW41**

WEST FAULT

EAST FAULT

COUNTY ROAD 63

COUNTY ROAD 25

LARGE-TAILINGS-PILE
(RECLAMATION IN PROGRESS)

HMC OFFICE

HIGHWAY-605

COLLECTION POND

LINED EVAP POND NO. 2

LINED EVAP. POND #1

SMALL TAILINGS PILE

PLEASANT-VALLEY ESTATES

MURRAY-ACRES

VALLE VERDE

BROADVIEW ACRES

FELICE-ACRES

THUNDERBIRD LANE

RAILROAD

HIGHWAY-122

RALPH CARD ROAD

0.01 CV32

0.009 CV33

<0.005 CV31

<0.005 CV36

0.04 CV43

0.07 CV37

1520' CV41

1520' CV29

1520' CV26

1520' 903

SOS MAP, SEE FIGURE 7.3-11A

N

W E

S

--LEGEND--

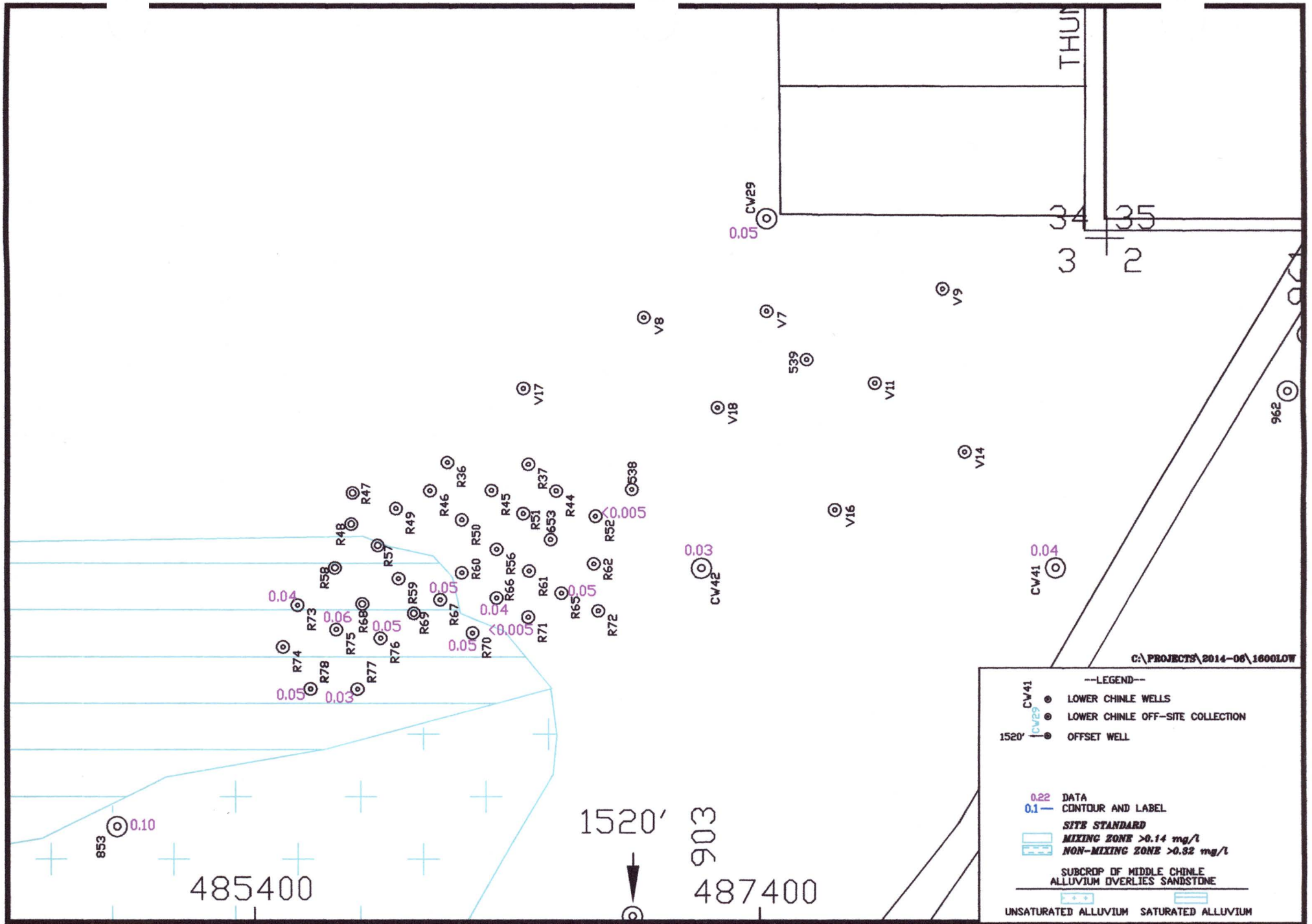
- CV41 LOWER CHINLE WELLS
- CV29 LOWER CHINLE OFF-SITE COLLECTION
- 1520' OFFSET WELL
- 0.22 DATA
- 0.1 CONTOUR AND LABEL
- *SITE STANDARD*
- *MIXING ZONE >0.14 mg/l*
- *NON-MIXING ZONE >0.32 mg/l*
- SUBCROP OF LOWER CHINLE ALLUVIUM OVERLIES SANDSTONE
- UNSATURATED ALLUVIUM
- SATURATED ALLUVIUM

SCALE: 1" = 1600'

C:\PROJECTS\2016-06\1600LOW

DATE: 2/10/16

FIGURE 7.3-11. SELENIUM CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, 2015, mg/l




HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

**FIGURE 7.3-11A. SELENIUM CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, SOS, 2015, mg/l**

DATE: 2/10/16

SCALE: 1"=500'

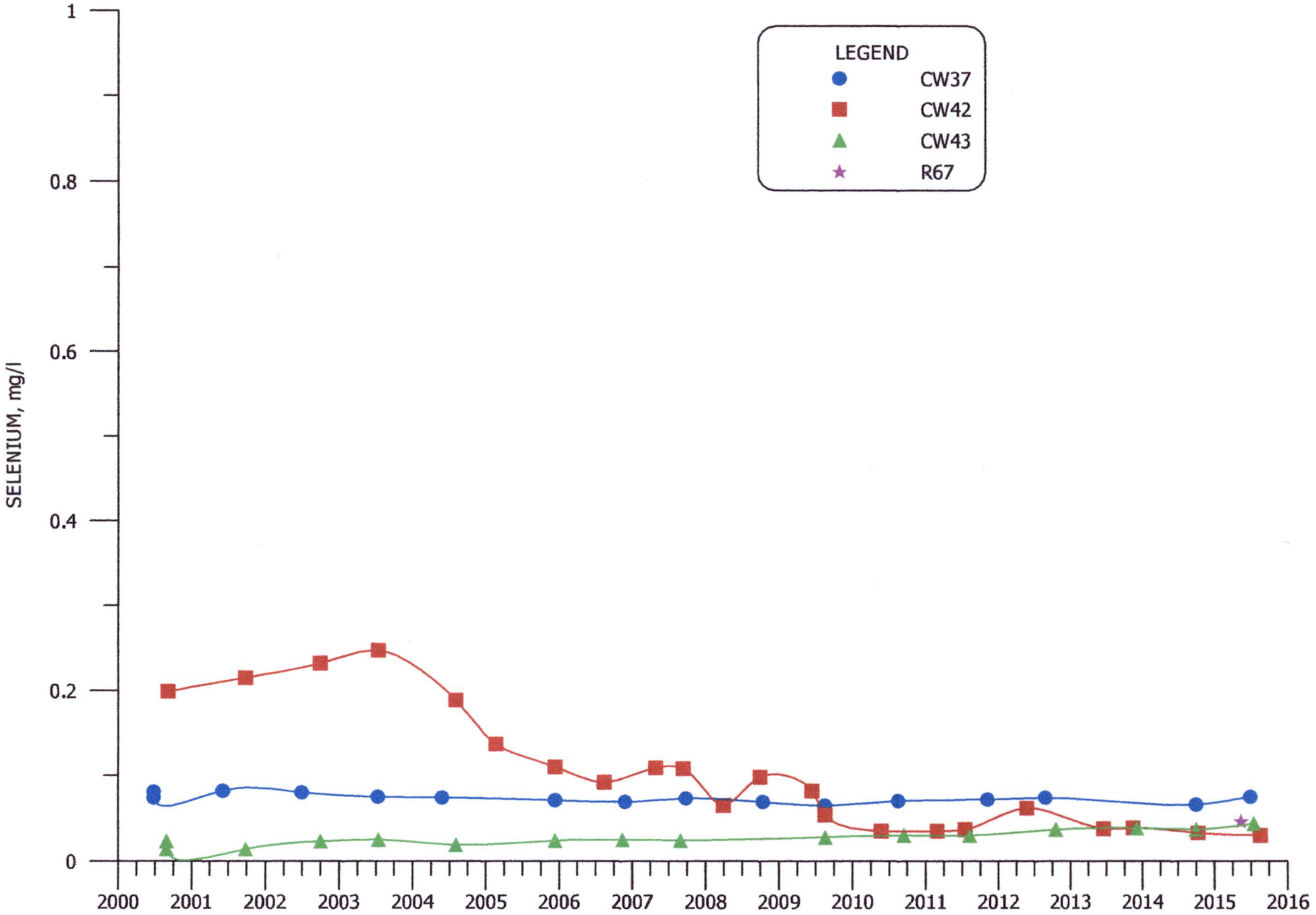



**FIGURE 7.3-12. SELENIUM CONCENTRATIONS FOR MIXING ZONE WELLS CW37, CW42, CW43, AND R67**

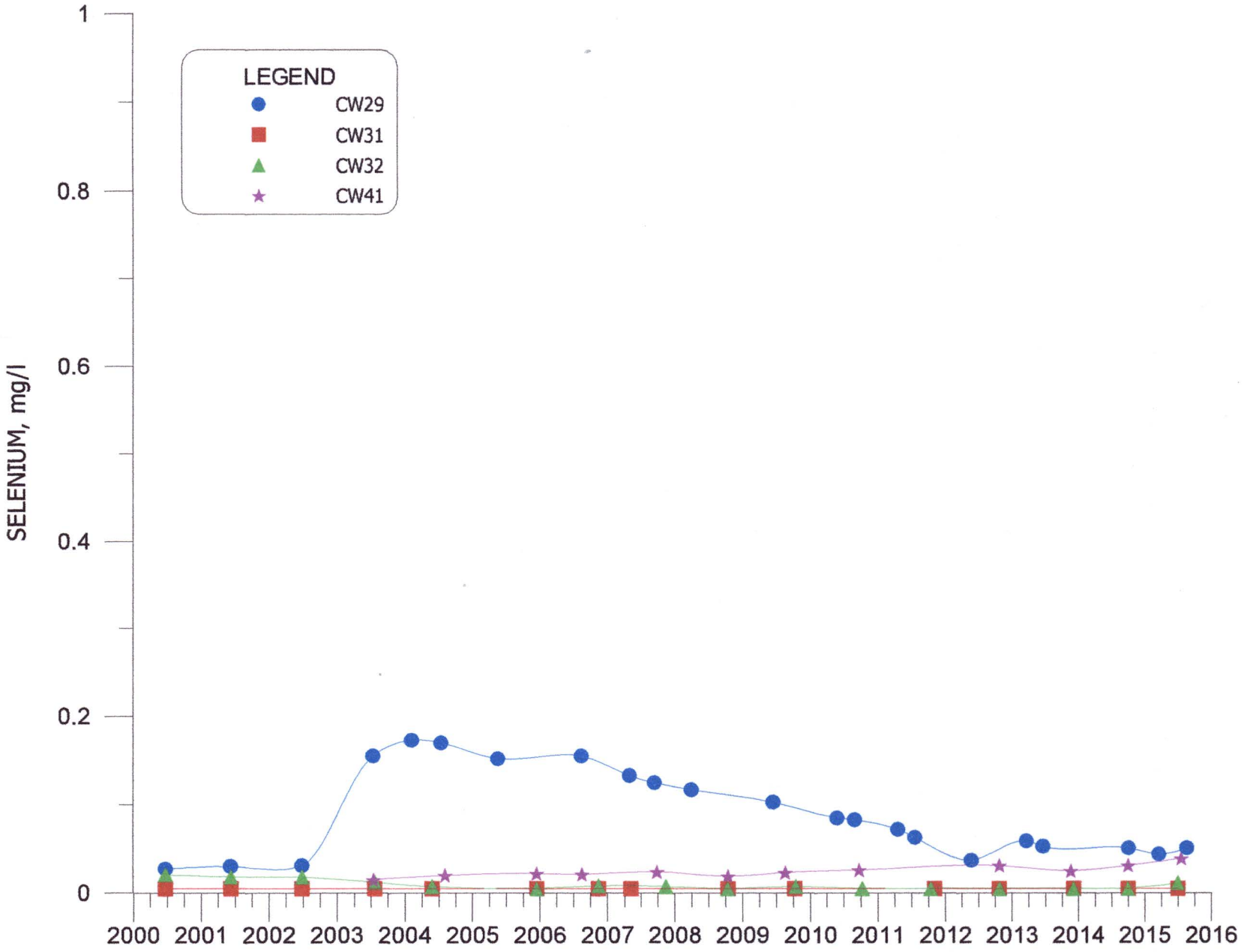
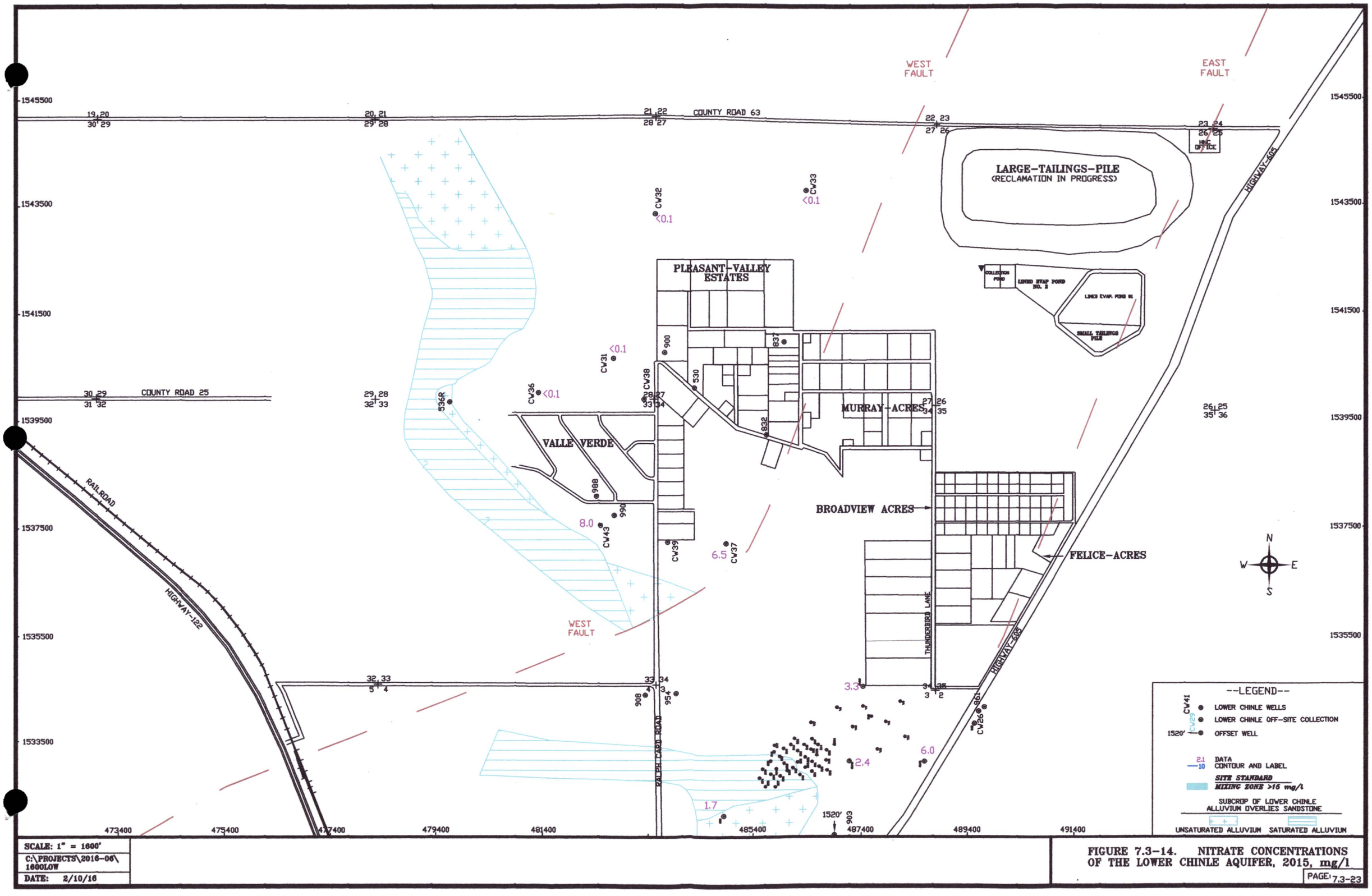



**FIGURE 7.3-13. SELENIUM CONCENTRATIONS FOR NON-MIXING ZONE WELLS CW29, CW31, CW32, AND CW41**




SCALE: 1" = 1600'
C:\PROJECTS\2016-06\1600LOW
DATE: 2/10/16

FIGURE 7.3-14. NITRATE CONCENTRATIONS OF THE LOWER CHINLE AQUIFER, 2015, mg/l

## SECTION 8

## TABLE OF CONTENTS

## GROUND WATER MONITORING FOR HOMESTAKE'S GRANTS PROJECT

## 8.0 SAN ANDRES AQUIFER MONITORING

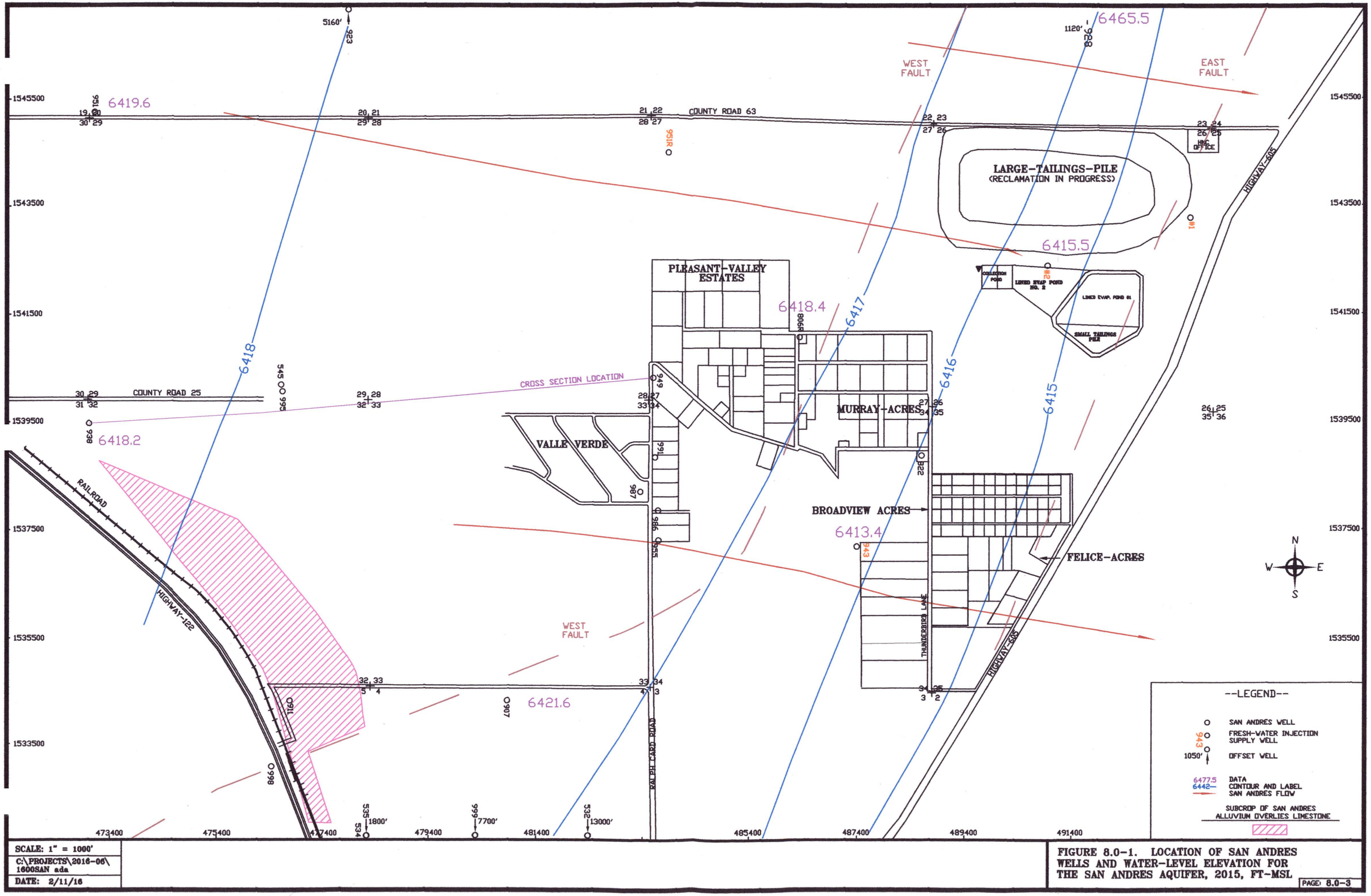
The San Andres aquifer is the most important regional aquifer in the Grants Project area. The Chinle Formation, which exists between the alluvium and the San Andres, is approximately 800 feet thick at the Homestake tailings site and is primarily a shale with a few sandstone lenses. Therefore, the alluvial aquifer and the San Andres aquifer are separated by a very thick aquitard. The difference in piezometric head between the alluvial and San Andres aquifers is in the range of 80 to 100 feet, which confirms that the flow between the two systems is restricted by the limited permeability of the Chinle Formation. The San Andres and alluvial aquifers are only in direct contact in the western portion of the area presented on Figure 8.0-1 (see magenta pattern area). With no areas of direct communication within the area where the alluvial aquifer is impacted by the Homestake tailings seepage, and only very limited hydraulic communication through the Chinle shale, the San Andres aquifer is not affected by tailings seepage. The San Andres aquifer has been used as the source for fresh-water injection into the alluvium and Chinle aquifers at the Grants Project, and as a result, a monitoring program was established for the San Andres aquifer.

Table 8.0-1 presents well completion information for the San Andres wells in this area. Homestake's two deep wells within the project area are San Andres wells, #1 Deep and #2 Deep. These wells are used to supply the fresh-water injection systems around the collection area. San Andres well 951 was used as the fresh-water injection supply for the injection system in Sections 28 and 29 through March of 2012. Replacement well 951R was used starting in July of 2012. San Andres well 943 was used as the fresh water injection supply for the injection system in Sections 3 and 34 and Felice Acres. Figure 8.0-1 shows the locations of the San Andres wells relevant to this area. Recharge to the San Andres aquifer occurs mainly west of the area shown in the figure and in the far western portion of the figure. The structure of the San Andres aquifer dips to the east, and thus the ground water system becomes progressively deeper in the easterly direction. Figure 8.0-2 shows a cross-section from the west at San Andres well 938 to the east at San Andres well 949 (see Figure 8.0-1 for location of cross section). This cross section shows the dip of the San Andres and the thickness of Chinle shale between the alluvium and the top of the San Andres.

The water-level elevations measured during 2015 (Figure 8.0-1) show a very flat piezometric surface with the gradient being from the west-northwest to the east-southeast. The continuity of the gradient in this area indicates that the East and West faults do not significantly affect the ground water flow in the San Andres aquifer. The displacement at the faults is not large enough to completely displace the entire thickness of this aquifer system. The increase in gradient in the project area also indicates a decrease in transmissivity in the area of the steeper gradient. The faults may cause a decrease in the transmitting ability of the San Andres aquifer in this area.

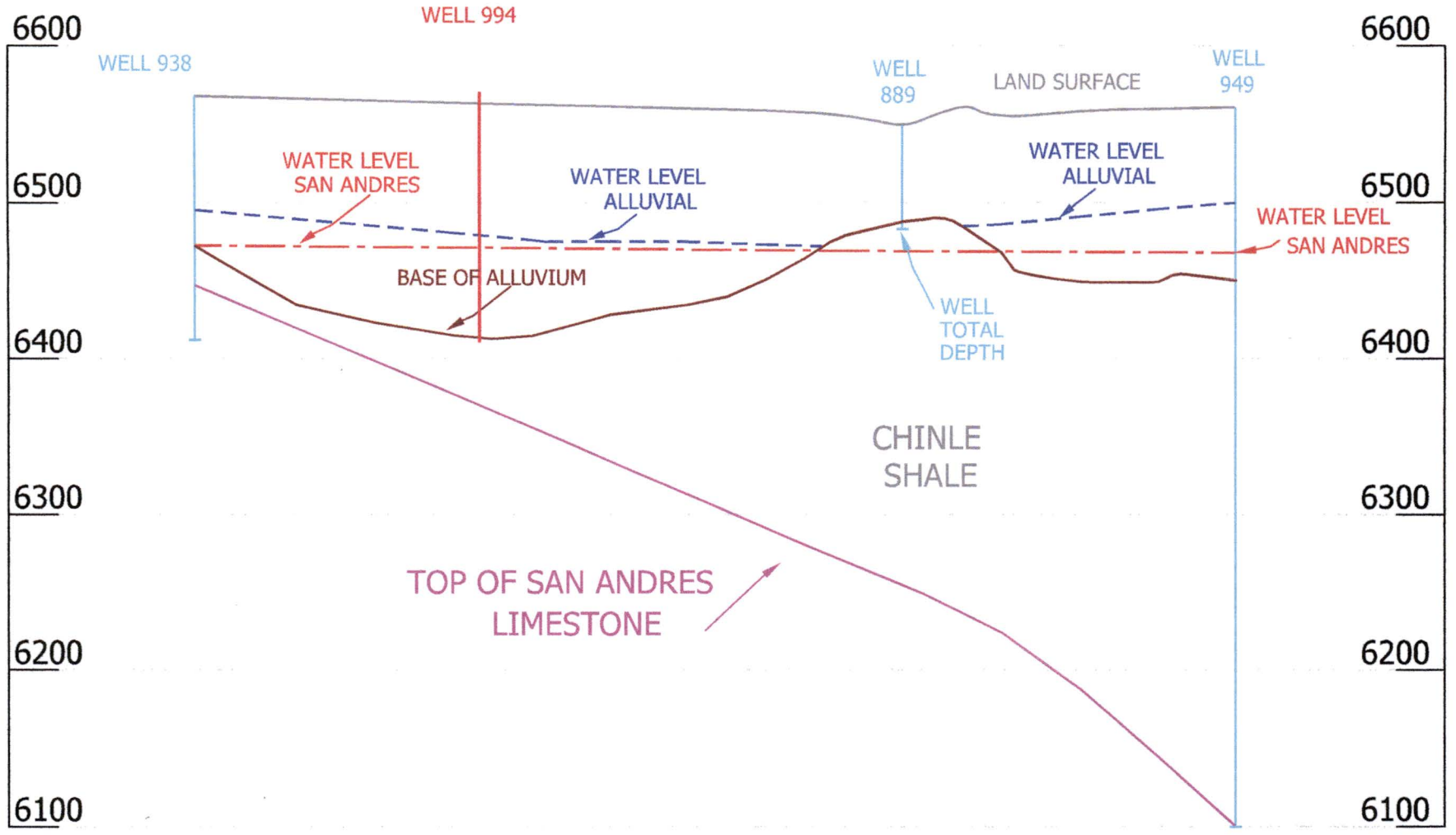
Figure 8.0-3 presents the most recent water-quality data for the San Andres aquifer. Tables B.6-1 and B.6-2 in Appendix B present the tabulation of the water-quality data for the San Andres aquifer. Figure 8.0-3 shows the 2015 data for sulfate, TDS, uranium and selenium concentrations in the San Andres aquifer. Sulfate concentrations vary from 130 mg/l to 788 mg/l in the San Andres aquifer. Sulfate concentrations are typically near 700 mg/l for Homestake #1 Deep and #2 Deep wells. TDS concentrations have varied from 450 to 2010 mg/l and generally increase in a down-gradient direction. The higher concentrations of sulfate and TDS to the east are natural and typical of a limestone aquifer where the extended contact time with the formation results in ongoing dissolution of major constituents. This increase in concentrations from the recharge area down dip is expected. Uranium concentrations were small in all of the San Andres wells monitored during 2015 with the largest value of 0.031 mg/l. Selenium concentrations in the San Andres aquifer vary from <0.005 to 0.022 mg/l. All measured molybdenum concentrations are less than 0.03 mg/l.

Figure 8.0-4 presents sulfate concentrations with time for Homestake's wells 943, 951, 951R, Deep #1 and #2 wells. This data shows that sulfate concentrations in 2015 for these San Andres wells were similar to their historical average since injection water supply has occurred. The October 2015 value from well 943 seems to be an outlier because the values before and after this value are much smaller and consistent. Updated concentrations for well 951 were obtained from the DOE.




SCALE: 1" = 1000'
C:\PROJECTS\2016-06\1600SAN ada
DATE: 2/11/16

**FIGURE 8.0-1. LOCATION OF SAN ANDRES WELLS AND WATER-LEVEL ELEVATION FOR THE SAN ANDRES AQUIFER, 2015, FT-MSL**




NOTE: X-SECTION BASED ON LOGS FROM WELLS 938, 889, AND 949.

FIGURE 8.0-2. SAN ANDRES CROSS-SECTION ALONG THE NORTHERN BORDER OF SECTIONS 32 AND 33

DATE: 02/10/16

HORIZONTAL SCALE: 1" = 1600'

C:\PROJECTS\2016-06\XSEC32-33.DWG

5160'

WEST FAULT

EAST FAULT

1120'

COUNTY ROAD 63

344 | 0.031
0.006 | 928

601 | 0.032
0.009 | 1520

LARGE-TAILINGS-PILE
(RECLAMATION IN PROGRESS)

733 | 0.010
0.008 | 1840

788 | 0.007
0.006 | 2010

HWY OFFICE

COLLECTION POND

LINED EVAP POND NO. 2

LINED EVAP. POND #1

SMALL TAILINGS PILE

HIGHWAY-6&95

PLEASANT-VALLEY ESTATES

674 | 0.020
0.009 | 1660

COUNTY ROAD 25

291 | 0.009
<0.005 | 720

MURRAY-ACRES

VALLE VERDE

BROADVIEW ACRES

740 | 0.030
0.022 | 1780

FELICE-ACRES

THUNDERBIRD LANE

RAILROAD

HIGHWAY-122

WEST FAULT

RALPH CARR ROAD

183 | 0.005
0.009 | 541

409 | 0.015
0.014 | 951

130 | 0.005
0.006 | 450

1800'

7700'

13000'

1545500
1543500
1541500
1539500
1537500
1535500
1533500

473400
475400
477400
479400
481400
485400
487400
489400
491400

N
W
E
S

--LEGEND--

- SAN ANDRES WELL
- FRESH-WATER INJECTION SUPPLY WELL
- 1050' OFFSET WELL
- SO4 | U / Se | TDS — SUBCROP OF SAN ANDRES ALLUVIUM OVERLIES LIMESTONE

SCALE: 1" = 1000'
C:\PROJECTS\2016-06\1600SAN ada
DATE: 2/11/16

**FIGURE 8.0-3. LOCATION OF SAN ANDRES WELLS AND WATER QUALITY DATA FOR THE SAN ANDRES AQUIFER 2015, mg/l**

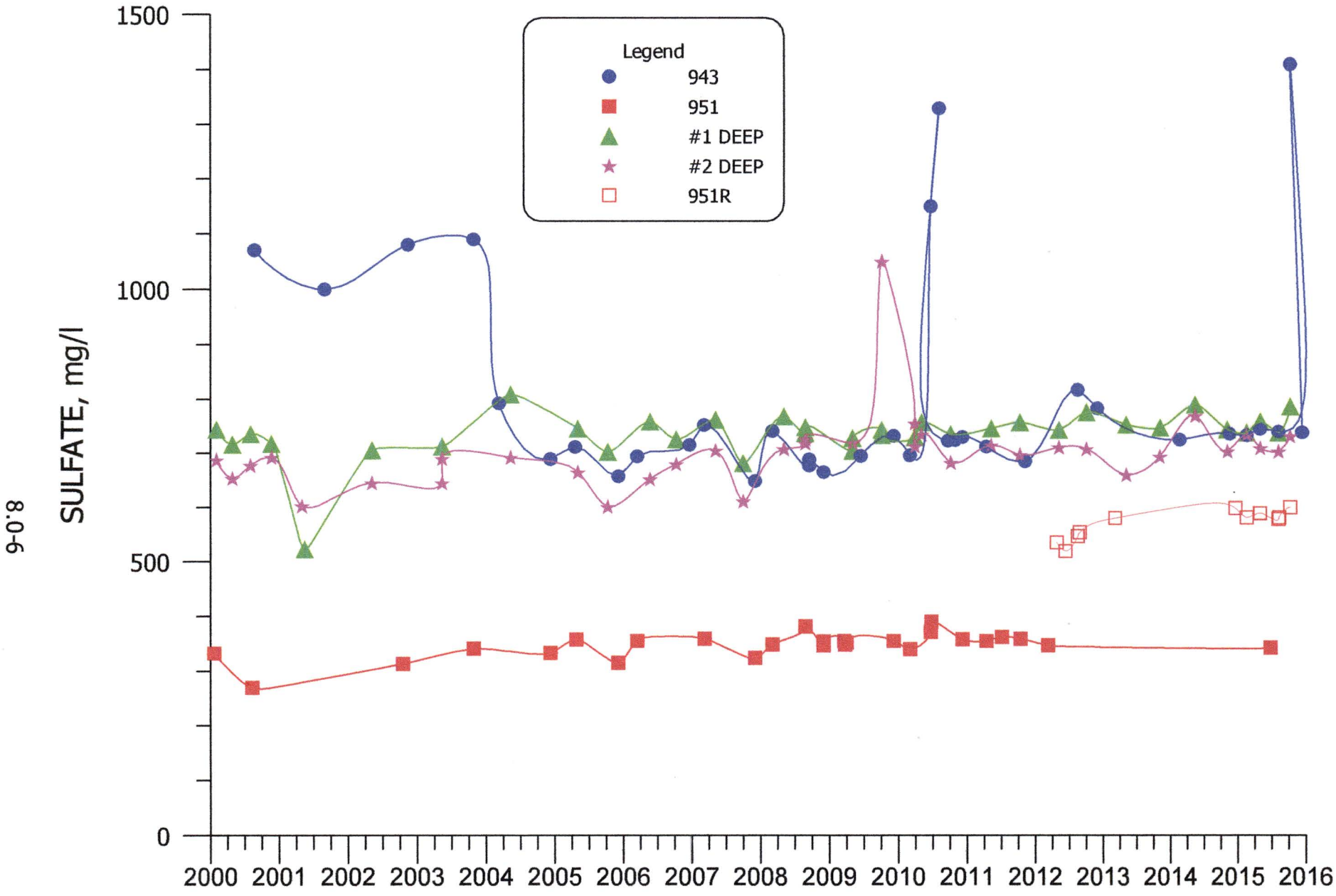



**FIGURE 8.0-4. SULFATE CONCENTRATIONS FOR WELLS 943, 951, 951R, #1 DEEP, AND #2 DEEP.**

# TABLE 8.0-1. WELL DATA FOR THE SAN ANDRES WELLS.

| WELL NAME | NORTH. COORD. | EAST. COORD. | WELL DEPTH (FT-MP) | CASING DIAM (IN) | WATER LEVEL DATE | WATER LEVEL DEPTH (FT-MP) | WATER LEVEL ELEV. (FT-MSL) | MP ABOVE LSD (FT) | MP ELEV. (FT-MSL) | DEPTH TO TOP OF SAN ANDRES (FT-LSD) | ELEV. TO TOP OF SAN ANDRES (FT-MSL) | CASING PERFOR-ATIONS | (FT-LSD) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 Deepw | 1543307 | 493633 | 1000.0 | 10.0 | 12/12/2007 | 99.0800 | 6484.68 | 0.0 | 6583.76 | 130 | 6454 | A | — |
| | | | | | | | | | | 303 | 6281 | U | — |
| | | | | | | | | | | 433 | 6151 | M | — |
| | | | | | | | | | | 597 | 5987 | L | — |
| | | | | | | | | | | 955 | 5629 | S | 919-999 |
| #2 Deepw | 1542424 | 490972 | 870.0 | — | 5/1/2015 | 160.199 | 6415.46 | 0.0 | 6575.66 | 110 | 6466 | A | — |
| | | | | | | | | | | 800 | 5776 | S | - |
| 0806R | 1541177 | 486264 | 600.0 | 16.0 | 4/13/2011 | 148.600 | 6418.40 | — | 6567.00 | 510 | — | S | 510-580 |
| 0532 | 1518700 | 482400 | 214.0 | 14.0 | — | — | — | 0.0 | 6515.00 | 0 | 6515 | S | - |
| 0534 | 1534589 | 476549 | 1000.0 | 16.0 | 12/16/2010 | 120.010 | 6432.56 | 0.0 | 6552.57 | — | — | S | - |
| 0535 | 1530100 | 478450 | 198.0 | 12.0 | 12/17/2010 | 117.849 | 6422.15 | 0.0 | 6540.00 | — | — | S | - |
| 0545 | 1540200 | 476600 | 0.0 | 8.0 | — | — | — | — | 6560.00 | — | — | S | - |
| 0806 | 1541120 | 486320 | 584.0 | 16.0 | — | — | — | 0.0 | 6567.00 | 90 | 6477 | A | — |
| | | | | | | | | | | 520 | 6047 | S | - |
| 0822 | 1538920 | 488630 | 980.0 | 7.0 | 2/13/2008 | 135.600 | 6421.40 | 0.0 | 6557.00 | 790 | 5767 | S | 790-875 |
| 0907 | 1534250 | 480800 | 360.0 | 16.0 | 12/1/2015 | 124 | 6421.60 | 0.0 | 6545.60 | 123 | 6423 | A | — |
| | | | | | | | | | | 262 | 6284 | S | 295-360 |
| 0911 | 1534350 | 476800 | 188.0 | — | — | — | — | 0.0 | 6552.60 | — | — | S | - |
| 0918 | — | — | 725.0 | 4.0 | — | — | — | 0.0 | 6702.40 | 620 | 6082 | S | 635-655 |
| 0919 | — | — | 628.0 | 5.0 | — | — | — | 0.0 | 6684.00 | 35 | 6649 | A | — |
| | | | | | | | | | | 356 | 6328 | S | 364-571 |
| 0923 | 1552400 | 477900 | 330.0 | 5.0 | 4/6/1994 | 6464.97 | 157.63 | 0.0 | 6622.60 | 60 | 6563 | A | — |
| | | | | | | | | | | 229 | 6394 | S | 234-330 |
| 0928 | 1548250 | 491700 | 864.0 | 18.0 | 12/1/2015 | 132.100 | 6465.50 | 1.2 | 6597.60 | 138 | 6458 | A | — |
| | | | | | | | | | | 801 | 5795 | S | - |
| 0938 | 1539500 | 473040 | — | — | 12/1/2015 | 150.649 | 6418.15 | 0.0 | 6568.80 | 95 | 6474 | A | — |
| | | | | | | | | | | 120 | 6449 | S | - |
| 0943 | 1537222 | 487407 | 978.0 | 18.0 | 12/10/2015 | 143.369 | 6412.54 | 0.0 | 6555.91 | 704 | 5852 | S | 703-978 |
| 0949 | 1540350 | 483600 | 551.0 | 6.0 | 2/13/2008 | 130.600 | 6431.70 | 0.0 | 6562.30 | 112 | 6450 | A | — |
| | | | | | | | | | | 250 | 6312 | L | — |
| | | | | | | | | | | 460 | 6102 | S | 400-493 |
| | | | | | | | | | | 460 | 6102 | S | 505-551 |
| 0951 | 1545500 | 473200 | 275.0 | 10.0 | 12/1/2015 | 154.149 | 6419.55 | 0.9 | 6573.70 | 110 | 6463 | A | — |
| | | | | | | | | | | 227 | 6346 | S | 241-275 |
| 0951R | 1544500 | 484100 | 525.0 | 8.0 | 11/30/2015 | 161.679 | 6415.10 | — | 6576.78 | 65 | — | A | — |
| | | | | | | | | | | 420 | — | S | 415-525 |
| 0955 | 1537338 | 483699 | 498.0 | 5.0 | 11/3/1995 | 78.0500 | 6471.95 | 0.2 | 6550.00 | 40 | 6510 | A | — |
| | | | | | | | | | | 420 | 6130 | S | 385-498 |

# TABLE 8.0-1. WELL DATA FOR THE SAN ANDRES WELLS.

(cont'd.)

| WELL NAME | NORTH. COORD. | EAST. COORD. | WELL DEPTH (FT-MP) | CASING DIAM (IN) | WATER LEVEL | | | MP ABOVE LSD (FT) | MP ELEV. (FT-MSL) | DEPTH TO TOP OF SAN ANDRES (FT-LSD) | ELEV. TO TOP OF SAN ANDRES (FT-MSL) | CASING PERFOR-ATIONS (FT-LSD) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | DATE | DEPTH (FT-MP) | ELEV. (FT-MSL) | | | | | | |
| 0986 | 1537894 | 483690 | 467.0 | 5.0 | 8/23/2008 | 124 | 6526.00 | 0.8 | 6650.00 | 65 | 6584 | A | — |
| | | | | | | | | | | 85 | 6564 | L | — |
| | | | | | | | | | | 415 | 6234 | S | 420-467 |
| 0987 | 1538226 | 483357 | 500.0 | 5.0 | 11/3/1995 | 54.4799 | 6595.52 | 1.0 | 6650.00 | 70 | 6579 | A | — |
| | | | | | | | | | | 385 | 6264 | S | 425-470 |
| 0991 | 1538873 | 483630 | 500.0 | — | 8/26/2008 | 126.819 | 6524.18 | 1.4 | 6651.00 | — | — | S | - |
| 0995 | 1540115 | 476594 | — | — | — | — | — | 0.0 | 6474.00 | — | — | S | - |
| 0998 | 1533080 | 476450 | 145.0 | 16.0 | — | — | — | 0.0 | 6650.00 | — | — | S | - |
| 0999 | 1524230 | 480187 | 180.0 | 16.0 | — | — | — | 0.0 | 6527.00 | 0 | 6527 | S | - |

NOTE: A = Base of Alluvium
L = Lower Chinle
S = San Andres Aquifer
r = Reported
* = Abandoned

## SECTION 9

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## GROUND WATER MONITORING
## FOR HOMESTAKE'S GRANTS PROJECT

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# APPENDIX A
# WATER LEVELS

## TABLE OF CONTENTS

## GROUND-WATER MONITORING FOR HOMESTAKE'S GRANTS PROJECT

## APPENDIX A

# Table A.1-1 WATER LEVELS FOR HOMESTAKE'S ALLUVIAL WELLS

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

### 0690

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 12/1/2015 | 34.48 | 6547.58 |

### 0691

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 12/1/2015 | 41.35 | 6547.46 |

### 0892

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/30/2015 | 38.30 | 6548.91 |

### 1C

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/30/2015 | 38.83 | 6549.16 |

### 1H

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/30/2015 | 30.43 | 6555.96 |

### 1I

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/30/2015 | 35.30 | 6563.05 |

### 1N

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/19/2015 | 28.61 | 6562.24 |
| 11/30/2015 | 29.00 | 6561.85 |

### 1O

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/30/2015 | > 43.95 | < 6550.99 |

### 1P

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/19/2015 | 30.68 | 6554.56 |
| 11/30/2015 | 29.10 | 6556.14 |

### 1Q

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/4/2015 | 28.02 | 6555.09 |

### 1R

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/3/2015 | 29.31 | 6556.68 |

### 1T

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/4/2015 | 27.18 | 6557.73 |

### 1U

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/3/2015 | 30.30 | 6555.92 |

### 1V

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/4/2015 | 28.70 | 6556.24 |

### B

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 1/5/2015 | 33.56 | 6537.34 |
| 1/12/2015 | 33.58 | 6537.32 |
| 1/19/2015 | 33.53 | 6537.37 |
| 1/26/2015 | 33.50 | 6537.40 |
| 2/2/2015 | 33.30 | 6537.60 |
| 2/9/2015 | 32.25 | 6538.65 |
| 2/16/2015 | 33.02 | 6537.88 |
| 2/23/2015 | 32.05 | 6538.85 |
| 3/2/2015 | 32.80 | 6538.10 |
| 3/9/2015 | 32.76 | 6538.14 |
| 3/16/2015 | 32.79 | 6538.11 |
| 3/23/2015 | 38.80 | 6532.10 |
| 3/30/2015 | 32.77 | 6538.13 |
| 4/6/2015 | 32.82 | 6538.08 |
| 4/13/2015 | 32.87 | 6538.03 |
| 4/20/2015 | 38.80 | 6532.10 |
| 4/27/2015 | 32.70 | 6538.20 |
| 5/4/2015 | 32.60 | 6538.30 |
| 5/11/2015 | 32.40 | 6538.50 |
| 5/18/2015 | 32.20 | 6538.70 |
| 5/21/2015 | 32.55 | 6538.35 |
| 5/25/2015 | 32.34 | 6538.56 |
| 6/1/2015 | 32.47 | 6538.43 |
| 6/8/2015 | 32.60 | 6538.30 |
| 6/15/2015 | 32.81 | 6538.09 |
| 6/22/2015 | 32.81 | 6538.09 |
| 6/29/2015 | 33.03 | 6537.87 |
| 7/6/2015 | 32.77 | 6538.13 |
| 7/13/2015 | 32.77 | 6538.13 |
| 7/27/2015 | 32.95 | 6537.95 |
| 8/3/2015 | 32.93 | 6537.97 |
| 8/17/2015 | 32.96 | 6537.94 |
| 8/24/2015 | 31.90 | 6539.00 |
| 8/31/2015 | 31.68 | 6539.22 |
| 9/7/2015 | 31.53 | 6539.37 |
| 9/14/2015 | 32.45 | 6538.45 |
| 9/28/2015 | 32.20 | 6538.70 |
| 10/5/2015 | 31.13 | 6539.77 |
| 10/12/2015 | 32.15 | 6538.75 |
| 10/19/2015 | 31.98 | 6538.92 |
| 10/26/2015 | 32.17 | 6538.73 |
| 11/2/2015 | 32.03 | 6538.87 |
| 11/9/2015 | 38.88 | 6532.02 |
| 11/16/2015 | 31.55 | 6539.35 |
| 11/23/2015 | 30.98 | 6539.92 |
| 11/30/2015 | 32.57 | 6538.33 |
| 12/7/2015 | 32.25 | 6538.65 |
| 12/14/2015 | 32.73 | 6538.17 |
| 12/21/2015 | 32.27 | 6538.63 |
| 12/28/2015 | 32.10 | 6538.80 |

### B1

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/30/2015 | 32.40 | 6539.42 |

### B8

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/12/2015 | 36.20 | 6539.55 |

### B12

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/5/2015 | 34.56 | 6538.46 |
| 11/24/2015 | 32.62 | 6540.40 |

### B13

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/5/2015 | 32.10 | 6537.94 |
| 11/30/2015 | 28.77 | 6541.27 |

### BA

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 1/5/2015 | 34.70 | 6536.88 |
| 1/12/2015 | 34.88 | 6536.70 |
| 1/19/2015 | 34.90 | 6536.68 |
| 1/26/2015 | 34.61 | 6536.97 |
| 2/2/2015 | 34.28 | 6537.30 |
| 2/9/2015 | 34.20 | 6537.38 |
| 2/16/2015 | 33.94 | 6537.64 |
| 2/23/2015 | 34.00 | 6537.58 |
| 3/2/2015 | 33.75 | 6537.83 |
| 3/9/2015 | 33.70 | 6537.88 |
| 3/16/2015 | 33.76 | 6537.82 |
| 3/23/2015 | 34.00 | 6537.58 |
| 3/30/2015 | 33.95 | 6537.63 |
| 4/6/2015 | 33.96 | 6537.62 |
| 4/13/2015 | 33.97 | 6537.61 |
| 4/20/2015 | 33.85 | 6537.73 |
| 4/27/2015 | 33.92 | 6537.66 |
| 5/4/2015 | 34.00 | 6537.58 |
| 5/11/2015 | 33.80 | 6537.78 |
| 5/18/2015 | 33.71 | 6537.87 |
| 5/25/2015 | 33.75 | 6537.83 |
| 6/1/2015 | 33.35 | 6538.23 |
| 6/8/2015 | 32.95 | 6538.63 |
| 6/15/2015 | 34.73 | 6536.85 |
| 6/22/2015 | 34.28 | 6537.30 |
| 6/29/2015 | 34.92 | 6536.66 |
| 7/6/2015 | 33.88 | 6537.70 |
| 7/13/2015 | 33.73 | 6537.85 |
| 7/27/2015 | 34.20 | 6537.38 |
| 8/3/2015 | 34.28 | 6537.30 |
| 8/17/2015 | 34.22 | 6537.36 |
| 8/24/2015 | 32.94 | 6538.64 |
| 8/31/2015 | 32.50 | 6539.08 |
| 9/7/2015 | 32.28 | 6539.30 |
| 9/14/2015 | 33.08 | 6538.50 |
| 9/28/2015 | 32.90 | 6538.68 |
| 10/5/2015 | 31.74 | 6539.84 |
| 10/12/2015 | 32.60 | 6538.98 |
| 10/19/2015 | 32.37 | 6539.21 |
| 10/26/2015 | 32.89 | 6538.69 |
| 11/2/2015 | 32.61 | 6538.97 |
| 11/9/2015 | 32.20 | 6539.38 |
| 11/16/2015 | 31.80 | 6539.78 |
| 11/23/2015 | 30.74 | 6540.84 |
| 11/30/2015 | 33.25 | 6538.33 |
| 12/7/2015 | 33.16 | 6538.42 |
| 12/14/2015 | 34.09 | 6537.49 |
| 12/21/2015 | 35.02 | 6536.56 |
| 12/28/2015 | 32.89 | 6538.69 |

### BC

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/21/2015 | 34.92 | 6539.69 |
| 11/24/2015 | 32.75 | 6541.86 |

### C6

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 3/31/2015 | 54.46 | 6530.43 |
| 6/9/2015 | 40.28 | 6544.61 |
| 6/11/2015 | 47.32 | 6537.57 |
| 10/1/2015 | 49.96 | 6534.93 |

* Drawdown Tube Pressure, # Transducer Reading

# Table A.1-1 WATER LEVELS FOR HOMESTAKE'S ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **C7** | | |
| 3/31/2015 | 58.68 | 6525.76 |
| 6/9/2015 | 44.97 | 6539.47 |
| 6/11/2015 | 58.75 | 6525.69 |
| 10/1/2015 | 55.50 | 6528.94 |
| **C8** | | |
| 3/31/2015 | 66.80 | 6517.69 |
| 6/9/2015 | 35.05 | 6549.44 |
| 6/11/2015 | 63.00 | 6521.49 |
| 10/1/2015 | 51.48 | 6533.01 |
| **C9** | | |
| 3/31/2015 | 64.70 | 6519.85 |
| 6/9/2015 | 44.02 | 6540.53 |
| 6/11/2015 | 58.50 | 6526.05 |
| 10/1/2015 | 48.28 | 6536.27 |
| **C10** | | |
| 3/31/2015 | 44.27 | 6540.99 |
| 6/9/2015 | 42.41 | 6542.85 |
| 6/11/2015 | 43.60 | 6541.66 |
| **C11** | | |
| 3/31/2015 | 36.42 | 6544.96 |
| 6/9/2015 | 35.37 | 6546.01 |
| 6/11/2015 | 39.41 | 6541.97 |
| 10/1/2015 | 32.97 | 6548.41 |
| **C12** | | |
| 3/31/2015 | 43.54 | 6537.01 |
| 6/9/2015 | 32.40 | 6548.15 |
| 6/11/2015 | 35.40 | 6545.15 |
| 10/1/2015 | 24.01 | 6556.54 |
| **D1** | | |
| 3/17/2015 | 33.85 | 6537.05 |
| 7/15/2015 | 34.59 | 6536.31 |
| **DA3** | | |
| 6/11/2015 | 39.28 | 6535.08 |
| **DC** | | |
| 6/9/2015 | 36.65 | 6534.66 |
| 11/24/2015 | 39.95 | 6531.36 |
| **DD** | | |
| 2/4/2015 | 47.40 | 6545.19 |
| 4/30/2015 | 50.22 | 6542.37 |
| 8/5/2015 | 45.72 | 6546.87 |
| 10/8/2015 | 46.80 | 6545.79 |
| **DD2** | | |
| 2/4/2015 | 46.09 | 6547.19 |
| 4/30/2015 | 50.93 | 6542.35 |
| 8/5/2015 | 44.53 | 6548.75 |
| 10/8/2015 | 45.60 | 6547.68 |
| **DQ** | | |
| 6/11/2015 | 40.77 | 6535.66 |
| **DR** | | |
| 6/11/2015 | 55.75 | 6535.08 |
| **DT** | | |
| 6/11/2015 | 46.78 | 6537.03 |
| 9/7/2015 | 42.28 | 6541.53 |
| 9/14/2015 | 43.02 | 6540.79 |
| 9/28/2015 | 44.30 | 6539.51 |
| 10/5/2015 | 41.47 | 6542.34 |
| 10/12/2015 | 42.40 | 6541.41 |
| 10/19/2015 | 47.74 | 6536.07 |
| 11/2/2015 | 42.90 | 6540.91 |
| 11/9/2015 | 42.37 | 6541.44 |
| 11/16/2015 | 40.11 | 6543.70 |
| 11/23/2015 | 46.31 | 6537.50 |
| 11/30/2015 | 48.58 | 6535.23 |
| 12/7/2015 | 42.85 | 6540.96 |
| 12/14/2015 | 44.70 | 6539.11 |
| **DZ** | | |
| 1/5/2015 | 45.08 | 6545.45 |
| 1/12/2015 | 45.21 | 6545.32 |
| 1/19/2015 | 45.85 | 6544.68 |
| 1/26/2015 | 45.96 | 6544.57 |
| 2/2/2015 | 46.61 | 6543.92 |
| 2/9/2015 | 46.35 | 6544.18 |
| 2/16/2015 | 46.02 | 6544.51 |
| 2/23/2015 | 46.00 | 6544.53 |
| 3/2/2015 | 46.10 | 6544.43 |
| 3/9/2015 | 45.71 | 6544.82 |
| 3/16/2015 | 46.17 | 6544.36 |
| 3/23/2015 | 45.90 | 6544.63 |
| 3/30/2015 | 45.40 | 6545.13 |
| 4/6/2015 | 45.27 | 6545.26 |
| 4/13/2015 | 45.15 | 6545.38 |
| 4/20/2015 | 44.78 | 6545.75 |
| 4/27/2015 | 44.64 | 6545.89 |
| 5/4/2015 | 44.50 | 6546.03 |
| 5/11/2015 | 44.52 | 6546.01 |
| 5/18/2015 | 44.51 | 6546.02 |
| 5/25/2015 | 45.10 | 6545.43 |
| 6/1/2015 | 44.89 | 6545.64 |
| 6/8/2015 | 44.68 | 6545.85 |
| 6/9/2015 | 44.56 | 6545.97 |
| 6/15/2015 | 45.80 | 6544.73 |
| 6/22/2015 | 45.30 | 6545.23 |
| 6/29/2015 | 45.94 | 6544.59 |
| 7/6/2015 | 45.34 | 6545.19 |
| 7/13/2015 | 45.02 | 6545.51 |
| 7/27/2015 | 46.20 | 6544.33 |
| 8/3/2015 | 46.93 | 6543.60 |
| 8/17/2015 | 46.69 | 6543.84 |
| 8/24/2015 | 37.70 | 6552.83 |
| 8/31/2015 | 44.19 | 6546.34 |
| 9/7/2015 | 43.90 | 6546.63 |
| 9/14/2015 | 44.95 | 6545.58 |
| 9/28/2015 | 44.50 | 6546.03 |
| 10/5/2015 | 48.48 | 6542.05 |
| 10/12/2015 | 44.70 | 6545.83 |
| 10/19/2015 | 44.38 | 6546.15 |
| 10/26/2015 | 45.49 | 6545.04 |
| 11/2/2015 | 44.56 | 6545.97 |
| 11/9/2015 | 44.00 | 6546.53 |
| 11/16/2015 | 42.19 | 6548.34 |
| 11/23/2015 | 43.15 | 6547.38 |
| 11/30/2015 | 44.98 | 6545.55 |
| 12/7/2015 | 44.81 | 6545.72 |
| 12/14/2015 | 44.52 | 6546.01 |
| 12/21/2015 | 45.47 | 6545.06 |
| 12/28/2015 | 45.39 | 6545.14 |
| **F** | | |
| 3/17/2015 | 29.99 | 6534.83 |
| 9/25/2015 | 28.05 | 6536.77 |
| 11/30/2015 | 28.57 | 6536.25 |
| **FB** | | |
| 3/17/2015 | 31.08 | 6534.58 |
| 8/6/2015 | 29.54 | 6536.12 |
| 9/25/2015 | 29.12 | 6536.54 |
| **GA** | | |
| 11/30/2015 | 29.07 | 6533.72 |
| **GF** | | |
| 11/30/2015 | 31.60 | 6534.41 |
| **GH** | | |
| 3/12/2015 | 30.59 | 6532.17 |
| 8/6/2015 | 28.32 | 6534.44 |
| 11/30/2015 | 30.90 | 6531.86 |
| **GN** | | |
| 3/10/2015 | 33.51 | 6534.46 |
| 8/18/2015 | 31.50 | 6536.47 |
| **GV** | | |
| 10/1/2015 | 45.24 | 6532.14 |
| 11/30/2015 | 45.95 | 6531.43 |
| **GW1** | | |
| 11/30/2015 | 29.17 | 6536.10 |
| **GW2** | | |
| 11/30/2015 | 29.85 | 6536.23 |
| **K4** | | |
| 4/2/2015 | 73.28 | 6528.74 |
| 6/11/2015 | 72.81 | 6529.21 |
| 7/16/2015 | 54.77 | 6547.25 |

* Drawdown Tube Pressure, # Transducer Reading

# Table A.1-1 WATER LEVELS FOR HOMESTAKE'S ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **K5** | | |
| 4/2/2015 | 66.67 | 6535.06 |
| 6/11/2015 | 65.30 | 6536.43 |
| 7/16/2015 | 65.42 | 6536.31 |
| **K7** | | |
| 4/2/2015 | 59.13 | 6542.40 |
| 6/11/2015 | 58.85 | 6542.68 |
| 7/16/2015 | 59.48 | 6542.05 |
| **K8** | | |
| 4/2/2015 | 57.61 | 6542.88 |
| 6/11/2015 | 78.35 | 6522.14 |
| 7/16/2015 | 72.93 | 6527.56 |
| **K9** | | |
| 4/2/2015 | 64.99 | 6535.35 |
| 6/11/2015 | 62.24 | 6538.10 |
| 7/16/2015 | 63.87 | 6536.47 |
| **K10** | | |
| 4/2/2015 | 73.72 | 6527.09 |
| 7/16/2015 | 70.02 | 6530.79 |
| **K11** | | |
| 4/2/2015 | 77.33 | 6523.28 |
| 6/11/2015 | 66.74 | 6533.87 |
| 7/16/2015 | 72.66 | 6527.95 |
| **KEB** | | |
| 7/21/2015 | 21.35 | 6548.38 |
| **KF** | | |
| 7/21/2015 | 25.86 | 6544.35 |
| **KZ** | | |
| 1/5/2015 | 30.82 | 6540.90 |
| 1/12/2015 | 31.00 | 6540.72 |
| 1/19/2015 | 30.89 | 6540.83 |
| 1/26/2015 | 31.10 | 6540.62 |
| 2/2/2015 | 31.10 | 6540.62 |
| 2/9/2015 | 30.00 | 6541.72 |
| 2/16/2015 | 30.71 | 6541.01 |
| 2/23/2015 | 30.01 | 6541.71 |
| 3/2/2015 | 30.50 | 6541.22 |
| 3/9/2015 | 30.05 | 6541.67 |
| 3/16/2015 | 30.62 | 6541.10 |
| 3/23/2015 | 31.10 | 6540.62 |
| 3/30/2015 | 30.05 | 6541.67 |
| 4/6/2015 | 29.65 | 6542.07 |
| 4/13/2015 | 29.26 | 6542.46 |
| 4/20/2015 | 28.60 | 6543.12 |
| 4/27/2015 | 27.70 | 6544.02 |
| 5/4/2015 | 26.80 | 6544.92 |
| 5/11/2015 | 27.50 | 6544.22 |
| 5/18/2015 | 27.20 | 6544.52 |
| 5/25/2015 | 27.10 | 6544.62 |
| 6/1/2015 | 27.33 | 6544.39 |
| 6/8/2015 | 27.57 | 6544.15 |
| 6/15/2015 | 28.03 | 6543.69 |
| 6/22/2015 | 27.71 | 6544.01 |
| 6/29/2015 | 28.10 | 6543.62 |
| 7/6/2015 | 27.98 | 6543.74 |
| 7/13/2015 | 28.23 | 6543.49 |
| 7/21/2015 | 28.23 | 6543.49 |
| 7/27/2015 | 28.28 | 6543.44 |
| 8/3/2015 | 28.21 | 6543.51 |
| 8/17/2015 | 27.49 | 6544.23 |
| 8/24/2015 | 26.70 | 6545.02 |
| 8/31/2015 | 26.13 | 6545.59 |
| 9/7/2015 | 26.06 | 6545.66 |
| 9/14/2015 | 26.86 | 6544.86 |
| 9/28/2015 | 26.60 | 6545.12 |
| 10/5/2015 | 25.49 | 6546.23 |
| 10/12/2015 | 27.40 | 6544.32 |
| 10/19/2015 | 26.67 | 6545.05 |
| 10/26/2015 | 26.93 | 6544.79 |
| 11/2/2015 | 36.27 | 6535.45 |
| 11/9/2015 | 26.57 | 6545.15 |
| 11/16/2015 | 26.63 | 6545.09 |
| 11/23/2015 | 26.13 | 6545.59 |
| 11/30/2015 | 27.87 | 6543.85 |
| 12/7/2015 | 27.42 | 6544.30 |
| 12/14/2015 | 27.85 | 6543.87 |
| 12/21/2015 | 27.53 | 6544.19 |
| 12/28/2015 | 27.47 | 6544.25 |
| **L** | | |
| 4/2/2015 | 57.53 | 6517.44 |
| **L5** | | |
| 4/2/2015 | 61.80 | 6514.27 |
| 11/18/2015 | 35.28 | 6540.79 |
| **L6** | | |
| 4/2/2015 | 26.13 | 6548.51 |
| 10/16/2015 | 24.05 | 6550.59 |
| **L7** | | |
| 4/2/2015 | 27.47 | 6549.14 |
| 11/18/2015 | 44.35 | 6532.26 |
| **L8** | | |
| 4/2/2015 | 46.69 | 6529.80 |
| 10/16/2015 | 32.90 | 6543.59 |
| **L9** | | |
| 4/2/2015 | 55.21 | 6522.02 |
| 11/18/2015 | 38.32 | 6538.91 |
| **L10** | | |
| 4/2/2015 | 42.71 | 6534.12 |
| 10/16/2015 | 39.31 | 6537.52 |
| **M5** | | |
| 7/28/2015 | 57.55 | 6517.79 |
| 11/30/2015 | 36.00 | 6539.34 |
| **M6** | | |
| 3/3/2015 | 58.56 | 6516.48 |
| 11/24/2015 | 57.65 | 6517.39 |
| **M7** | | |
| 3/3/2015 | 57.31 | 6515.54 |
| 11/24/2015 | 53.27 | 6519.58 |
| **M9** | | |
| 3/3/2015 | 68.80 | 6508.01 |
| 6/11/2015 | 70.08 | 6506.73 |
| 10/1/2015 | 69.25 | 6507.56 |
| 11/24/2015 | 68.85 | 6507.96 |
| **M10** | | |
| 11/24/2015 | 52.80 | 6520.56 |
| **MA** | | |
| 11/24/2015 | 37.12 | 6535.10 |
| **MC** | | |
| 11/24/2015 | 39.61 | 6532.45 |
| **MF** | | |
| 11/24/2015 | 42.60 | 6529.68 |
| **MH** | | |
| 11/24/2015 | 47.26 | 6526.66 |
| **MJ** | | |
| 11/24/2015 | > 53.06 | < 6519.88 |
| **ML** | | |
| 11/24/2015 | 47.31 | 6525.39 |
| **MN** | | |
| 11/24/2015 | 58.23 | 6519.33 |
| **MQ** | | |
| 3/3/2015 | 65.72 | 6508.58 |
| 6/11/2015 | 66.78 | 6507.52 |
| 10/1/2015 | 67.10 | 6507.20 |
| **MU** | | |
| 11/24/2015 | 33.40 | 6540.79 |
| **MW** | | |
| 11/24/2015 | 59.50 | 6515.41 |

* Drawdown Tube Pressure, # Transducer Reading

# Table A.1-1 WATER LEVELS FOR HOMESTAKE'S ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **MX** | | |
| 3/10/2015 | 48.45 | 6520.16 |
| 8/18/2015 | 47.21 | 6521.40 |
| **MZ** | | |
| 3/3/2015 | 61.48 | 6515.16 |
| 11/24/2015 | 60.73 | 6515.91 |
| **NB** | | |
| 8/27/2015 | 43.70 | 6549.60 |
| **NC** | | |
| 4/14/2015 | 38.41 | 6547.42 |
| 8/26/2015 | 37.15 | 6548.68 |
| 11/30/2015 | 37.85 | 6547.98 |
| **ND** | | |
| 3/26/2015 | 42.88 | 6550.01 |
| 5/12/2015 | 43.32 | 6549.57 |
| **O** | | |
| 8/26/2015 | 35.80 | 6552.03 |
| **P** | | |
| 5/19/2015 | 49.66 | 6537.60 |
| 10/20/2015 | 36.85 | 6550.41 |
| **P3** | | |
| 3/31/2015 | 41.38 | 6548.57 |
| **Q** | | |
| 4/30/2015 | 43.02 | 6550.80 |
| **R** | | |
| 3/26/2015 | 40.51 | 6563.52 |
| 5/12/2015 | 79.06 | 6524.97 |
| **S** | | |
| 11/24/2015 | 36.80 | 6544.37 |
| **S1** | | |
| 9/7/2015 | 33.77 | 6541.42 |
| 9/14/2015 | 34.45 | 6540.74 |
| 9/28/2015 | 34.29 | 6540.90 |
| 10/5/2015 | 33.20 | 6541.99 |
| 10/12/2015 | 34.04 | 6541.15 |
| 10/19/2015 | 34.44 | 6540.75 |
| 11/2/2015 | 34.52 | 6540.67 |
| 11/9/2015 | 33.50 | 6541.69 |
| 11/16/2015 | 32.90 | 6542.29 |
| 11/23/2015 | 33.51 | 6541.68 |
| 11/30/2015 | 35.60 | 6539.59 |
| 12/7/2015 | 35.22 | 6539.97 |
| 12/14/2015 | 35.22 | 6539.97 |
| **S2** | | |
| 1/5/2015 | 35.39 | 6538.33 |
| 1/12/2015 | 35.27 | 6538.45 |
| 1/19/2015 | 34.96 | 6538.76 |
| 1/26/2015 | 35.25 | 6538.47 |
| 1/29/2015 | 35.30 | 6538.42 |
| 2/2/2015 | 35.00 | 6538.72 |
| 2/9/2015 | 24.82 | 6548.90 |
| 2/16/2015 | 34.62 | 6539.10 |
| 2/23/2015 | 34.07 | 6539.65 |
| 3/2/2015 | 34.75 | 6538.97 |
| 3/9/2015 | 34.90 | 6538.82 |
| 3/16/2015 | 35.09 | 6538.63 |
| 3/23/2015 | 35.00 | 6538.72 |
| 3/30/2015 | 45.05 | 6528.67 |
| 4/6/2015 | 35.03 | 6538.69 |
| 4/13/2015 | 35.06 | 6538.66 |
| 4/20/2015 | 34.74 | 6538.98 |
| 4/27/2015 | 34.62 | 6539.10 |
| 5/4/2015 | 34.50 | 6539.22 |
| 5/11/2015 | 34.60 | 6539.12 |
| 5/18/2015 | 34.50 | 6539.22 |
| 5/25/2015 | 34.50 | 6539.22 |
| 6/1/2015 | 34.69 | 6539.03 |
| 6/8/2015 | 34.89 | 6538.83 |
| 6/15/2015 | 35.23 | 6538.49 |
| 6/22/2015 | 35.45 | 6538.27 |
| 6/29/2015 | 35.50 | 6538.22 |
| 7/6/2015 | 35.35 | 6538.37 |
| 7/13/2015 | 35.59 | 6538.13 |
| 7/16/2015 | 35.60 | 6538.12 |
| 7/27/2015 | 35.80 | 6537.92 |
| 8/3/2015 | 36.09 | 6537.63 |
| 8/17/2015 | 36.06 | 6537.66 |
| 8/24/2015 | 34.66 | 6539.06 |
| 8/31/2015 | 34.20 | 6539.52 |
| 9/7/2015 | 33.70 | 6540.02 |
| 9/14/2015 | 35.04 | 6538.68 |
| 9/28/2015 | 34.33 | 6539.39 |
| 10/5/2015 | 33.41 | 6540.31 |
| 10/12/2015 | 34.57 | 6539.15 |
| 10/19/2015 | 34.55 | 6539.17 |
| 10/26/2015 | 35.09 | 6538.63 |
| 11/2/2015 | 34.73 | 6538.99 |
| 11/9/2015 | 35.64 | 6538.08 |
| 11/16/2015 | 33.11 | 6540.61 |
| 11/23/2015 | 33.60 | 6540.12 |
| 11/24/2015 | 33.51 | 6540.21 |
| 11/30/2015 | 35.21 | 6538.51 |
| 12/7/2015 | 34.62 | 6539.10 |
| 12/14/2015 | 35.21 | 6538.51 |
| 12/21/2015 | 34.50 | 6539.22 |
| 12/28/2015 | 34.93 | 6538.79 |
| **S3** | | |
| 7/29/2015 | 36.71 | 6538.07 |
| 11/24/2015 | 34.94 | 6539.84 |
| **S4** | | |
| 7/16/2015 | 36.05 | 6539.24 |
| 11/24/2015 | 34.60 | 6540.69 |
| **S5** | | |
| 1/5/2015 | 39.66 | 6535.03 |
| 1/12/2015 | 23.15 | 6551.54 |
| 1/19/2015 | 38.72 | 6535.97 |
| 1/26/2015 | 39.18 | 6535.51 |
| 2/2/2015 | 38.80 | 6535.89 |
| 2/9/2015 | 38.42 | 6536.27 |
| 2/16/2015 | 38.29 | 6536.40 |
| 2/23/2015 | 38.04 | 6536.65 |
| 3/2/2015 | 38.35 | 6536.34 |
| 3/9/2015 | 38.81 | 6535.88 |
| 3/16/2015 | 39.50 | 6535.19 |
| 3/23/2015 | 23.00 | 6551.69 |
| 3/30/2015 | 38.05 | 6536.64 |
| 4/6/2015 | 38.32 | 6536.37 |
| 4/13/2015 | 38.60 | 6536.09 |
| 4/20/2015 | 38.24 | 6536.45 |
| 4/27/2015 | 38.17 | 6536.52 |
| 5/4/2015 | 38.10 | 6536.59 |
| 5/11/2015 | 38.10 | 6536.59 |
| 5/18/2015 | 37.92 | 6536.77 |
| 5/25/2015 | 38.00 | 6536.69 |
| 6/1/2015 | 38.28 | 6536.41 |
| 6/8/2015 | 38.58 | 6536.11 |
| 6/15/2015 | 23.06 | 6551.63 |
| 6/22/2015 | 23.05 | 6551.64 |
| 6/29/2015 | 40.40 | 6534.29 |
| 7/6/2015 | 38.55 | 6536.14 |
| 7/13/2015 | 39.91 | 6534.78 |
| 7/27/2015 | 39.75 | 6534.94 |
| 8/3/2015 | 41.35 | 6533.34 |
| 8/17/2015 | 41.38 | 6533.31 |
| 8/24/2015 | 39.19 | 6535.50 |
| 8/31/2015 | 22.03 | 6552.66 |
| 9/7/2015 | 38.00 | 6536.69 |
| 9/14/2015 | 38.80 | 6535.89 |
| 9/28/2015 | 38.71 | 6535.98 |
| 10/5/2015 | 38.58 | 6536.11 |
| 10/12/2015 | 38.25 | 6536.44 |
| 10/19/2015 | 39.20 | 6535.49 |
| 10/26/2015 | 40.37 | 6534.32 |
| 11/2/2015 | 38.97 | 6535.72 |
| 11/9/2015 | 38.46 | 6536.23 |
| 11/16/2015 | 38.19 | 6536.50 |
| 11/23/2015 | 22.05 | 6552.64 |
| 11/30/2015 | 23.61 | 6551.08 |
| 12/7/2015 | 23.52 | 6551.17 |
| 12/14/2015 | 40.44 | 6534.25 |
| 12/21/2015 | 39.23 | 6535.46 |
| 12/28/2015 | 35.84 | 6538.85 |
| **S5R** | | |
| 6/11/2015 | 73.50 | 6506.99 |
| **S11** | | |
| 11/24/2015 | 30.51 | 6547.88 |
| **S12** | | |
| 2/5/2015 | 38.39 | 6540.46 |

* Drawdown Tube Pressure, # Transducer Reading

# Table A.1-1 WATER LEVELS FOR HOMESTAKE'S ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL)

3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **S19** | | |
| 11/24/2015 | 31.85 | 6546.12 |
| **S21** | | |
| 11/24/2015 | 29.81 | 6550.47 |
| **SA** | | |
| 6/11/2015 | 47.34 | 6532.97 |
| **SB** | | |
| 6/11/2015 | 52.50 | 6528.59 |
| **SE6** | | |
| 2/5/2015 | 49.25 | 6529.66 |
| **SM** | | |
| 1/5/2015 | 36.68 | 6542.06 |
| 1/12/2015 | 36.66 | 6542.08 |
| 1/19/2015 | 36.39 | 6542.35 |
| 1/26/2015 | 36.54 | 6542.20 |
| 2/2/2015 | 36.45 | 6542.29 |
| 2/9/2015 | 36.30 | 6542.44 |
| 2/16/2015 | 36.11 | 6542.63 |
| 2/23/2015 | 36.14 | 6542.60 |
| 3/2/2015 | 36.30 | 6542.44 |
| 3/9/2015 | 36.48 | 6542.26 |
| 3/16/2015 | 36.68 | 6542.06 |
| 3/23/2015 | 36.70 | 6542.04 |
| 3/30/2015 | 36.75 | 6541.99 |
| 4/6/2015 | 36.84 | 6541.90 |
| 4/13/2015 | 36.94 | 6541.80 |
| 4/20/2015 | 36.38 | 6542.36 |
| 4/27/2015 | 36.31 | 6542.43 |
| 5/4/2015 | 36.25 | 6542.49 |
| 5/11/2015 | 36.25 | 6542.49 |
| 5/18/2015 | 36.12 | 6542.62 |
| 5/19/2015 | 36.38 | 6542.36 |
| 5/25/2015 | 36.12 | 6542.62 |
| 6/1/2015 | 36.27 | 6542.47 |
| 6/8/2015 | 36.43 | 6542.31 |
| 6/15/2015 | 36.69 | 6542.05 |
| 6/22/2015 | 36.68 | 6542.06 |
| 6/29/2015 | 37.10 | 6541.64 |
| 7/6/2015 | 37.02 | 6541.72 |
| 7/13/2015 | 37.27 | 6541.47 |
| 7/27/2015 | 37.50 | 6541.24 |
| 8/3/2015 | 37.76 | 6540.98 |
| 8/17/2015 | 37.89 | 6540.85 |
| 8/24/2015 | 36.60 | 6542.14 |
| 8/31/2015 | 36.24 | 6542.50 |
| 9/7/2015 | 36.05 | 6542.69 |
| 9/14/2015 | 36.63 | 6542.11 |
| 9/28/2015 | 36.75 | 6541.99 |
| 10/5/2015 | 35.64 | 6543.10 |
| 10/12/2015 | 36.60 | 6542.14 |
| 10/19/2015 | 36.75 | 6541.99 |
| 10/26/2015 | 37.26 | 6541.48 |
| 11/2/2015 | 37.00 | 6541.74 |
| 11/9/2015 | 36.70 | 6542.04 |
| 11/16/2015 | 35.33 | 6543.41 |
| 11/23/2015 | 35.81 | 6542.93 |
| 11/30/2015 | 37.69 | 6541.05 |
| 12/7/2015 | 37.52 | 6541.22 |
| 12/14/2015 | 37.60 | 6541.14 |
| 12/21/2015 | 36.87 | 6541.87 |
| 12/28/2015 | 36.67 | 6542.07 |
| **SN** | | |
| 1/5/2015 | 37.14 | 6542.12 |
| 1/12/2015 | 37.13 | 6542.13 |
| 1/19/2015 | 36.86 | 6542.40 |
| 1/26/2015 | 37.30 | 6541.96 |
| 2/2/2015 | 36.86 | 6542.40 |
| 2/9/2015 | 36.80 | 6542.46 |
| 2/16/2015 | 36.52 | 6542.74 |
| 2/23/2015 | 36.54 | 6542.72 |
| 3/2/2015 | 36.94 | 6542.32 |
| 3/9/2015 | 36.85 | 6542.41 |
| 3/16/2015 | 37.05 | 6542.21 |
| 3/23/2015 | 37.10 | 6542.16 |
| 3/30/2015 | 37.12 | 6542.14 |
| 4/6/2015 | 36.86 | 6542.40 |
| 4/13/2015 | 36.60 | 6542.66 |
| 4/20/2015 | 36.64 | 6542.62 |
| 4/27/2015 | 36.62 | 6542.64 |
| 5/4/2015 | 36.60 | 6542.66 |
| 5/11/2015 | 36.60 | 6542.66 |
| 5/18/2015 | 36.32 | 6542.94 |
| 5/25/2015 | 36.30 | 6542.96 |
| 6/1/2015 | 36.50 | 6542.76 |
| 6/8/2015 | 36.69 | 6542.57 |
| 6/15/2015 | 37.00 | 6542.26 |
| 6/22/2015 | 36.97 | 6542.29 |
| 6/29/2015 | 37.54 | 6541.72 |
| 7/6/2015 | 37.42 | 6541.84 |
| 7/13/2015 | 37.75 | 6541.51 |
| 7/27/2015 | 38.00 | 6541.26 |
| 8/3/2015 | 38.40 | 6540.86 |
| 8/17/2015 | 38.57 | 6540.69 |
| 8/24/2015 | 37.14 | 6542.12 |
| 8/31/2015 | 36.70 | 6542.56 |
| 9/7/2015 | 36.41 | 6542.85 |
| 9/14/2015 | 37.30 | 6541.96 |
| 9/28/2015 | 37.05 | 6542.21 |
| 10/5/2015 | 35.92 | 6543.34 |
| 10/12/2015 | 36.88 | 6542.38 |
| 10/19/2015 | 37.20 | 6542.06 |
| 10/26/2015 | 37.82 | 6541.44 |
| 11/2/2015 | 36.40 | 6542.86 |
| 11/9/2015 | 37.15 | 6542.11 |
| 11/16/2015 | 35.72 | 6543.54 |
| 11/23/2015 | 36.33 | 6542.93 |
| 11/24/2015 | 35.69 | 6543.57 |
| 11/30/2015 | 37.54 | 6541.72 |
| 12/7/2015 | 37.33 | 6541.93 |
| 12/14/2015 | 37.47 | 6541.79 |
| 12/21/2015 | 37.25 | 6542.01 |
| 12/28/2015 | 36.43 | 6542.83 |
| **SO** | | |
| 1/5/2015 | 38.12 | 6540.67 |
| 1/12/2015 | 38.10 | 6540.69 |
| 1/19/2015 | 37.69 | 6541.10 |
| 1/26/2015 | 38.00 | 6540.79 |
| 2/2/2015 | 37.75 | 6541.04 |
| 2/9/2015 | 37.71 | 6541.08 |
| 2/16/2015 | 37.40 | 6541.39 |
| 2/23/2015 | 37.06 | 6541.73 |
| 3/2/2015 | 37.70 | 6541.09 |
| 3/9/2015 | 37.88 | 6540.91 |
| 3/16/2015 | 38.04 | 6540.75 |
| 3/23/2015 | 38.10 | 6540.69 |
| 3/30/2015 | 38.10 | 6540.69 |
| 4/6/2015 | 38.00 | 6540.79 |
| 4/13/2015 | 37.90 | 6540.89 |
| 4/20/2015 | 37.74 | 6541.05 |
| 4/27/2015 | 37.67 | 6541.12 |
| 5/4/2015 | 37.60 | 6541.19 |
| 5/11/2015 | 37.50 | 6541.29 |
| 5/18/2015 | 37.45 | 6541.34 |
| 5/19/2015 | 37.42 | 6541.37 |
| 5/25/2015 | 37.40 | 6541.39 |
| 6/1/2015 | 37.58 | 6541.21 |
| 6/8/2015 | 37.77 | 6541.02 |
| 6/15/2015 | 38.11 | 6540.68 |
| 6/22/2015 | 37.98 | 6540.81 |
| 6/29/2015 | 38.55 | 6540.24 |
| 7/6/2015 | 38.33 | 6540.46 |
| 7/13/2015 | 38.68 | 6540.11 |
| 7/27/2015 | 38.83 | 6539.96 |
| 8/3/2015 | 39.19 | 6539.60 |
| 8/17/2015 | 39.26 | 6539.53 |
| 8/24/2015 | 37.83 | 6540.96 |
| 8/31/2015 | 37.42 | 6541.37 |
| 9/7/2015 | 37.21 | 6541.58 |
| 9/14/2015 | 38.10 | 6540.69 |
| 9/28/2015 | 37.95 | 6540.84 |
| 10/5/2015 | 36.82 | 6541.97 |
| 10/12/2015 | 37.34 | 6541.45 |
| 10/19/2015 | 38.01 | 6540.78 |
| 10/26/2015 | 38.59 | 6540.20 |
| 11/2/2015 | 38.00 | 6540.79 |
| 11/9/2015 | 37.80 | 6540.99 |
| 11/16/2015 | 36.39 | 6542.40 |
| 11/23/2015 | 37.08 | 6541.71 |
| 11/30/2015 | 38.90 | 6539.89 |
| 12/7/2015 | 38.70 | 6540.09 |
| 12/14/2015 | 38.76 | 6540.03 |
| 12/21/2015 | 37.51 | 6541.28 |
| 12/28/2015 | 37.80 | 6540.99 |

* Drawdown Tube Pressure, # Transducer Reading

# Table A.1-1 WATER LEVELS FOR HOMESTAKE'S ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

### SP

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 1/5/2015 | 35.67 | 6542.99 |
| 1/12/2015 | 37.59 | 6541.07 |
| 1/19/2015 | 37.26 | 6541.40 |
| 1/26/2015 | 37.50 | 6541.16 |
| 2/2/2015 | 37.32 | 6541.34 |
| 2/9/2015 | 39.13 | 6539.53 |
| 2/16/2015 | 36.93 | 6541.73 |
| 2/23/2015 | 37.00 | 6541.66 |
| 3/2/2015 | 37.20 | 6541.46 |
| 3/9/2015 | 37.43 | 6541.23 |
| 3/16/2015 | 37.61 | 6541.05 |
| 3/23/2015 | 36.00 | 6542.66 |
| 3/30/2015 | 37.70 | 6540.96 |
| 4/13/2015 | 37.41 | 6541.25 |
| 4/20/2015 | 37.15 | 6541.51 |
| 5/4/2015 | 37.00 | 6541.66 |
| 5/11/2015 | 37.00 | 6541.66 |
| 5/18/2015 | 36.85 | 6541.81 |
| 5/25/2015 | 36.88 | 6541.78 |
| 6/8/2015 | 37.31 | 6541.35 |
| 6/15/2015 | 37.70 | 6540.96 |
| 6/22/2015 | 37.56 | 6541.10 |
| 6/29/2015 | 38.20 | 6540.46 |
| 7/6/2015 | 37.98 | 6540.68 |
| 7/13/2015 | 38.32 | 6540.34 |
| 7/27/2015 | 38.50 | 6540.16 |
| 8/3/2015 | 38.90 | 6539.76 |
| 8/17/2015 | 39.09 | 6539.57 |
| 8/24/2015 | 37.55 | 6541.11 |
| 8/31/2015 | 37.09 | 6541.57 |
| 9/7/2015 | 36.83 | 6541.83 |
| 9/14/2015 | 37.70 | 6540.96 |
| 9/28/2015 | 37.45 | 6541.21 |
| 10/5/2015 | 36.33 | 6542.33 |
| 10/12/2015 | 37.80 | 6540.86 |
| 10/19/2015 | 37.57 | 6541.09 |
| 10/26/2015 | 38.27 | 6540.39 |
| 11/2/2015 | 37.78 | 6540.88 |
| 11/9/2015 | 37.33 | 6541.33 |
| 11/16/2015 | 35.98 | 6542.68 |
| 11/23/2015 | 36.69 | 6541.97 |
| 11/30/2015 | 38.70 | 6539.96 |
| 12/7/2015 | 38.35 | 6540.31 |
| 12/14/2015 | 38.45 | 6540.21 |
| 12/21/2015 | 37.72 | 6540.94 |
| 12/28/2015 | 37.41 | 6541.25 |

### SQ

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/11/2015 | 42.25 | 6536.95 |

### ST

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/11/2015 | 49.64 | 6529.67 |

### SV

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/11/2015 | 37.20 | 6542.05 |

### SW

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/12/2015 | 38.63 | 6542.66 |

### SZ

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/5/2015 | 34.05 | 6547.42 |
| 11/24/2015 | 33.91 | 6547.56 |

### T

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/11/2015 | 50.65 | 6528.58 |
| 9/29/2015 | 29.67 | 6549.56 |

### T2

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/27/2015 | 114.46 | 6550.36 |

### T4

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/27/2015 | 114.60 | 6543.14 |

### T5

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/27/2015 | 113.65 | 6543.68 |

### T6

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/14/2015 | 113.85 | 6544.92 |
| 5/18/2015 | 112.94 | 6545.83 |

### T7

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/14/2015 | 112.38 | 6547.29 |
| 5/18/2015 | 110.04 | 6549.63 |

### T8

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/14/2015 | 113.94 | 6547.67 |

### T9

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/27/2015 | 115.32 | 6548.63 |

### T10

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/28/2015 | 102.19 | 6557.77 |

### T11

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/27/2015 | 109.54 | 6547.27 |

### T12

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 7/27/2015 | 94.80 | 6562.43 |

### T15

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/9/2015 | 116.82 | 6548.47 |

### T16

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/15/2015 | 111.29 | 6548.69 |

### T17

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/14/2015 | 110.83 | 6546.08 |

### T18

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/15/2015 | 117.78 | 6547.38 |

### T19

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/15/2015 | 112.83 | 6554.93 |

### T20

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/23/2015 | 136.06 | 6534.63 |

### T21

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/9/2015 | 120.03 | 6549.97 |

### T22

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/9/2015 | 97.70 | 6569.49 |
| 7/28/2015 | 108.83 | 6558.36 |

### T23

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/9/2015 | 112.64 | 6548.47 |

### T36

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/14/2015 | 111.45 | 6543.99 |

### T39

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/9/2015 | 115.78 | 6549.53 |

### T40

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 6/9/2015 | 127.10 | 6543.17 |

### T41

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 5/14/2015 | 82.85 | 6577.11 |

### TA

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 9/29/2015 | 33.54 | 6546.76 |

### TB

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 9/30/2015 | 32.79 | 6550.78 |

### W

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/24/2015 | 38.59 | 6533.55 |

### WR12

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 11/24/2015 | 32.00 | 6536.19 |

### X

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| 2/3/2015 | 24.08 | 6547.53 |
| 4/2/2015 | 24.88 | 6546.73 |
| 7/16/2015 | 43.50 | 6528.11 |

* Drawdown Tube Pressure, # Transducer Reading

# TABLE A.1-2 WATER LEVELS FOR THE SUBDIVISION ALLUVIAL WELLS

WATER LEVEL ELEVATION (FT-MSL)

3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **0490** | | |
| 10/15/2015 | 25.79 | 6536.63 |
| 12/1/2015 | 24.50 | 6537.92 |
| **0496** | | |
| 11/30/2015 | 48.08 | 6514.44 |
| **0497** | | |
| 11/30/2015 | 48.35 | 6514.27 |
| **0498** | | |
| 6/9/2015 | 53.85 | 6506.74 |
| **0688** | | |
| 3/12/2015 | 59.06 | 6503.56 |
| 11/30/2015 | 57.55 | 6505.07 |
| **0802** | | |
| 3/19/2015 | 35.59 | 6527.13 |
| 8/6/2015 | 84.06 | 6478.66 |
| **0844** | | |
| 2/25/2015 | 36.28 | 6519.85 |
| 11/30/2015 | 36.32 | 6519.81 |
| **0845** | | |
| 2/25/2015 | 34.11 | 6522.94 |
| 11/30/2015 | 33.80 | 6523.25 |
| **AW** | | |
| 10/23/2015 | 28.93 | 6534.50 |
| 12/1/2015 | 30.87 | 6532.56 |
| **CW44** | | |
| 7/29/2015 | 49.96 | 6510.78 |
| **Q3** | | |
| 3/25/2015 | 59.75 | 6499.99 |
| 4/29/2015 | 61.72 | 6498.02 |
| **Q5** | | |
| 3/25/2015 | 60.90 | 6500.58 |
| 4/29/2015 | 63.11 | 6498.37 |
| **Q7** | | |
| 5/7/2015 | 52.71 | 6508.46 |
| **Q8** | | |
| 5/6/2015 | 53.08 | 6507.72 |
| 11/30/2015 | 47.56 | 6513.24 |
| **Q11** | | |
| 5/7/2015 | 52.26 | 6508.76 |
| **Q13** | | |
| 5/7/2015 | 51.58 | 6510.56 |
| **Q14** | | |
| 5/7/2015 | 52.05 | 6509.92 |
| **Q15** | | |
| 5/6/2015 | 52.66 | 6509.59 |
| **Q18** | | |
| 5/7/2015 | 50.99 | 6510.70 |
| **Q19** | | |
| 5/8/2015 | 51.21 | 6510.96 |
| **Q20** | | |
| 5/8/2015 | 50.85 | 6511.96 |
| **Q21** | | |
| 5/8/2015 | 51.31 | 6511.78 |
| **Q22** | | |
| 5/11/2015 | 51.96 | 6510.83 |
| **Q24** | | |
| 5/11/2015 | 50.55 | 6513.50 |
| **Q25** | | |
| 5/8/2015 | 51.37 | 6513.14 |
| **Q26** | | |
| 5/8/2015 | 51.71 | 6513.12 |
| **Q27** | | |
| 5/8/2015 | 51.39 | 6513.49 |
| **Q28** | | |
| 5/11/2015 | 49.97 | 6513.97 |
| **Q29** | | |
| 11/30/2015 | 48.87 | 6517.59 |
| **Q42** | | |
| 5/11/2015 | 35.27 | 6529.21 |
| **Q43** | | |
| 5/14/2015 | 34.04 | 6529.15 |
| **Q44** | | |
| 11/30/2015 | 47.80 | 6513.53 |
| **Q48** | | |
| 11/30/2015 | 48.15 | 6519.69 |
| **Q49** | | |
| 5/11/2015 | 49.91 | 6514.80 |
| **Q50** | | |
| 8/25/2015 | 37.30 | 6531.63 |
| **SUB3** | | |
| 11/3/2015 | 23.35 | 6533.72 |

* Drawdown Tube Pressure, # Transducer Reading

**0490 - SUB3**

# TABLE A.1-3 WATER LEVELS FOR REGIONAL ALLUVIAL WELLS

WATER LEVEL ELEVATION (FT-MSL)

3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **0520** | | |
| 12/1/2015 | 49.35 | 6536.67 |
| **0539** | | |
| 12/1/2015 | 25.09 | 6530.23 |
| **0540** | | |
| 5/14/2015 | 52.43 | 6503.48 |
| 12/1/2015 | 49.50 | 6506.41 |
| **0541** | | |
| 7/21/2015 | 86.60 | 6469.02 |
| 11/30/2015 | 85.96 | 6469.66 |
| **0551** | | |
| 2/19/2015 | 95.65 | 6451.65 |
| 11/30/2015 | 95.30 | 6452.00 |
| **0553** | | |
| 2/19/2015 | 102.51 | 6444.97 |
| 11/30/2015 | 102.17 | 6445.31 |
| **0554** | | |
| 2/19/2015 | 103.78 | 6443.39 |
| 11/30/2015 | 103.52 | 6443.65 |
| **0555** | | |
| 2/25/2015 | 42.28 | 6512.06 |
| **0556** | | |
| 2/25/2015 | 49.06 | 6504.16 |
| **0557** | | |
| 2/25/2015 | 42.55 | 6508.72 |
| **0631** | | |
| 12/2/2015 | 85.50 | 6455.60 |
| **0632** | | |
| 12/2/2015 | 85.41 | 6455.89 |
| **0634** | | |
| 4/22/2015 | 65.95 | 6494.12 |
| 5/5/2015 | 65.88 | 6494.19 |
| 6/16/2015 | 65.78 | 6494.29 |
| 8/19/2015 | 65.89 | 6494.18 |
| 9/29/2015 | 64.87 | 6495.20 |
| 11/30/2015 | 65.09 | 6494.98 |
| **0638** | | |
| 12/1/2015 | 42.44 | 6543.12 |
| **0640** | | |
| 12/1/2015 | 48.73 | 6531.24 |
| **0641** | | |
| 6/30/2015 | 48.35 | 6525.01 |
| **0642** | | |
| 6/30/2015 | 48.80 | 6523.08 |
| **0644** | | |
| 12/1/2015 | 68.67 | 6475.23 |
| **0646** | | |
| 12/2/2015 | 73.71 | 6469.64 |
| **0647** | | |
| 2/19/2015 | 100.98 | 6450.93 |
| 11/30/2015 | 99.40 | 6452.51 |
| **0649** | | |
| 11/30/2015 | > 76.45 | < 6466.84 |
| **0650** | | |
| 3/17/2015 | 68.28 | 6478.83 |
| 12/1/2015 | 81.50 | 6465.61 |
| **0652** | | |
| 12/2/2015 | 85.88 | 6452.27 |
| **0653** | | |
| 12/2/2015 | 63.47 | 6481.50 |
| **0654** | | |
| 6/9/2015 | 70.35 | 6480.15 |
| 11/30/2015 | 68.92 | 6481.58 |
| **0656** | | |
| 11/30/2015 | > 55.61 | < 6498.46 |
| **0657** | | |
| 11/30/2015 | 92.90 | 6458.91 |
| **0658** | | |
| 2/19/2015 | 103.15 | 6447.03 |
| 11/30/2015 | 102.20 | 6447.98 |
| **0659** | | |
| 4/22/2015 | 64.92 | 6495.25 |
| 5/5/2015 | 64.84 | 6495.33 |
| 6/16/2015 | 66.98 | 6493.19 |
| 8/19/2015 | 64.51 | 6495.66 |
| 9/29/2015 | 64.09 | 6496.08 |
| 11/30/2015 | 64.64 | 6495.53 |
| **0680** | | |
| 11/30/2015 | 72.39 | 6486.48 |
| **0681** | | |
| 3/26/2015 | 61.82 | 6498.70 |
| 12/1/2015 | 61.83 | 6498.69 |
| **0684** | | |
| 10/13/2015 | 80.50 | 6472.78 |
| **0685** | | |
| 11/30/2015 | 91.09 | 6465.48 |
| **0687** | | |
| 11/30/2015 | 90.11 | 6465.85 |
| **0692** | | |
| 6/30/2015 | 64.18 | 6520.64 |
| **0846** | | |
| 3/17/2015 | 44.45 | 6504.47 |
| 6/30/2015 | 44.25 | 6504.67 |
| 8/19/2015 | 43.18 | 6505.74 |
| 11/30/2015 | 44.08 | 6504.84 |
| **0851** | | |
| 12/1/2015 | > 86.60 | < 6459.84 |
| **0852** | | |
| 6/30/2015 | 70.21 | 6519.93 |
| 12/1/2015 | 69.93 | 6520.21 |
| **0855** | | |
| 12/2/2015 | 83.87 | 6457.24 |
| **0862** | | |
| 12/1/2015 | 48.45 | 6507.73 |
| **0864** | | |
| 8/20/2015 | 64.05 | 6482.67 |
| **0865** | | |
| 5/14/2015 | 54.01 | 6502.77 |
| 8/20/2015 | 51.80 | 6504.98 |
| **0866** | | |
| 8/20/2015 | 34.69 | 6523.43 |
| **0867** | | |
| 12/1/2015 | 52.30 | 6503.60 |

* Drawdown Tube Pressure, # Transducer Reading

**0520 - 0867**

# TABLE A.1-3 WATER LEVELS FOR REGIONAL ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **0868** | | |
| 6/30/2015 | 56.11 | 6518.63 |
| **0869** | | |
| 8/20/2015 | 65.18 | 6479.31 |
| 12/1/2015 | 65.33 | 6479.16 |
| **0876** | | |
| 12/1/2015 | 65.07 | 6479.19 |
| **0877** | | |
| 12/2/2015 | 56.51 | 6496.57 |
| **0879** | | |
| 12/2/2015 | 66.80 | 6477.75 |
| **0881** | | |
| 2/26/2015 | 68.66 | 6496.38 |
| **0882** | | |
| 2/26/2015 | 61.37 | 6499.79 |
| **0883** | | |
| 11/30/2015 | 57.08 | 6500.05 |
| **0884** | | |
| 2/26/2015 | 67.59 | 6498.51 |
| **0885** | | |
| 11/30/2015 | 61.31 | 6503.33 |
| **0886** | | |
| 11/30/2015 | 64.23 | 6500.32 |
| **0887** | | |
| 3/24/2015 | 55.30 | 6512.43 |
| 11/30/2015 | 58.25 | 6509.48 |
| **0888** | | |
| 3/24/2015 | 73.65 | 6483.68 |
| 11/30/2015 | 71.67 | 6485.66 |
| **0889** | | |
| 11/30/2015 | 62.40 | 6487.23 |
| **0890** | | |
| 4/22/2015 | 84.18 | 6474.25 |
| 5/5/2015 | 84.01 | 6474.42 |
| 6/16/2015 | 83.75 | 6474.68 |
| 8/19/2015 | 68.08 | 6490.35 |
| 9/29/2015 | 70.70 | 6487.73 |
| **0893** | | |
| 3/12/2015 | 67.22 | 6496.75 |
| 11/30/2015 | 64.93 | 6499.04 |
| **0897** | | |
| 11/30/2015 | 77.41 | 6484.84 |
| **0899** | | |
| 6/9/2015 | 95.90 | 6474.94 |
| **0909** | | |
| 5/12/2015 | 84.49 | 6454.41 |
| **0935** | | |
| 10/13/2015 | 86.08 | 6472.04 |
| **0994** | | |
| 4/9/2015 | 90.30 | 6464.70 |
| 8/28/2015 | 88.68 | 6466.32 |
| 10/19/2015 | 87.16 | 6467.84 |
| **H1** | | |
| 2/20/2015 | 71.50 | 6487.75 |
| 3/4/2015 | 71.35 | 6487.90 |
| 3/11/2015 | 71.50 | 6487.75 |
| 3/18/2015 | 71.33 | 6487.92 |
| 3/25/2015 | 71.32 | 6487.93 |
| 4/1/2015 | 71.30 | 6487.95 |
| 4/15/2015 | 71.20 | 6488.05 |
| 4/22/2015 | 71.25 | 6488.00 |
| 5/5/2015 | 71.24 | 6488.01 |
| 6/16/2015 | 70.70 | 6488.55 |
| 8/19/2015 | 69.64 | 6489.61 |
| 9/29/2015 | 69.46 | 6489.79 |
| **H2** | | |
| 2/25/2015 | 71.52 | 6489.31 |
| 5/5/2015 | 71.81 | 6489.02 |
| **H2A** | | |
| 2/17/2015 | 73.30 | 6486.57 |
| 2/25/2015 | 72.76 | 6487.11 |
| 3/4/2015 | 72.60 | 6487.27 |
| 3/11/2015 | 72.81 | 6487.06 |
| 3/18/2015 | 72.58 | 6487.29 |
| 3/25/2015 | 72.81 | 6487.06 |
| 4/1/2015 | 71.85 | 6488.02 |
| 4/10/2015 | 71.84 | 6488.03 |
| 4/15/2015 | 71.65 | 6488.22 |
| 4/22/2015 | 71.70 | 6488.17 |
| 5/5/2015 | 71.76 | 6488.11 |
| 6/16/2015 | 70.90 | 6488.97 |
| 8/19/2015 | 69.98 | 6489.89 |
| 9/29/2015 | 70.98 | 6488.89 |
| 11/24/2015 | 69.05 | 6490.82 |
| **H6** | | |
| 5/5/2015 | 65.36 | 6494.62 |
| **H7** | | |
| 5/5/2015 | 66.92 | 6492.62 |
| **H7A** | | |
| 11/24/2015 | 66.40 | 6492.69 |
| **H7B** | | |
| 4/22/2015 | 66.18 | 6493.20 |
| 5/5/2015 | 66.24 | 6493.14 |
| 6/16/2015 | 66.01 | 6493.37 |
| 8/19/2015 | 65.20 | 6494.18 |
| 9/29/2015 | 65.05 | 6494.33 |
| **H8** | | |
| 5/5/2015 | 64.85 | 6493.26 |
| **H9** | | |
| 5/5/2015 | 66.14 | 6494.48 |
| **H10** | | |
| 5/5/2015 | 63.79 | 6494.77 |
| **H11** | | |
| 5/5/2015 | 64.84 | 6494.58 |
| **H12** | | |
| 4/22/2015 | 67.45 | 6496.17 |
| 5/5/2015 | 67.42 | 6496.20 |
| 6/16/2015 | 67.42 | 6496.20 |
| 8/19/2015 | 67.10 | 6496.52 |
| 9/29/2015 | 66.62 | 6497.00 |
| **H42A** | | |
| 10/1/2015 | 64.00 | 6503.43 |
| **H44** | | |
| 10/13/2015 | 82.00 | 6487.86 |
| **H45** | | |
| 10/5/2015 | 63.50 | 6506.15 |
| **H47** | | |
| 10/5/2015 | 63.00 | 6506.46 |
| **H48** | | |
| 10/13/2015 | 62.00 | 6506.26 |
| **H50** | | |
| 10/14/2015 | 62.00 | 6506.84 |

* Drawdown Tube Pressure, # Transducer Reading

# TABLE A.1-3 WATER LEVELS FOR REGIONAL ALLUVIAL WELLS (cont.)

WATER LEVEL ELEVATION (FT-MSL)

3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **H51** | | |
| 10/15/2015 | 62.00 | 6507.94 |
| **H52** | | |
| 10/13/2015 | 54.00 | 6516.01 |
| **H54** | | |
| 10/15/2015 | 60.00 | 6509.56 |
| **H57** | | |
| 10/16/2015 | 64.00 | 6507.09 |
| **H58** | | |
| 10/16/2015 | 60.00 | 6511.02 |
| **H59** | | |
| 10/20/2015 | 58.00 | 6512.15 |
| **H60** | | |
| 10/23/2015 | 70.00 | 6501.02 |
| **H62** | | |
| 10/26/2015 | 81.00 | 6491.52 |
| **H63** | | |
| 10/23/2015 | 81.00 | 6490.85 |
| **H64** | | |
| 10/26/2015 | 83.00 | 6488.86 |
| **H66** | | |
| 10/27/2015 | 64.00 | 6507.77 |
| **H67** | | |
| 10/28/2015 | 64.00 | 6509.76 |
| **H68** | | |
| 10/28/2015 | 62.00 | 6511.38 |
| **H69** | | |
| 10/29/2015 | 61.00 | 6512.08 |
| **H72** | | |
| 11/2/2015 | 64.00 | 6511.17 |
| **H95** | | |
| 11/30/2015 | 60.40 | 6508.51 |
| **H100** | | |
| 11/4/2015 | 82.00 | 6492.12 |
| **H101** | | |
| 11/6/2015 | 64.00 | 6511.52 |
| **H102** | | |
| 11/6/2015 | 63.00 | 6512.62 |
| **H103** | | |
| 11/9/2015 | 70.00 | 6505.61 |
| **H104** | | |
| 11/9/2015 | 83.00 | 6492.05 |
| **M16** | | |
| 10/1/2015 | 57.30 | 6513.29 |
| 11/30/2015 | 58.30 | 6512.29 |
| **MO** | | |
| 3/12/2015 | 59.86 | 6513.03 |
| 10/15/2015 | 58.37 | 6514.52 |
| 11/30/2015 | 59.49 | 6513.40 |
| **MP** | | |
| 11/30/2015 | 60.75 | 6513.73 |
| **MR** | | |
| 3/10/2015 | 62.41 | 6503.85 |
| 4/14/2015 | 62.36 | 6503.90 |
| 8/7/2015 | 62.71 | 6503.55 |
| 11/30/2015 | 62.71 | 6503.55 |
| **MS** | | |
| 11/30/2015 | 57.72 | 6512.95 |
| **MT** | | |
| 11/30/2015 | 59.46 | 6507.97 |
| **MV** | | |
| 3/24/2015 | 61.99 | 6507.79 |
| 11/30/2015 | 62.46 | 6507.32 |
| **R1** | | |
| 5/12/2015 | 47.74 | 6507.38 |
| 12/1/2015 | 44.98 | 6510.14 |
| **R2** | | |
| 5/14/2015 | 48.09 | 6506.07 |
| **R3** | | |
| 5/14/2015 | 48.79 | 6506.94 |
| **R4** | | |
| 5/14/2015 | 50.45 | 6508.33 |
| **R5** | | |
| 5/14/2015 | 51.78 | 6505.97 |
| **R10** | | |
| 5/14/2015 | 49.25 | 6505.97 |
| **R11** | | |
| 5/14/2015 | 53.39 | 6505.06 |
| **R18** | | |
| 5/14/2015 | 55.35 | 6500.65 |
| **R20** | | |
| 5/14/2015 | 54.09 | 6502.25 |
| **R22** | | |
| 5/12/2015 | 56.52 | 6500.62 |
| **R73** | | |
| 5/13/2015 | 69.92 | 6474.42 |
| **R74** | | |
| 5/13/2015 | 69.81 | 6474.22 |
| 12/1/2015 | 68.63 | 6475.40 |
| **R75** | | |
| 5/13/2015 | 69.14 | 6475.74 |
| **R76** | | |
| 5/13/2015 | 68.37 | 6476.72 |
| **R77** | | |
| 5/13/2015 | 68.28 | 6476.69 |
| **R78** | | |
| 5/13/2015 | 69.16 | 6474.87 |

* Drawdown Tube Pressure, # Transducer Reading

# TABLE A.2-1 WATER LEVELS FOR CHINLE AQUIFERS

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **0493** | | |
| 3/4/2015 | 69.56 | 6490.72 |
| 12/1/2015 | 67.12 | 6493.16 |
| **0494** | | |
| 3/4/2015 | 32.30 | 6527.84 |
| 12/1/2015 | 30.30 | 6529.84 |
| **0498** | | |
| 6/9/2015 | 53.85 | 6506.74 |
| **0539** | | |
| 12/1/2015 | 25.09 | 6530.23 |
| **0653** | | |
| 12/2/2015 | 63.47 | 6481.50 |
| **0850** | | |
| 12/1/2015 | > 55.76 | < 6493.39 |
| **0853** | | |
| 7/1/2015 | 72.63 | 6468.75 |
| 12/1/2015 | 72.31 | 6469.07 |
| **0859** | | |
| 12/1/2015 | 55.85 | 6496.91 |
| **0909** | | |
| 5/12/2015 | 84.49 | 6454.41 |
| **0927** | | |
| 12/1/2015 | 48.20 | 6546.80 |
| 12/1/2015 | 48.20 | 6546.80 |
| **0929** | | |
| 7/1/2015 | 54.09 | 6538.48 |
| **0930** | | |
| 6/30/2015 | 113.11 | 6485.43 |
| **0931** | | |
| 7/1/2015 | 76.58 | 6533.98 |
| 11/30/2015 | 62.05 | 6548.51 |
| **0994** | | |
| 4/9/2015 | 90.30 | 6464.70 |
| 8/28/2015 | 88.68 | 6466.32 |
| 10/19/2015 | 87.16 | 6467.84 |
| **ACW** | | |
| 12/1/2015 | 72.73 | 6491.07 |
| **AW** | | |
| 10/23/2015 | 28.93 | 6534.50 |
| 12/1/2015 | 30.87 | 6532.56 |
| **CE1** | | |
| 11/30/2015 | 25.48 | 6544.71 |
| **CE2** | | |
| 8/19/2015 | 32.28 | 6544.07 |
| 10/15/2015 | 29.55 | 6546.80 |
| **CE5** | | |
| 7/16/2015 | 36.11 | 6532.44 |
| **CE6** | | |
| 7/16/2015 | 32.16 | 6533.03 |
| **CE7** | | |
| 3/26/2015 | 54.26 | 6521.73 |
| 6/11/2015 | 92.86 | 6483.13 |
| 11/30/2015 | 68.58 | 6507.41 |
| **CE8** | | |
| 3/19/2015 | 37.64 | 6532.06 |
| 8/18/2015 | 33.96 | 6535.74 |
| 9/25/2015 | 33.80 | 6535.90 |
| 11/30/2015 | 35.09 | 6534.61 |
| **CE9** | | |
| 3/26/2015 | 93.11 | 6470.01 |
| 8/18/2015 | 29.86 | 6533.26 |
| 12/1/2015 | 31.83 | 6531.29 |
| **CE10** | | |
| 7/16/2015 | 37.23 | 6533.63 |
| 11/30/2015 | 36.76 | 6534.10 |
| **CE11** | | |
| 7/16/2015 | 32.64 | 6532.78 |
| 8/5/2015 | 31.03 | 6534.39 |
| **CE12** | | |
| 7/16/2015 | 35.09 | 6537.14 |
| 8/5/2015 | 33.91 | 6538.32 |
| **CE13** | | |
| 7/16/2015 | 38.22 | 6536.42 |
| 11/30/2015 | 34.37 | 6540.27 |
| **CE14** | | |
| 3/31/2015 | 32.80 | 6536.65 |
| 8/27/2015 | 30.59 | 6538.86 |
| 11/30/2015 | 31.20 | 6538.25 |
| **CE15** | | |
| 3/31/2015 | 36.49 | 6529.59 |
| 11/30/2015 | 32.07 | 6534.01 |
| **CW1** | | |
| 7/1/2015 | 104.90 | 6480.32 |
| **CW2** | | |
| 7/1/2015 | 105.77 | 6479.71 |
| 8/6/2015 | 95.98 | 6489.50 |
| **CW2-1** | | |
| 12/1/2015 | 39.95 | 6545.53 |
| **CW3** | | |
| 7/1/2015 | 50.99 | 6536.19 |
| 12/1/2015 | 48.82 | 6538.36 |
| **CW6** | | |
| 11/30/2015 | 70.18 | 6505.46 |
| **CW9** | | |
| 11/30/2015 | 30.09 | 6561.74 |
| **CW15** | | |
| 6/30/2015 | 94.46 | 6456.86 |
| 12/2/2015 | 92.65 | 6458.67 |
| **CW17** | | |
| 7/1/2015 | 47.31 | 6542.01 |
| 12/1/2015 | 46.84 | 6542.48 |
| **CW18** | | |
| 3/30/2015 | 74.50 | 6498.15 |
| 11/30/2015 | 15.60 | 6557.05 |
| **CW24** | | |
| 8/6/2015 | 43.43 | 6545.24 |
| 12/1/2015 | 44.05 | 6544.62 |
| **CW28** | | |
| 7/1/2015 | 76.88 | 6494.80 |
| 11/30/2015 | 69.25 | 6502.43 |
| **CW29** | | |
| 8/19/2015 | 75.50 | 6476.72 |
| 12/1/2015 | 75.04 | 6477.18 |
| **CW31** | | |
| 7/2/2015 | 85.02 | 6475.24 |
| 12/1/2015 | 84.45 | 6475.81 |

* Drawdown Tube Pressure, # Transducer Reading

# TABLE A.2-1 WATER LEVELS FOR CHINLE AQUIFERS (cont.)

WATER LEVEL ELEVATION (FT-MSL)

3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **CW32** | | |
| 7/2/2015 | 149.52 | 6417.76 |
| 12/1/2015 | 148.10 | 6419.18 |
| **CW33** | | |
| 7/1/2015 | 105.50 | 6469.39 |
| 12/1/2015 | 105.70 | 6469.19 |
| **CW34** | | |
| 12/1/2015 | 50.62 | 6543.78 |
| **CW35** | | |
| 7/1/2015 | 46.77 | 6544.40 |
| 10/23/2015 | 45.30 | 6545.87 |
| 12/1/2015 | 46.35 | 6544.82 |
| **CW36** | | |
| 7/17/2015 | 76.14 | 6474.95 |
| 12/1/2015 | 75.85 | 6475.24 |
| **CW37** | | |
| 6/30/2015 | 62.37 | 6488.80 |
| 12/1/2015 | 62.79 | 6488.38 |
| **cw40** | | |
| 6/30/2015 | 35.83 | 6543.11 |
| 12/1/2015 | 19.53 | 6559.41 |
| **CW41** | | |
| 7/20/2015 | 77.97 | 6477.44 |
| 12/1/2015 | 76.91 | 6478.50 |
| **CW42** | | |
| 8/18/2015 | 67.32 | 6481.46 |
| 12/1/2015 | 69.98 | 6478.80 |
| **CW43** | | |
| 7/17/2015 | 67.60 | 6481.19 |
| 12/1/2015 | 67.40 | 6481.39 |
| **CW44** | | |
| 7/29/2015 | 49.96 | 6510.78 |
| **CW45** | | |
| 3/31/2015 | 54.88 | 6506.43 |
| 3/31/2015 | 54.88 | 6506.43 |
| 8/19/2015 | 51.61 | 6509.70 |
| 12/1/2015 | 50.05 | 6511.26 |
| **CW50** | | |
| 3/10/2015 | 43.15 | 6545.41 |
| 8/18/2015 | 41.64 | 6546.92 |
| 12/1/2015 | 42.66 | 6545.90 |
| **CW52** | | |
| 12/1/2015 | 67.05 | 6525.35 |
| **CW53** | | |
| 12/1/2015 | 9.03 | 6555.91 |
| **CW54** | | |
| 12/2/2015 | 24.00 | 6534.55 |
| **CW55** | | |
| 7/29/2015 | 52.25 | 6511.91 |
| 12/1/2015 | 49.97 | 6514.19 |
| **CW56** | | |
| 2/20/2015 | 44.03 | 6543.83 |
| 8/27/2015 | 42.92 | 6544.94 |
| **CW57** | | |
| 2/20/2015 | 43.58 | 6541.32 |
| 8/31/2015 | 42.07 | 6542.83 |
| **CW58** | | |
| 12/1/2015 | 66.20 | 6494.60 |
| **CW60** | | |
| 2/20/2015 | 40.58 | 6543.62 |
| 8/31/2015 | 39.95 | 6544.25 |
| **CW61** | | |
| 3/31/2015 | 40.71 | 6542.12 |
| 8/28/2015 | 39.50 | 6543.33 |
| **CW62** | | |
| 3/31/2015 | 43.62 | 6536.24 |
| 8/28/2015 | 34.85 | 6545.01 |
| 11/30/2015 | 36.31 | 6543.55 |
| **CW72** | | |
| 11/30/2015 | 36.48 | 6543.65 |
| **CW73** | | |
| 8/31/2015 | 46.48 | 6516.97 |
| 12/1/2015 | 46.02 | 6517.43 |
| **CW74** | | |
| 5/14/2015 | 70.11 | 6483.30 |
| 12/2/2015 | 62.50 | 6490.91 |
| **CW75** | | |
| 5/12/2015 | 84.52 | 6469.06 |
| 12/1/2015 | 68.32 | 6485.26 |
| **CW76** | | |
| 5/11/2015 | 80.17 | 6476.44 |
| 12/2/2015 | 62.93 | 6493.68 |
| **CW77** | | |
| 5/11/2015 | 83.61 | 6475.70 |
| **CW78** | | |
| 12/2/2015 | 16.00 | 6551.15 |
| **R1** | | |
| 5/12/2015 | 47.74 | 6507.38 |
| 12/1/2015 | 44.98 | 6510.14 |
| **R2** | | |
| 5/14/2015 | 48.09 | 6506.07 |
| **R3** | | |
| 5/14/2015 | 48.79 | 6506.94 |
| **R4** | | |
| 5/14/2015 | 50.45 | 6508.33 |
| **R5** | | |
| 5/14/2015 | 51.78 | 6505.97 |
| **R10** | | |
| 5/14/2015 | 49.25 | 6505.97 |
| **R11** | | |
| 5/14/2015 | 53.39 | 6505.06 |
| **R18** | | |
| 5/14/2015 | 55.35 | 6500.65 |
| **R20** | | |
| 5/14/2015 | 54.09 | 6502.25 |
| **R22** | | |
| 5/12/2015 | 56.52 | 6500.62 |
| **R49** | | |
| 12/1/2015 | 69.57 | 6476.42 |
| **R52** | | |
| 5/15/2015 | 69.74 | 6477.95 |
| **R65** | | |
| 5/15/2015 | 69.24 | 6476.86 |

* Drawdown Tube Pressure, # Transducer Reading

# TABLE A.2-1 WATER LEVELS FOR CHINLE AQUIFERS (cont.)

WATER LEVEL ELEVATION (FT-MSL) 3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|
| **R66** | | |
| 5/15/2015 | 69.33 | 6476.18 |
| **R67** | | |
| 5/15/2015 | 69.06 | 6476.47 |
| 12/1/2015 | 67.61 | 6477.92 |
| **R70** | | |
| 5/15/2015 | 68.01 | 6477.20 |
| **R71** | | |
| 5/15/2015 | 68.36 | 6477.39 |
| **R73** | | |
| 5/13/2015 | 69.92 | 6474.42 |
| **R74** | | |
| 5/13/2015 | 69.81 | 6474.22 |
| 12/1/2015 | 68.63 | 6475.40 |
| **R75** | | |
| 5/13/2015 | 69.14 | 6475.74 |
| **R76** | | |
| 5/13/2015 | 68.37 | 6476.72 |
| **R77** | | |
| 5/13/2015 | 68.28 | 6476.69 |
| **R78** | | |
| 5/13/2015 | 69.16 | 6474.87 |
| **V7** | | |
| 12/1/2015 | 77.72 | 6477.51 |
| **V8** | | |
| 12/1/2015 | 74.81 | 6476.68 |
| **V9** | | |
| 12/1/2015 | 80.35 | 6475.34 |
| **V11** | | |
| 12/1/2015 | 77.22 | 6478.68 |
| **V14** | | |
| 12/1/2015 | 80.04 | 6475.65 |
| **V16** | | |
| 12/1/2015 | 74.79 | 6477.19 |
| **V17** | | |
| 12/1/2015 | 74.76 | 6475.39 |
| **V18** | | |
| 12/1/2015 | 73.82 | 6477.56 |
| **WCW** | | |
| 12/1/2015 | 75.50 | 6491.87 |
| **WR25** | | |
| 7/29/2015 | 42.25 | 6544.21 |
| 12/1/2015 | 42.85 | 6543.61 |
| **Y1** | | |
| 12/1/2015 | 66.30 | 6495.14 |
| **Y3** | | |
| 12/1/2015 | 68.75 | 6494.63 |
| 12/1/2015 | 68.75 | 6494.63 |
| **Y7** | | |
| 3/25/2015 | 60.10 | 6500.33 |
| 4/29/2015 | 113.82 | 6446.61 |
| **Y30** | | |
| 12/1/2015 | 50.65 | 6509.40 |

* Drawdown Tube Pressure, # Transducer Reading

# TABLE A.3-1 WATER LEVELS FOR THE SAN ANDRES AQUIFER

WATER LEVEL ELEVATION (FT-MSL)

3/4/2016

| Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft+MSL) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **#2 DEEPWELL** | | | | | | | | | | | |
| 5/1/2015 | 160.20 | 6415.46 | | | | | | | | | |
| **0907** | | | | | | | | | | | |
| 12/1/2015 | 124.00 | 6421.60 | | | | | | | | | |
| **0928** | | | | | | | | | | | |
| 2/9/2015 | 118.20 | 6479.40 | | | | | | | | | |
| 12/1/2015 | 132.10 | 6465.50 | | | | | | | | | |
| **0938** | | | | | | | | | | | |
| 12/1/2015 | 150.65 | 6418.15 | | | | | | | | | |
| **0943** | | | | | | | | | | | |
| 2/17/2015 | 142.10 | 6413.81 | | | | | | | | | |
| 8/5/2015 | 142.57 | 6413.34 | | | | | | | | | |
| 8/7/2015 | 142.54 | 6413.37 | | | | | | | | | |
| 12/10/2015 | 143.37 | 6412.54 | | | | | | | | | |
| **0951** | | | | | | | | | | | |
| 12/1/2015 | 154.15 | 6419.55 | | | | | | | | | |
| **0951R** | | | | | | | | | | | |
| 4/30/2015 | 163.47 | 6413.31 | | | | | | | | | |
| 8/7/2015 | 164.63 | 6412.15 | | | | | | | | | |
| 8/10/2015 | 164.60 | 6412.18 | | | | | | | | | |
| 10/8/2015 | 68.05 | 6508.73 | | | | | | | | | |
| 11/30/2015 | 161.68 | 6415.10 | | | | | | | | | |

* Drawdown Tube Pressure, # Transducer Reading

# APPENDIX B
# WATER QUALITY

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## GROUND-WATER MONITORING FOR HOMESTAKE'S GRANTS PROJECT

## APPENDIX B

# TABLE B.1-1 WATER QUALITY ANALYSES FOR THE TAILINGS WELLS

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CN1 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 1340 | 8130 | 18600 | * 21360 | --- |
| CN2 | 12/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 364 | 2530 | 5550 | * 7695 | --- |
| CS1 | 12/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 288 | 1700 | 3830 | --- | --- |
| CS2 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 734 | 5070 | 9600 | * 12390 | --- |
| EC8 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 504 | 3720 | 9650 | * 12760 | --- |
| EC9 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 758 | 5540 | 12200 | * 14800 | --- |
| EC11 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 607 | 4950 | 12600 | * 16020 | --- |
| EC19 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 299 | 2550 | 6770 | * 9440 | --- |
| EC21 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 519 | 4300 | 11600 | * 14970 | --- |
| ED10 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 369 | 3550 | 9450 | * 12480 | --- |
| ED18 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 317 | 3300 | 8520 | * 11520 | --- |
| EE2 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 361 | 2790 | 7270 | * 10570 | --- |
| EF2 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 355 | 3000 | 7190 | * 9690 | --- |
| EG3 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 383 | 4270 | 11200 | * 14420 | --- |
| EG5 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 425 | 2830 | 7380 | * 10420 | --- |
| EG7 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 351 | 2310 | 6030 | * 8392 | --- |
| EG13 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 284 | 3080 | 8140 | * 10850 | --- |
| EG16 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 442 | 4500 | 11700 | * 14700 | --- |
| EH14 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 293 | 2380 | 5790 | * 8136 | --- |
| EH19 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 212 | 2380 | 6320 | * 8920 | --- |
| EH27 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 198 | 1890 | 4770 | * 6832 | --- |
| EN1 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 589 | 5290 | 13600 | * 16610 | --- |
| EN2 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 289 | 2210 | 4700 | * 6701 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.1-1 WATER QUALITY ANALYSES FOR THE TAILINGS WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EN9 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 290 | 2010 | 4680 | * 6682 | --- |
| EN10 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 321 | 3080 | 8120 | * 11010 | --- |
| EN11 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 418 | 3340 | 8600 | * 11160 | --- |
| EN12 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 391 | 3030 | 7540 | * 10040 | --- |
| EN17 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 679 | 4340 | 11300 | * 14400 | --- |
| EN18 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 464 | 4380 | 12200 | * 15050 | --- |
| EN19 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 310 | 3060 | 8110 | * 10740 | --- |
| ES1 | 12/30/2015 | ENER | --- | --- | --- | --- | --- | --- | 642 | 4030 | 8250 | --- | --- |
| ES4 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 407 | 2710 | 6350 | * 8819 | --- |
| NE Tails | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 3190 | 8650 | * 11640 | --- |
| | 8/27/2015 | ENER | 3.60 | 2.70 | 12.7 | 3010 | 1380 | 1090 | 368 | 3230 | 8220 | * 11370 | 0.964 |
| NE1 | 12/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 532 | 5880 | 13700 | * 16390 | --- |
| NE8 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 746 | 4570 | 10100 | * 13120 | --- |
| NE9 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 393 | 2940 | 8640 | * 11320 | --- |
| NE13 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 593 | 4430 | 11700 | * 14650 | --- |
| NW Tails | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 2560 | 7220 | * 9840 | --- |
| | 8/27/2015 | ENER | 6.30 | 6.60 | 7.80 | 2530 | 1260 | 890 | 334 | 2650 | 7110 | * 9898 | 0.967 |
| SE Tails | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 2670 | 6370 | * 9277 | --- |
| | 8/27/2015 | ENER | 4.00 | 5.50 | 10.2 | 2370 | 1260 | 607 | 369 | 2730 | 6720 | * 9222 | 0.962 |
| SW TAILS | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1890 | 5430 | * 7518 | --- |
| | 8/27/2015 | ENER | 9.10 | 9.20 | 6.80 | 2230 | 1150 | 780 | 287 | 2320 | 6090 | * 8787 | 0.972 |
| SW1 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 336 | 2650 | 6270 | * 8402 | --- |
| SW2 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 607 | 3280 | 6800 | * 9179 | --- |
| WA3 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 242 | 1690 | 4700 | * 7038 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.1-1 WATER QUALITY ANALYSES FOR THE TAILINGS WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA7 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 720 | 5880 | 16900 | * 23410 | --- |
| WA11 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 485 | 5520 | 15900 | * 19340 | --- |
| WA13 | 12/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 518 | 6640 | 20700 | * 23410 | --- |
| WB10 | 12/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 613 | 4430 | 10500 | * 13690 | --- |
| WB17 | 12/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 458 | 2660 | 6120 | * 8494 | --- |
| WC21 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 380 | 2460 | 6840 | * 9275 | --- |
| WF13 | 12/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 449 | 2660 | 6290 | * 9169 | --- |
| WN1 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 199 | 1400 | 3060 | * 4530 | --- |
| WN2 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 1020 | 2770 | * 4285 | --- |
| WS1 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 1120 | 7440 | 14700 | --- | --- |
| WS2 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 254 | 1450 | 3250 | * 4680 | --- |
| WW1 | 12/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 720 | 4940 | 11800 | * 15200 | --- |
| WW4 | 12/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 528 | 4300 | 11300 | * 14730 | --- |
| WW5 | 12/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 392 | 3350 | 8800 | * 11740 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.1-2 WATER QUALITY ANALYSES FOR THE TAILINGS WELLS

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CN1 | 12/21/2015 | ENER | --- | 33.0 | 76.7 | 0.910 | --- | --- | --- | --- | --- |
| CN2 | 12/22/2015 | ENER | --- | 15.6 | 18.7 | 0.0160 | --- | --- | --- | --- | --- |
| CS1 | 12/29/2015 | ENER | --- | 7.75 | 12.8 | 0.0630 | --- | --- | --- | --- | --- |
| CS2 | 12/21/2015 | ENER | --- | 7.37 | 24.6 | 0.0100 | --- | --- | --- | --- | --- |
| EC8 | 12/28/2015 | ENER | --- | 12.0 | 34.7 | 0.111 | --- | --- | --- | --- | --- |
| EC9 | 12/28/2015 | ENER | --- | 21.7 | 22.5 | 0.136 | --- | --- | --- | --- | --- |
| EC11 | 12/28/2015 | ENER | --- | 19.7 | 49.5 | 0.107 | --- | --- | --- | --- | --- |
| EC19 | 12/28/2015 | ENER | --- | 5.90 | 20.1 | 0.0770 | --- | --- | --- | --- | --- |
| EC21 | 12/28/2015 | ENER | --- | 12.2 | 46.0 | 0.0850 | --- | --- | --- | --- | --- |
| ED10 | 12/28/2015 | ENER | --- | 15.2 | 35.1 | 0.100 | --- | --- | --- | --- | --- |
| ED18 | 12/28/2015 | ENER | --- | 12.0 | 34.0 | 0.0470 | --- | --- | --- | --- | --- |
| EE2 | 12/21/2015 | ENER | --- | 4.63 | 22.0 | 0.147 | --- | --- | --- | --- | --- |
| EF2 | 12/28/2015 | ENER | --- | 7.60 | 11.7 | 0.0820 | --- | --- | --- | --- | --- |
| EG3 | 12/28/2015 | ENER | --- | 18.0 | 51.6 | 0.0800 | --- | --- | --- | --- | --- |
| EG5 | 12/28/2015 | ENER | --- | 6.72 | 18.3 | 0.0550 | --- | --- | --- | --- | --- |
| EG7 | 12/28/2015 | ENER | --- | 4.60 | 13.2 | 0.0460 | --- | --- | --- | --- | --- |
| EG13 | 12/28/2015 | ENER | --- | 10.5 | 36.1 | 0.130 | --- | --- | --- | --- | --- |
| EG16 | 12/28/2015 | ENER | --- | 16.9 | 55.1 | 0.0370 | --- | --- | --- | --- | --- |
| EH14 | 12/28/2015 | ENER | --- | 5.50 | 12.0 | 0.0340 | --- | --- | --- | --- | --- |
| EH19 | 12/28/2015 | ENER | --- | 6.80 | 27.8 | 0.0470 | --- | --- | --- | --- | --- |
| EH27 | 12/28/2015 | ENER | --- | 5.20 | 16.7 | 0.0200 | --- | --- | --- | --- | --- |
| EN1 | 12/21/2015 | ENER | --- | 16.5 | 57.4 | 0.236 | --- | --- | --- | --- | --- |
| EN2 | 12/21/2015 | ENER | --- | 2.20 | 11.8 | 0.0260 | --- | --- | --- | --- | --- |

# TABLE B.1-2 WATER QUALITY ANALYSES FOR THE TAILINGS WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EN9 | 12/28/2015 | ENER | --- | 2.02 | 8.32 | 0.0280 | --- | --- | --- | --- | --- |
| EN10 | 12/28/2015 | ENER | --- | 10.00 | 34.5 | 0.130 | --- | --- | --- | --- | --- |
| EN11 | 12/28/2015 | ENER | --- | 11.7 | 29.2 | 0.0720 | --- | --- | --- | --- | --- |
| EN12 | 12/28/2015 | ENER | --- | 11.0 | 25.9 | 0.0470 | --- | --- | --- | --- | --- |
| EN17 | 12/28/2015 | ENER | --- | 11.8 | 28.1 | 0.0610 | --- | --- | --- | --- | --- |
| EN18 | 12/28/2015 | ENER | --- | 20.1 | 50.5 | 0.0570 | --- | --- | --- | --- | --- |
| EN19 | 12/28/2015 | ENER | --- | 9.10 | 34.6 | 0.0400 | --- | --- | --- | --- | --- |
| ES1 | 12/30/2015 | ENER | --- | 14.8 | 30.8 | 0.0910 | --- | --- | --- | --- | --- |
| ES4 | 12/28/2015 | ENER | --- | 7.30 | 19.4 | 0.0280 | --- | --- | --- | --- | --- |
| NE Tails | 3/10/2015 | ENER | --- | 10.2 | 32.7 | 0.0480 | --- | --- | --- | --- | --- |
| | 8/27/2015 | ENER | 9.82 | 9.63 | 34.4 | 0.0580 | 2.30 | 189 | --- | --- | --- |
| NE1 | 12/22/2015 | ENER | --- | 41.9 | 69.2 | 0.104 | --- | --- | --- | --- | --- |
| NE8 | 12/28/2015 | ENER | --- | 10.5 | 29.7 | 0.0370 | --- | --- | --- | --- | --- |
| NE9 | 12/28/2015 | ENER | --- | 7.64 | 19.0 | 0.0570 | --- | --- | --- | --- | --- |
| NE13 | 12/28/2015 | ENER | --- | 12.0 | 36.7 | 0.0620 | --- | --- | --- | --- | --- |
| NW Tails | 3/10/2015 | ENER | --- | 5.72 | 23.4 | 0.386 | --- | --- | --- | --- | --- |
| | 8/27/2015 | ENER | 9.78 | 6.67 | 25.4 | 0.253 | 1.70 | 128 | --- | --- | --- |
| SE Tails | 3/10/2015 | ENER | --- | 6.86 | 23.6 | 0.0520 | --- | --- | --- | --- | --- |
| | 8/27/2015 | ENER | 9.62 | 7.66 | 23.5 | 0.0560 | 2.00 | 229 | --- | --- | --- |
| SW TAILS | 3/10/2015 | ENER | --- | 4.71 | 17.2 | 0.246 | --- | --- | --- | --- | --- |
| | 8/27/2015 | ENER | 9.78 | 6.06 | 20.6 | 0.271 | 1.30 | 108 | --- | --- | --- |
| SW1 | 12/21/2015 | ENER | --- | 5.70 | 14.5 | 6.70 | --- | --- | --- | --- | --- |
| SW2 | 12/21/2015 | ENER | --- | 4.10 | 13.5 | 7.04 | --- | --- | --- | --- | --- |
| WA3 | 12/28/2015 | ENER | --- | 3.50 | 14.5 | 0.224 | --- | --- | --- | --- | --- |

# TABLE B.1-2 WATER QUALITY ANALYSES FOR THE TAILINGS WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WA7 | 12/28/2015 | ENER | --- | 17.1 | 61.9 | 0.805 | --- | --- | --- | --- | --- |
| WA11 | 12/28/2015 | ENER | --- | 19.0 | 73.8 | 0.266 | --- | --- | --- | --- | --- |
| WA13 | 12/23/2015 | ENER | --- | 25.5 | 98.9 | 0.759 | --- | --- | --- | --- | --- |
| WB10 | 12/23/2015 | ENER | --- | 7.10 | 33.7 | 0.310 | --- | --- | --- | --- | --- |
| WB17 | 12/22/2015 | ENER | --- | 2.01 | 12.5 | 0.118 | --- | --- | --- | --- | --- |
| WC21 | 12/28/2015 | ENER | --- | 5.95 | 15.3 | 0.457 | --- | --- | --- | --- | --- |
| WF13 | 12/28/2015 | ENER | --- | 4.09 | 14.7 | 0.141 | --- | --- | --- | --- | --- |
| WN1 | 12/21/2015 | ENER | --- | 1.40 | 5.32 | 0.588 | --- | --- | --- | --- | --- |
| WN2 | 12/21/2015 | ENER | --- | 0.519 | 2.31 | 0.0220 | --- | --- | --- | --- | --- |
| WS1 | 12/21/2015 | ENER | --- | 12.7 | 19.0 | 0.0350 | --- | --- | --- | --- | --- |
| WS2 | 12/21/2015 | ENER | --- | 1.96 | 4.90 | 0.0810 | --- | --- | --- | --- | --- |
| WW1 | 12/21/2015 | ENER | --- | 12.9 | 33.4 | 1.87 | --- | --- | --- | --- | --- |
| WW4 | 12/23/2015 | ENER | --- | 10.5 | 38.8 | 0.615 | --- | --- | --- | --- | --- |
| WW5 | 12/22/2015 | ENER | --- | 9.80 | 38.1 | 0.606 | --- | --- | --- | --- | --- |

# TABLE B.2-1 WATER QUALITY ANALYSES FOR THE TOE DRAIN SUMPS

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East 1 Sump | 3/11/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 8020 | 20200 | * 23000 | --- |
| | 8/21/2015 | ENER | 2.10 | 3.30 | 21.0 | 6090 | 2560 | 1920 | 941 | 6830 | 17100 | * 20110 | 0.968 |
| East 2 Sump | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 6880 | 15200 | * 18220 | --- |
| | 8/21/2015 | ENER | 10.6 | 11.7 | 17.0 | 4900 | 2350 | 1020 | 840 | 6400 | 13800 | * 16560 | 0.937 |
| East Reclaim | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 4430 | 10500 | * 13280 | --- |
| | 8/21/2015 | ENER | 4.90 | 12.4 | 16.0 | 3710 | 1760 | 754 | 676 | 4800 | 10600 | * 13090 | 0.943 |
| North 1 Sump | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 6440 | 13900 | * 16950 | --- |
| | 8/21/2015 | ENER | 6.10 | 6.20 | 15.0 | 4570 | 2270 | 952 | 755 | 5640 | 13100 | * 15950 | 0.963 |
| North 3 Sump | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 4490 | 10700 | --- | --- |
| South 1 Sump | 3/11/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 2580 | 5780 | * 7777 | --- |
| | 8/21/2015 | ENER | 24.4 | 21.3 | 11.7 | 1640 | 1160 | 40.0 | 355 | 2280 | 4960 | * 6709 | 0.959 |
| West 1 Sump | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 3710 | 8110 | * 10500 | --- |
| | 8/21/2015 | ENER | 40.2 | 38.5 | 12.2 | 2480 | 1320 | 107 | 489 | 3680 | 7630 | * 10630 | 0.981 |
| West Reclaim | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 5850 | 13500 | * 16560 | --- |
| | 8/21/2015 | ENER | 4.70 | 4.80 | 5.40 | 1840 | 1040 | 435 | 300 | 2040 | 5260 | * 7146 | 0.980 |

* Signifies Specific Conductivity from HMC

# TABLE B.2-2 WATER QUALITY ANALYSES FOR THE TOE DRAIN SUMPS

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East 1 Sump | 3/11/2015 | ENER | --- | 32.5 | 76.8 | 0.222 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 9.58 | 25.8 | 59.4 | 0.141 | 4.00 | 89.0 | --- | --- | --- |
| East 2 Sump | 3/10/2015 | ENER | --- | 37.6 | 44.0 | 0.153 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 9.43 | 33.0 | 41.3 | 0.136 | 3.20 | 9.50 | --- | --- | --- |
| East Reclaim | 3/10/2015 | ENER | --- | 14.8 | 33.0 | 0.235 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 9.46 | 15.2 | 32.5 | 0.204 | 2.30 | 69.0 | --- | --- | --- |
| North 1 Sump | 3/10/2015 | ENER | --- | 31.5 | 55.2 | 0.642 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 9.43 | 23.7 | 52.2 | 0.360 | 3.00 | 26.0 | --- | --- | --- |
| North 3 Sump | 3/10/2015 | ENER | --- | 16.0 | 41.7 | 0.309 | --- | --- | --- | --- | --- |
| South 1 Sump | 3/11/2015 | ENER | --- | 11.9 | 15.6 | 0.0560 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 8.34 | 10.4 | 14.4 | 0.0570 | 7.00 | 36.0 | --- | --- | --- |
| West 1 Sump | 3/10/2015 | ENER | --- | 22.3 | 16.3 | 0.664 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 8.71 | 16.3 | 14.7 | 0.105 | 5.40 | 0.820 | --- | --- | --- |
| West Reclaim | 3/10/2015 | ENER | --- | 23.6 | 53.6 | 0.410 | --- | --- | --- | --- | --- |
| | 8/21/2015 | ENER | 9.53 | 4.56 | 14.4 | 0.0940 | 0.900 | 9.70 | --- | --- | --- |

# TABLE B.3-1 WATER QUALITY ANALYSES FOR THE LINED PONDS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E Coll Pond | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 845 | 6650 | 12200 | --- | --- |
| | 4/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 757 | 5700 | 11000 | * 9390 | --- |
| | 8/5/2015 | ENER | 37.0 | 78.0 | 11.1 | 3170 | 1230 | 243 | 599 | 5060 | 10000 | * 12520 | 0.973 |
| | 10/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 882 | 7700 | 13400 | * 16240 | --- |
| Evap Pond 1 | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 5500 | 22700 | 56500 | --- | --- |
| | 4/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 5070 | 22600 | 50600 | * 49200 | --- |
| | 8/5/2015 | ENER | 19.5 | 283 | 90.0 | 19600 | 5120 | 4560 | 5400 | 28200 | 56700 | * 57030 | 0.901 |
| | 10/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 4990 | 24900 | 50600 | * 49380 | --- |
| Evap Pond 2 | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 1400 | 10400 | 20500 | --- | --- |
| | 4/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 1510 | 10800 | 20800 | * 23270 | --- |
| | 8/5/2015 | ENER | 30.6 | 127 | 26.3 | 6980 | 2140 | 770 | 1540 | 11600 | 21500 | * 26010 | 0.915 |
| | 10/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 1680 | 13000 | 22500 | * 25500 | --- |
| | 11/12/2015 | ENER | 23.0 | 146 | 28.0 | 7580 | 2440 | 816 | 1520 | 12200 | 23600 | --- | 0.944 |
| Evap Pond 3A | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 53600 | 11600 | 198000 | --- | --- |
| | 4/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 61500 | 20700 | 207000 | * 137900 | --- |
| | 8/5/2015 | ENER | < 0.700 | 28.0 | 546 | 93100 | 37300 | 25400 | 81700 | 17900 | 214000 | * 149100 | 0.983 |
| | 10/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 32800 | 27300 | 106000 | * 111700 | --- |
| Evap Pond 3B | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 6910 | 21500 | 63400 | --- | --- |
| | 4/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 11200 | 47300 | 82500 | * 84380 | --- |
| | 8/5/2015 | ENER | 15.1 | 269 | 122 | 23900 | 5240 | 6000 | 9480 | 43700 | 68400 | * 65830 | 0.728 |
| | 10/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 7740 | 42100 | 76600 | * 68550 | --- |
| W Coll Pond | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 304 | 2420 | 4240 | --- | --- |
| | 4/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 403 | 3320 | 6140 | * 7993 | --- |
| | 8/5/2015 | ENER | 52.9 | 84.4 | 10.3 | 3040 | 1170 | 156 | 585 | 5070 | 9770 | * 12230 | 0.970 |
| | 10/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 740 | 8390 | 12700 | * 15230 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.3-2 WATER QUALITY ANALYSES FOR THE LINED PONDS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E Coll Pond | 2/3/2015 | ENER | --- | 21.0 | 36.1 | 0.624 | --- | --- | --- | --- | --- |
| | 4/7/2015 | ENER | --- | 18.2 | 31.7 | 0.900 | --- | --- | --- | --- | --- |
| | 8/5/2015 | ENER | 9.13 | 14.4 | 30.1 | 0.342 | 0.500 | 10.00 | 3.70 | 0.0100 | 3.80 |
| | 10/12/2015 | ENER | 9.39 | 23.0 | 41.1 | 0.142 | --- | --- | --- | --- | --- |
| Evap Pond 1 | 2/3/2015 | ENER | --- | 139 | 229 | 0.520 | --- | --- | --- | --- | --- |
| | 4/7/2015 | ENER | --- | 124 | 166 | 0.580 | --- | --- | --- | --- | --- |
| | 8/5/2015 | ENER | 9.53 | 113 | 194 | 0.336 | 0.200 | 53.0 | 1.40 | 0.0600 | 146 |
| | 10/12/2015 | ENER | 9.58 | 111 | 161 | 0.480 | --- | --- | --- | --- | --- |
| Evap Pond 2 | 2/3/2015 | ENER | --- | 30.0 | 61.9 | 0.607 | --- | --- | --- | --- | --- |
| | 4/7/2015 | ENER | --- | 28.0 | 62.3 | 0.650 | --- | --- | --- | --- | --- |
| | 8/5/2015 | ENER | 9.36 | 28.3 | 60.4 | 0.327 | 0.600 | 53.0 | 3.00 | 0.0400 | 11.3 |
| | 10/12/2015 | ENER | 9.32 | 33.0 | 69.5 | 0.426 | --- | --- | --- | --- | --- |
| | 11/12/2015 | ENER | 9.30 | 34.0 | 69.5 | 0.466 | 0.500 | --- | --- | --- | --- |
| Evap Pond 3A | 2/3/2015 | ENER | --- | 1340 | 2060 | 0.560 | --- | --- | --- | --- | --- |
| | 4/7/2015 | ENER | --- | 1510 | 2060 | 0.500 | --- | --- | --- | --- | --- |
| | 8/5/2015 | ENER | 9.51 | 857 | 2040 | 0.430 | 0.700 | 130 | 5.20 | 0.320 | 2210 |
| | 10/12/2015 | ENER | 9.63 | 462 | 616 | 0.610 | --- | --- | --- | --- | --- |
| Evap Pond 3B | 2/3/2015 | ENER | --- | 173 | 277 | 0.680 | --- | --- | --- | --- | --- |
| | 4/7/2015 | ENER | --- | 261 | 302 | 0.870 | --- | --- | --- | --- | --- |
| | 8/5/2015 | ENER | 9.50 | 144 | 184 | 0.250 | < 0.500 | 63.0 | 2.50 | 0.0800 | 173 |
| | 10/12/2015 | ENER | 9.51 | 154 | 206 | 0.200 | --- | --- | --- | --- | --- |
| W Coll Pond | 2/3/2015 | ENER | --- | 4.20 | 11.4 | 0.470 | --- | --- | --- | --- | --- |
| | 4/7/2015 | ENER | --- | 9.00 | 14.9 | 0.500 | --- | --- | --- | --- | --- |
| | 8/5/2015 | ENER | 8.89 | 14.3 | 26.2 | 0.448 | 1.000 | 4.30 | 4.40 | 0.0100 | 0.800 |
| | 10/12/2015 | ENER | 9.62 | 25.0 | 29.8 | 0.504 | --- | --- | --- | --- | --- |

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1J | 2/4/2015 | ENER | 67.1 | 21.6 | 3.50 | 101 | 175 | < 5.00 | 76.0 | 216 | 581 | --- | 0.993 |
| 1N | 2/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 546 | 866 | 2550 | * 3812 | --- |
| 1P | 2/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 125 | 334 | 1080 | * 1646 | --- |
| 1Q | 2/4/2015 | ENER | 110 | 25.2 | 2.60 | 122 | 299 | < 5.00 | 93.0 | 277 | 818 | * 1210 | 0.961 |
| 1R | 2/3/2015 | ENER | 80.9 | 14.0 | 2.60 | 204 | 366 | < 5.00 | 89.0 | 267 | 868 | * 1350 | 0.993 |
| 1S | 2/4/2015 | ENER | 63.6 | 20.5 | 3.40 | 96.9 | 167 | < 5.00 | 73.0 | 207 | 559 | --- | 0.988 |
| 1T | 2/4/2015 | ENER | 104 | 21.8 | 3.20 | 112 | 337 | < 5.00 | 76.0 | 221 | 717 | * 1108 | 0.960 |
| 1U | 2/3/2015 | ENER | 109 | 25.9 | 2.90 | 123 | 301 | < 5.00 | 89.0 | 272 | 794 | * 1209 | 0.979 |
| 1V | 2/4/2015 | ENER | 105 | 23.5 | 3.00 | 132 | 342 | < 5.00 | 83.0 | 252 | 776 | * 1163 | 0.972 |
| B | 5/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 189 | 930 | 2110 | * 2773 | --- |
| B4 | 6/12/2015 | ENER | 128 | 62.4 | 5.20 | 2910 | 1680 | < 5.00 | 634 | 4800 | 9260 | * 11550 | 0.950 |
| B5 | 6/12/2015 | ENER | 119 | 71.4 | 6.00 | 3420 | 2050 | < 5.00 | 792 | 5540 | 10900 | * 13210 | 0.938 |
| B6 | 6/12/2015 | ENER | 193 | 55.6 | 4.50 | 769 | 714 | < 5.00 | 235 | 1460 | 3130 | * 4180 | 0.977 |
| B7 | 6/12/2015 | ENER | 190 | 55.1 | 4.60 | 749 | 723 | < 5.00 | 232 | 1430 | 3000 | * 4155 | 0.966 |
| B8 | 6/12/2015 | ENER | 122 | 56.0 | 2.80 | 1340 | 1310 | < 5.00 | 261 | 2040 | 4510 | * 5946 | 0.966 |
| B9 | 6/12/2015 | ENER | 87.2 | 33.0 | 2.50 | 809 | 809 | < 5.00 | 213 | 1200 | 2780 | * 3883 | 0.953 |
| B11 | 6/12/2015 | ENER | 342 | 106 | 9.30 | 2060 | 1180 | < 5.00 | 603 | 3850 | 7640 | * 9580 | 0.991 |
| B12 | 2/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 159 | 858 | 1890 | * 2598 | --- |
| B13 | 2/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 110 | 523 | 1250 | * 1784 | --- |
| BC | 5/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 177 | 1200 | 2500 | * 3053 | --- |
| C6 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 116 | 429 | 1220 | * 1824 | --- |
| | 6/11/2015 | ENER | 98.8 | 27.5 | 3.20 | 284 | 442 | < 5.00 | 107 | 438 | 1220 | * 1769 | 1.00 |
| | 10/1/2015 | ENER | 77.5 | 21.3 | 2.70 | 265 | 393 | < 5.00 | 105 | 371 | 1100 | * 1630 | 0.996 |
| C7 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 2150 | 4190 | * 5189 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C7 | 6/11/2015 | ENER | 263 | 63.5 | 5.90 | 937 | 724 | < 5.00 | 251 | 1940 | 3870 | * 4857 | 0.996 |
| | 10/1/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 4538 | --- |
| C8 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 373 | 2070 | 4300 | * 5481 | --- |
| | 6/11/2015 | ENER | 110 | 29.6 | 3.30 | 345 | 489 | < 5.00 | 121 | 546 | 1440 | * 2077 | 1.00 |
| | 10/1/2015 | ENER | 100.0 | 26.0 | 3.20 | 294 | 421 | < 5.00 | 104 | 503 | 1280 | * 1841 | 0.977 |
| C9 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1400 | 3120 | * 4228 | --- |
| | 6/11/2015 | ENER | 173 | 40.3 | 4.10 | 790 | 653 | < 5.00 | 255 | 1460 | 3110 | * 4125 | 0.958 |
| | 10/1/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 4156 | --- |
| C10 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 181 | 738 | 1820 | * 2752 | --- |
| | 6/11/2015 | ENER | 76.1 | 20.4 | 2.40 | 794 | 633 | < 5.00 | 211 | 981 | 2640 | * 3698 | 1.09 |
| | 10/1/2015 | ENER | 79.8 | 21.0 | 2.60 | 800 | 552 | < 5.00 | 239 | 1180 | 2650 | --- | 1.00 |
| C11 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 804 | 1930 | * 2784 | --- |
| | 6/11/2015 | ENER | 151 | 36.1 | 3.90 | 721 | 602 | < 5.00 | 228 | 1210 | 2740 | * 3708 | 1.01 |
| | 10/1/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2595 | --- |
| C12 | 3/31/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 818 | 1920 | * 2806 | --- |
| | 6/11/2015 | ENER | 151 | 36.2 | 3.90 | 719 | 617 | < 5.00 | 229 | 1210 | 2730 | * 3738 | 0.999 |
| | 10/1/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2274 | --- |
| D1 | 3/17/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 2310 | 4380 | * 5292 | --- |
| | 7/15/2015 | ENER | 418 | 91.0 | 5.10 | 834 | 609 | < 5.00 | 310 | 2500 | 4670 | * 5524 | 0.913 |
| DA3 | 6/11/2015 | ENER | 115 | 50.9 | 4.70 | 2600 | 1640 | 20.0 | 489 | 4160 | 8230 | * 10200 | 0.962 |
| DC | 6/9/2015 | ENER | --- | --- | --- | --- | --- | --- | 229 | 886 | 2110 | * 2774 | --- |
| DD | 2/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 70.0 | 1770 | 3070 | * 3551 | --- |
| | 4/30/2015 | ENER | 448 | 86.4 | 7.00 | 318 | 350 | < 5.00 | 68.0 | 1830 | 3090 | * 3494 | 0.947 |
| | 8/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 69.0 | 1750 | 3000 | * 3400 | --- |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 76.0 | 1970 | 3210 | * 3505 | --- |
| DD2 | 2/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 64.0 | 1400 | 2450 | * 2954 | --- |
| | 4/30/2015 | ENER | 374 | 73.3 | 6.50 | 284 | 352 | < 5.00 | 62.0 | 1470 | 2500 | * 2922 | 0.972 |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DD2 | 8/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 61.0 | 1430 | 2510 | * 2982 | --- |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1570 | 2550 | * 2914 | --- |
| DQ | 6/11/2015 | ENER | 120 | 28.5 | 4.30 | 254 | 382 | < 5.00 | 139 | 451 | 1230 | * 1805 | 0.988 |
| DR | 6/11/2015 | ENER | 177 | 81.7 | 6.00 | 2370 | 1270 | < 5.00 | 572 | 4090 | 8160 | * 10030 | 0.972 |
| DT | 6/11/2015 | ENER | 299 | 63.7 | 6.20 | 825 | 803 | < 5.00 | 209 | 1830 | 3660 | * 4555 | 0.981 |
| DZ | 6/9/2015 | ENER | --- | --- | --- | --- | --- | --- | 1140 | 7930 | 14800 | * 17770 | --- |
| EW-1 | 10/29/2015 | ENER | 266 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EW-4 | 10/29/2015 | ENER | 446 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EW-7 | 10/29/2015 | ENER | 431 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| F | 3/17/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 699 | 1890 | * 2568 | --- |
| | 9/25/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2588 | --- |
| FB | 3/17/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 624 | 1710 | * 2373 | --- |
| | 8/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 205 | 670 | 1820 | * 2477 | --- |
| | 9/25/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2426 | --- |
| GH | 3/12/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 667 | 1840 | * 2473 | --- |
| | 8/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 682 | 1790 | * 2410 | --- |
| GN | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 407 | 1170 | * 1727 | --- |
| | 8/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 126 | 406 | 1150 | * 1634 | --- |
| GV | 10/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 595 | 1600 | * 2244 | --- |
| IW-1D | 4/15/2015 | ENER | 247 | 70.0 | 6.00 | 306 | --- | --- | 245 | 700 | 2010 | --- | --- |
| IW-1S | 4/15/2015 | ENER | 292 | 72.0 | 6.00 | 316 | --- | --- | 251 | 897 | 2190 | --- | --- |
| IW-3D | 4/15/2015 | ENER | 230 | 60.0 | 6.00 | 464 | --- | --- | 246 | 950 | 2390 | --- | --- |
| IW-3S | 4/14/2015 | ENER | 282 | 71.0 | 6.00 | 305 | --- | --- | 251 | 816 | 2150 | --- | --- |
| IW-6S | 4/13/2015 | ENER | 287 | 73.0 | 6.00 | 339 | --- | --- | 244 | 948 | 2250 | --- | --- |
| IW-7D | 4/14/2015 | ENER | 252 | 71.0 | 7.00 | 374 | --- | --- | 238 | 879 | 2180 | --- | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IW-10D | 4/13/2015 | ENER | 253 | 67.0 | 7.00 | 339 | --- | --- | 239 | 851 | 2090 | --- | --- |
| IW-10S | 4/12/2015 | ENER | 294 | 73.0 | 6.00 | 331 | --- | --- | 265 | 1020 | 2300 | --- | --- |
| IW-11D | 4/12/2015 | ENER | 244 | 67.0 | 8.00 | 405 | --- | --- | 247 | 890 | 2210 | --- | --- |
| IW-12S | 4/12/2015 | ENER | 387 | 102 | 8.00 | 405 | --- | --- | 271 | 1440 | 3020 | --- | --- |
| IW-13D | 4/10/2015 | ENER | 295 | 75.0 | 9.00 | 375 | --- | --- | 247 | 1040 | 2420 | --- | --- |
| IW-15D | 4/10/2015 | ENER | 263 | 60.0 | 8.00 | 329 | --- | --- | 242 | 828 | 2070 | --- | --- |
| IW-15S | 4/11/2015 | ENER | 266 | 58.0 | 6.00 | 300 | --- | --- | 234 | 862 | 2010 | --- | --- |
| IW-17D | 4/11/2015 | ENER | 243 | 54.0 | 7.00 | 290 | --- | --- | 217 | 710 | 1820 | --- | --- |
| IW-17S | 4/11/2015 | ENER | 261 | 54.0 | 6.00 | 318 | --- | --- | 236 | 837 | 2000 | --- | --- |
| K4 | 2/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 104 | 405 | 1130 | --- | --- |
| | 6/11/2015 | ENER | 85.0 | 23.2 | 3.20 | 234 | 399 | < 5.00 | 98.0 | 348 | 1020 | * 1522 | 0.982 |
| | 7/16/2015 | ENER | 94.4 | 24.2 | 3.30 | 216 | 429 | < 5.00 | 100.0 | 341 | 1050 | * 1507 | 0.945 |
| K5 | 6/11/2015 | ENER | 104 | 28.2 | 3.10 | 285 | 456 | < 5.00 | 107 | 478 | 1250 | * 1844 | 0.970 |
| | 7/16/2015 | ENER | 95.3 | 26.2 | 2.90 | 281 | 446 | < 5.00 | 102 | 488 | 1270 | * 1892 | 0.936 |
| K7 | 2/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 109 | 372 | 1110 | --- | --- |
| | 6/11/2015 | ENER | 106 | 26.5 | 3.50 | 210 | 430 | < 5.00 | 106 | 339 | 1040 | * 1555 | 0.967 |
| | 7/16/2015 | ENER | 91.7 | 23.4 | 3.20 | 211 | 424 | < 5.00 | 98.0 | 334 | 1020 | * 1550 | 0.936 |
| K8 | 6/11/2015 | ENER | 93.7 | 25.9 | 3.20 | 251 | 439 | < 5.00 | 109 | 362 | 1080 | * 1616 | 0.991 |
| | 7/16/2015 | ENER | 88.2 | 23.4 | 3.00 | 242 | 424 | < 5.00 | 102 | 383 | 1110 | * 1658 | 0.942 |
| K9 | 2/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 114 | 492 | 1290 | --- | --- |
| | 6/11/2015 | ENER | 95.1 | 25.6 | 3.30 | 289 | 442 | < 5.00 | 115 | 426 | 1190 | * 1774 | 0.999 |
| | 7/16/2015 | ENER | 97.4 | 25.6 | 3.30 | 325 | 470 | < 5.00 | 115 | 557 | 1420 | * 2062 | 0.933 |
| K10 | 2/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 124 | 807 | 1860 | --- | --- |
| | 6/11/2015 | ENER | 85.2 | 20.9 | 3.80 | 366 | 495 | < 5.00 | 113 | 509 | 1370 | * 2011 | 0.997 |
| | 7/16/2015 | ENER | 97.4 | 23.7 | 3.90 | 418 | 534 | < 5.00 | 118 | 699 | 1690 | * 2419 | 0.936 |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K11 | 6/11/2015 | ENER | 95.5 | 26.1 | 3.30 | 272 | 433 | < 5.00 | 105 | 412 | 1180 | * 1726 | 1.00 |
| | 7/16/2015 | ENER | 105 | 26.1 | 3.60 | 240 | 449 | < 5.00 | 106 | 424 | 1180 | * 1713 | 0.926 |
| KF | 7/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 94.0 | 287 | 878 | * 1312 | --- |
| L | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 144 | 464 | 1280 | * 1871 | --- |
| L5 | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 127 | 392 | 1120 | * 1687 | --- |
| | 11/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 120 | 370 | 1060 | * 1597 | --- |
| L6 | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 108 | 325 | 979 | * 1491 | --- |
| | 10/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 112 | 334 | 990 | * 1481 | --- |
| L7 | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 129 | 402 | 1130 | * 1663 | --- |
| | 11/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 121 | 373 | 1100 | * 1670 | --- |
| L8 | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 113 | 349 | 1040 | * 1565 | --- |
| | 10/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 184 | 555 | 1420 | * 2069 | --- |
| L9 | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 132 | 404 | 1150 | * 1694 | --- |
| | 11/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 150 | 467 | 1270 | * 1898 | --- |
| L10 | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 118 | 383 | 1100 | * 1632 | --- |
| | 10/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 116 | 365 | 1050 | * 1572 | --- |
| M3 | 6/11/2015 | ENER | 299 | 83.6 | 6.20 | 1190 | 930 | < 5.00 | 281 | 2460 | 4850 | * 6004 | 0.989 |
| M5 | 7/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 208 | 741 | 1830 | * 2482 | --- |
| M6 | 3/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 203 | 1200 | 2570 | * 3336 | --- |
| M7 | 3/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 210 | 737 | 1890 | * 2663 | --- |
| M9 | 3/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 220 | 1280 | 2670 | * 3331 | --- |
| | 6/11/2015 | ENER | 339 | 85.6 | 6.10 | 390 | 517 | < 5.00 | 225 | 1290 | 2710 | * 3378 | 0.982 |
| | 10/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 214 | 1420 | 2780 | * 3545 | --- |
| MQ | 3/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 217 | 1230 | 2580 | * 3315 | --- |
| | 6/11/2015 | ENER | 348 | 86.6 | 7.70 | 354 | 481 | < 5.00 | 227 | 1250 | 2650 | * 3260 | 0.990 |
| | 10/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 234 | 1300 | 2640 | * 3260 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MX | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 642 | 1730 | * 2381 | --- |
| | 8/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 188 | 657 | 1710 | * 2348 | --- |
| MZ | 3/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 228 | 1340 | 2650 | * 3287 | --- |
| NB | 8/27/2015 | ENER | --- | --- | --- | --- | --- | --- | 1490 | 6090 | 12800 | * 1601 | --- |
| NC | 4/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 52.0 | 619 | 1230 | * 1650 | --- |
| | 8/26/2015 | ENER | --- | --- | --- | --- | --- | --- | 61.0 | 704 | 1310 | * 1749 | --- |
| ND | 3/26/2015 | ENER | 45.3 | 11.9 | 0.900 | 476 | 409 | < 5.00 | 86.0 | 739 | 1560 | * 2335 | 0.971 |
| | 5/12/2015 | ENER | 47.4 | 12.4 | 1.000 | 475 | 371 | < 5.00 | 85.0 | 748 | 1530 | * 2296 | 0.994 |
| O | 8/26/2015 | ENER | --- | --- | --- | --- | --- | --- | 156 | 895 | 1770 | * 2399 | --- |
| P | 5/19/2015 | ENER | 236 | 47.3 | 4.80 | 249 | 249 | < 5.00 | 51.0 | 1050 | 1810 | * 2315 | 0.966 |
| | 10/20/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1090 | 1810 | * 2285 | --- |
| P2 | 3/31/2015 | ENER | 296 | 56.3 | 6.40 | 271 | 236 | < 5.00 | 62.0 | 1200 | 2130 | * 2594 | 1.02 |
| P3 | 3/31/2015 | ENER | 273 | 48.3 | 5.30 | 268 | 211 | < 5.00 | 90.0 | 1080 | 1980 | * 2470 | 1.03 |
| P4 | 3/31/2015 | ENER | 176 | 33.5 | 3.30 | 240 | 215 | < 5.00 | 42.0 | 779 | 1410 | * 1890 | 1.05 |
| PMW-1D | 4/16/2015 | ENER | 253 | 70.0 | 7.00 | 316 | --- | --- | 236 | 793 | 2050 | --- | --- |
| | 8/25/2015 | ENER | 258 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | 246 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 286 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PMW-1S | 4/16/2015 | ENER | 269 | 65.0 | 7.00 | 311 | --- | --- | 252 | 909 | 2090 | --- | --- |
| | 8/25/2015 | ENER | 287 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | 265 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 297 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PMW-2D | 4/17/2015 | ENER | 248 | 69.0 | 10.00 | 356 | --- | --- | 255 | 851 | 2120 | --- | --- |
| | 8/26/2015 | ENER | 368 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | 390 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 350 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PMW-2S | 4/17/2015 | ENER | 254 | 65.0 | 8.00 | 348 | --- | --- | 252 | 894 | 2160 | --- | --- |
| | 8/26/2015 | ENER | 229 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | 255 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 266 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PMW-3D | 4/17/2015 | ENER | 251 | 62.0 | 9.00 | 316 | --- | --- | 234 | 794 | 2040 | --- | --- |
| | 8/26/2015 | ENER | 260 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 258 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PMW-3S | 4/17/2015 | ENER | 272 | 65.0 | 8.00 | 326 | --- | --- | 241 | 873 | 2120 | --- | --- |
| | 8/26/2015 | ENER | 317 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 339 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Q | 3/26/2015 | ENER | 394 | 71.9 | 6.80 | 282 | 235 | < 5.00 | 70.0 | 1510 | 2640 | * 3058 | 1.02 |
| | 4/30/2015 | ENER | 397 | 61.6 | 7.30 | 251 | 236 | < 5.00 | 65.0 | 1520 | 2530 | * 2930 | 0.959 |
| R | 3/26/2015 | ENER | 330 | 54.2 | 3.90 | 285 | 162 | < 5.00 | 59.0 | 1370 | 2330 | * 2785 | 1.01 |
| | 5/12/2015 | ENER | 325 | 55.1 | 4.20 | 305 | 156 | < 5.00 | 55.0 | 1390 | 2330 | * 2803 | 1.03 |
| S1 | 4/10/2015 | ENER | 265 | 66.0 | 5.00 | 311 | --- | --- | 235 | 793 | 2030 | --- | --- |
| | 8/26/2015 | ENER | 261 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 294 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S2 | 1/29/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 986 | 2370 | * 3286 | --- |
| | 7/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 232 | 932 | 2250 | * 3071 | --- |
| S3 | 4/10/2015 | ENER | 630 | 154 | 10.00 | 1360 | --- | --- | 423 | 3660 | 6850 | --- | --- |
| | 7/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 473 | 3690 | 6940 | * 8136 | --- |
| S4 | 7/16/2015 | ENER | 251 | 63.8 | 4.80 | 304 | 629 | < 5.00 | 222 | 794 | 2050 | * 2784 | 0.935 |
| S5R | 6/11/2015 | ENER | 205 | 84.6 | 7.90 | 3140 | 2280 | < 5.00 | 506 | 5260 | 10100 | * 11980 | 0.955 |
| S12 | 2/5/2015 | ENER | 284 | 90.9 | 5.80 | 1070 | 995 | < 5.00 | 377 | 2110 | 4380 | * 5777 | 0.962 |
| S14 | 4/11/2015 | ENER | 261 | 66.0 | 6.00 | 312 | --- | --- | 241 | 804 | 2050 | --- | --- |
| S15 | 4/11/2015 | ENER | 265 | 61.0 | 5.00 | 311 | --- | --- | 237 | 814 | 2010 | --- | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S18 | 4/11/2015 | ENER | 250 | 66.0 | 6.00 | 324 | --- | --- | 238 | 813 | 2050 | --- | --- |
| S26 | 4/10/2015 | ENER | 265 | 65.0 | 5.00 | 311 | --- | --- | 247 | 835 | 2060 | --- | --- |
| S27 | 4/10/2015 | ENER | 266 | 69.0 | 6.00 | 333 | --- | --- | 242 | 853 | 2110 | --- | --- |
| S28 | 4/9/2015 | ENER | 245 | 62.0 | 7.00 | 319 | --- | --- | 235 | 769 | 2000 | --- | --- |
| S36 | 4/10/2015 | ENER | 266 | 57.0 | 6.00 | 301 | --- | --- | 234 | 828 | 1980 | --- | --- |
| | 8/4/2015 | ENER | 250 | 48.0 | 4.00 | 242 | --- | --- | 203 | 851 | 1840 | --- | --- |
| | 8/4/2015 | ENER | 266 | 55.0 | 4.00 | 251 | --- | --- | 206 | 871 | 1880 | --- | --- |
| | 8/26/2015 | ENER | 306 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 410 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SA | 4/17/2015 | ENER | 10.00 | 20.0 | 9.00 | 6120 | --- | --- | 898 | 8430 | 18200 | --- | --- |
| | 6/11/2015 | ENER | 12.9 | 20.1 | 9.00 | 5860 | 3700 | 251 | 940 | 8520 | 17100 | * 19820 | 0.943 |
| SB | 6/11/2015 | ENER | 19.8 | 34.7 | 10.00 | 7130 | 1950 | 1680 | 1240 | 9760 | 20500 | * 23360 | 0.964 |
| SDR-1S | 1/28/2015 | ENER | 255 | 73.0 | 9.00 | 281 | 583 | < 5.00 | 231 | 743 | 1970 | --- | 0.983 |
| SE6 | 1/28/2015 | ENER | 547 | 190 | 9.00 | 2690 | 2000 | < 5.00 | 698 | 5300 | 10700 | --- | 0.983 |
| | 2/5/2015 | ENER | 535 | 186 | 9.20 | 2690 | 2010 | < 5.00 | 711 | 5430 | 10600 | * 12190 | 0.958 |
| SM | 5/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 249 | 903 | 2100 | * 2956 | --- |
| SMW-1 | 1/28/2015 | ENER | 274 | 70.0 | 9.00 | 308 | 591 | < 5.00 | 248 | 814 | 2090 | --- | 0.978 |
| SMW-3D | 1/28/2015 | ENER | 282 | 57.0 | 8.00 | 330 | 619 | < 5.00 | 253 | 807 | 2120 | --- | 0.973 |
| SMW-4D | 1/28/2015 | ENER | 285 | 54.0 | 10.00 | 302 | 621 | < 5.00 | 245 | 737 | 2010 | --- | 0.983 |
| SO | 5/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 253 | 1310 | 2700 | * 3201 | --- |
| SQ | 6/11/2015 | ENER | 16.9 | 57.0 | 8.00 | 5560 | 731 | 1680 | 882 | 7410 | 16200 | * 18590 | 1.00 |
| ST | 6/11/2015 | ENER | 267 | 137 | 9.00 | 3870 | 2810 | < 5.00 | 733 | 6550 | 12600 | * 14780 | 0.950 |
| SV | 6/11/2015 | ENER | 155 | 91.5 | 8.00 | 5140 | 3660 | < 5.00 | 1040 | 7730 | 15800 | * 18240 | 0.955 |
| SW | 5/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 911 | 6660 | 12600 | * 14570 | --- |
| SZ | 2/5/2015 | ENER | 16.5 | 53.2 | 9.00 | 7850 | 5970 | 420 | 1330 | 10700 | 23600 | * 25970 | 0.932 |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 751 | 1900 | * 2804 | --- |
| | 6/11/2015 | ENER | 113 | 28.9 | 5.40 | 532 | 540 | < 5.00 | 185 | 882 | 2100 | * 3046 | 0.960 |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 247 | 1610 | 3290 | * 4257 | --- |
| T2 | 7/27/2015 | ENER | 203 | 91.6 | 5.70 | 1900 | 1270 | 18.0 | 327 | 3390 | 6330 | * 16180 | 0.993 |
| T4 | 7/27/2015 | ENER | 6.50 | 2.00 | 6.40 | 1970 | 939 | 593 | 299 | 2170 | 5290 | * 7451 | 0.973 |
| T5 | 7/27/2015 | ENER | 2.50 | 1.90 | 4.40 | 2540 | 1240 | 858 | 328 | 2550 | 6750 | * 9229 | 0.997 |
| T6 | 5/18/2015 | ENER | 11.4 | 16.5 | 6.70 | 2090 | 1330 | 133 | 437 | 2940 | 6360 | * 8296 | 0.932 |
| T7 | 5/18/2015 | ENER | 298 | 185 | 7.00 | 3360 | 2290 | < 5.00 | 692 | 6560 | 12100 | * 14020 | 0.910 |
| T8 | 5/14/2015 | ENER | 19.3 | 25.9 | 11.6 | 3300 | 1570 | 963 | 516 | 3890 | 9760 | * 12160 | 0.958 |
| T9 | 7/27/2015 | ENER | 1.80 | 1.70 | 20.8 | 4410 | 1710 | 1920 | 609 | 4470 | 12400 | * 15460 | 0.952 |
| T10 | 7/28/2015 | ENER | 3.60 | 1.90 | 31.6 | 10000 | 4080 | 3660 | 1920 | 12000 | 28900 | * 32110 | 0.885 |
| T11 | 7/27/2015 | ENER | 14.6 | 15.0 | 4.50 | 2170 | 1430 | 488 | 354 | 2790 | 6570 | * 8678 | 0.895 |
| T12 | 7/27/2015 | ENER | 5.70 | 3.30 | 5.60 | 1120 | 647 | 146 | 244 | 1460 | 3350 | * 4800 | 0.937 |
| T15 | 6/9/2015 | ENER | 8.70 | 6.40 | 2.30 | 3840 | 1220 | 1800 | 372 | 3880 | 10900 | * 13370 | 0.981 |
| T16 | 5/15/2015 | ENER | 36.9 | 101 | 12.0 | 7060 | 2680 | 959 | 1460 | 10400 | 21000 | * 24320 | 0.952 |
| T17 | 5/14/2015 | ENER | 3.60 | 33.6 | 6.00 | 4330 | 3110 | 479 | 563 | 5680 | 12700 | * 15400 | 0.952 |
| T18 | 5/15/2015 | ENER | 446 | 161 | 5.90 | 1060 | 702 | < 5.00 | 543 | 2410 | 5430 | * 6683 | 1.06 |
| T19 | 5/15/2015 | ENER | 4.80 | 1.70 | 1.90 | 1570 | 844 | 354 | 310 | 1880 | 4590 | * 6373 | 0.935 |
| T20 | 6/23/2015 | ENER | 11.2 | 7.60 | 4.00 | 1860 | 1010 | 355 | 337 | 2460 | 5580 | * 7156 | 0.922 |
| T21 | 6/9/2015 | ENER | 2.10 | 2.00 | 8.70 | 2180 | 1490 | 852 | 315 | 2680 | 7000 | * 8202 | 0.811 |
| T22 | 6/9/2015 | ENER | 121 | 41.8 | 7.80 | 671 | 515 | < 5.00 | 205 | 1270 | 2580 | * 3734 | 0.952 |
| | 7/28/2015 | ENER | 94.5 | 32.6 | 7.70 | 837 | 554 | < 5.00 | 222 | 1390 | 2790 | * 3905 | 0.990 |
| T23 | 6/9/2015 | ENER | 233 | 272 | 25.0 | 7380 | 3690 | < 5.00 | 1710 | 13300 | 24600 | * 27740 | 0.922 |
| T36 | 5/14/2015 | ENER | 6.90 | 5.10 | 4.00 | 1560 | 949 | 470 | 209 | 1520 | 4210 | * 6122 | 1.000 |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T39 | 6/9/2015 | ENER | 125 | 62.7 | 2.50 | 2140 | 1650 | 25.0 | 367 | 3400 | 6910 | * 8400 | 0.959 |
| T40 | 6/9/2015 | ENER | 2.00 | 1.70 | 10.8 | 3050 | 1680 | 1290 | 345 | 3100 | 8640 | * 11090 | 0.920 |
| T41 | 5/14/2015 | ENER | 1.70 | < 0.500 | 9.60 | 2240 | 869 | 864 | 333 | 2330 | 6020 | * 8798 | 0.969 |
| TA | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 130 | 503 | 1370 | * 2065 | --- |
| TB | 9/30/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2027 | --- |
| TDR-1D | 4/16/2015 | ENER | 292 | 97.0 | 8.00 | 972 | --- | --- | 323 | 2180 | 4380 | --- | --- |
| | 8/3/2015 | ENER | 268 | 76.0 | 7.00 | 726 | --- | --- | 280 | 1420 | 3170 | --- | --- |
| | 8/25/2015 | ENER | 257 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 273 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-1S | 4/16/2015 | ENER | 285 | 67.0 | 4.00 | 315 | --- | --- | 241 | 854 | 2200 | --- | --- |
| | 8/3/2015 | ENER | 296 | 63.0 | 4.00 | 277 | --- | --- | 240 | 914 | 2150 | --- | --- |
| | 8/25/2015 | ENER | 297 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 289 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-2D | 4/16/2015 | ENER | 274 | 81.0 | 7.00 | 482 | --- | --- | 239 | 1160 | 2650 | --- | --- |
| | 8/4/2015 | ENER | 323 | 89.0 | 7.00 | 573 | --- | --- | 254 | 1560 | 3250 | --- | --- |
| | 8/25/2015 | ENER | 293 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 189 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-2S | 4/16/2015 | ENER | 266 | 66.0 | 6.00 | 325 | --- | --- | 249 | 842 | 2100 | --- | --- |
| | 8/4/2015 | ENER | 282 | 64.0 | 5.00 | 280 | --- | --- | 252 | 859 | 2120 | --- | --- |
| | 8/25/2015 | ENER | 277 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 325 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-3D | 4/16/2015 | ENER | 260 | 70.0 | 7.00 | 321 | --- | --- | 241 | 844 | 2110 | --- | --- |
| | 8/4/2015 | ENER | 253 | 68.0 | 5.00 | 399 | --- | --- | 241 | 994 | 2370 | --- | --- |
| | 8/25/2015 | ENER | 270 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 277 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-3S | 4/16/2015 | ENER | 263 | 66.0 | 6.00 | 320 | --- | --- | 252 | 899 | 2120 | --- | --- |
| | 8/4/2015 | ENER | 389 | 75.0 | 6.00 | 359 | --- | --- | 262 | 1350 | 2870 | --- | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-1 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TDR-3S | 8/25/2015 | ENER | 291 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 198 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-4D | 4/17/2015 | ENER | 250 | 70.0 | 8.00 | 361 | --- | --- | 238 | 880 | 2180 | --- | --- |
| | 8/5/2015 | ENER | 264 | 70.0 | 8.00 | 348 | --- | --- | 235 | 886 | 2210 | --- | --- |
| | 8/25/2015 | ENER | 265 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-4S | 4/17/2015 | ENER | 254 | 65.0 | 6.00 | 300 | --- | --- | 238 | 819 | 2040 | --- | --- |
| | 8/5/2015 | ENER | 341 | 81.0 | 7.00 | 332 | --- | --- | 263 | 1200 | 2540 | --- | --- |
| | 8/5/2015 | ENER | 343 | 78.0 | 6.00 | 309 | --- | --- | 270 | 1190 | 2580 | --- | --- |
| | 8/25/2015 | ENER | 312 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | 312 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-5D | 4/17/2015 | ENER | 247 | 69.0 | 10.00 | 352 | --- | --- | 236 | 849 | 2130 | --- | --- |
| | 8/5/2015 | ENER | 275 | 70.0 | 9.00 | 329 | --- | --- | 236 | 907 | 2210 | --- | --- |
| | 8/26/2015 | ENER | 254 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 247 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TDR-5S | 4/17/2015 | ENER | 251 | 64.0 | 9.00 | 308 | --- | --- | 247 | 818 | 2000 | --- | --- |
| | 8/5/2015 | ENER | 297 | 65.0 | 8.00 | 296 | --- | --- | 225 | 1060 | 2200 | --- | --- |
| | 8/5/2015 | ENER | 298 | 65.0 | 8.00 | 293 | --- | --- | 224 | 1050 | 2210 | --- | --- |
| | 8/26/2015 | ENER | 298 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | 297 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | 2/3/2015 | ENER | --- | --- | --- | --- | --- | --- | 88.0 | 266 | 819 | * 1270 | --- |
| | 4/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 84.0 | 255 | 781 | * 1205 | --- |
| | 7/16/2015 | ENER | 126 | 27.3 | 4.20 | 126 | 310 | < 5.00 | 122 | 310 | 912 | * 1346 | 0.933 |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 104 | 366 | 1080 | --- | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1J | 2/4/2015 | ENER | 6.99 | 0.0104 | 0.0600 | 0.0060 | 4.80 | 0.340 | --- | --- | --- |
| 1N | 2/19/2015 | ENER | --- | 0.0761 | < 0.0300 | 0.370 | --- | --- | --- | --- | --- |
| 1P | 2/19/2015 | ENER | --- | 0.222 | 0.0400 | 0.0720 | --- | --- | --- | --- | --- |
| 1Q | 2/4/2015 | ENER | 7.30 | 0.126 | 0.110 | 0.0100 | 0.400 | 0.210 | --- | --- | --- |
| 1R | 2/3/2015 | ENER | 7.56 | 0.116 | 0.0700 | < 0.0050 | < 0.100 | 0.280 | --- | --- | --- |
| 1S | 2/4/2015 | ENER | 6.97 | 0.0097 | 0.0600 | 0.0060 | 1.50 | 0.200 | --- | --- | --- |
| 1T | 2/4/2015 | ENER | 7.42 | 0.156 | 0.100 | < 0.0050 | 0.300 | 0.260 | --- | --- | --- |
| 1U | 2/3/2015 | ENER | 7.34 | 0.250 | 0.160 | < 0.0050 | < 0.100 | 0.300 | --- | --- | --- |
| 1V | 2/4/2015 | ENER | 7.40 | 0.391 | 0.120 | < 0.0050 | 0.200 | 0.220 | --- | --- | --- |
| B | 5/21/2015 | ENER | --- | 0.0836 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| B4 | 6/12/2015 | ENER | 7.83 | 20.6 | 27.4 | 0.580 | 6.90 | 0.330 | --- | --- | --- |
| B5 | 6/12/2015 | ENER | 7.58 | 28.2 | 31.0 | 0.784 | 6.20 | 0.290 | --- | --- | --- |
| B6 | 6/12/2015 | ENER | 7.47 | 6.49 | 12.8 | 0.452 | 4.80 | 0.240 | --- | --- | --- |
| B7 | 6/12/2015 | ENER | 7.53 | 6.13 | 12.5 | 0.403 | 4.50 | 0.280 | --- | --- | --- |
| B8 | 6/12/2015 | ENER | 7.49 | 13.4 | 47.5 | 0.231 | 3.00 | 0.340 | --- | --- | --- |
| B9 | 6/12/2015 | ENER | 7.59 | 8.78 | 22.2 | 0.139 | 2.30 | 0.440 | --- | --- | --- |
| B11 | 6/12/2015 | ENER | 7.33 | 17.8 | 24.8 | 1.98 | 14.0 | 0.610 | --- | --- | --- |
| B12 | 2/5/2015 | ENER | --- | 1.50 | 1.78 | 0.0630 | --- | --- | --- | --- | --- |
| B13 | 2/5/2015 | ENER | --- | 0.475 | 0.370 | 0.0270 | --- | --- | --- | --- | --- |
| BC | 5/21/2015 | ENER | --- | 0.920 | 0.560 | 0.0700 | --- | --- | --- | --- | --- |
| C6 | 3/31/2015 | ENER | --- | 0.806 | 1.04 | 0.130 | 2.50 | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.69 | 0.627 | 1.36 | 0.138 | 1.70 | 0.380 | --- | --- | --- |
| | 10/1/2015 | ENER | 7.77 | 0.530 | 0.750 | 0.0520 | 1.70 | 0.140 | --- | --- | --- |
| C7 | 3/31/2015 | ENER | --- | 7.74 | --- | 1.30 | 4.60 | --- | --- | --- | --- |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C7 | 6/11/2015 | ENER | 7.42 | 9.26 | 18.2 | 1.45 | 4.00 | 0.470 | --- | --- | --- |
| | 10/1/2015 | ENER | --- | 8.53 | 18.0 | 1.18 | --- | --- | --- | --- | --- |
| C8 | 3/31/2015 | ENER | --- | 9.22 | 19.5 | 1.53 | --- | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.73 | 1.89 | 5.80 | 0.228 | 2.00 | 0.340 | --- | --- | --- |
| | 10/1/2015 | ENER | 7.66 | 0.880 | 2.15 | 0.250 | 1.60 | 0.240 | --- | --- | --- |
| C9 | 3/31/2015 | ENER | --- | 8.36 | --- | 1.10 | 9.40 | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.52 | 9.18 | 16.2 | 1.14 | 8.80 | 0.350 | --- | --- | --- |
| | 10/1/2015 | ENER | --- | 10.1 | 18.4 | 0.989 | --- | --- | --- | --- | --- |
| C10 | 3/31/2015 | ENER | --- | 3.37 | 3.34 | 0.780 | --- | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.76 | 7.36 | 9.98 | 1.03 | 17.0 | 0.390 | --- | --- | --- |
| | 10/1/2015 | ENER | 7.78 | 6.50 | 8.83 | 0.902 | 20.0 | 0.150 | --- | --- | --- |
| C11 | 3/31/2015 | ENER | --- | 2.95 | --- | 0.582 | 12.0 | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.62 | 7.49 | 13.7 | 0.976 | 8.60 | 0.370 | --- | --- | --- |
| | 10/1/2015 | ENER | --- | 3.02 | 4.45 | 0.932 | --- | --- | --- | --- | --- |
| C12 | 3/31/2015 | ENER | --- | 3.17 | --- | 0.902 | 24.0 | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.58 | 7.37 | 13.6 | 0.930 | 9.00 | 0.220 | --- | --- | --- |
| | 10/1/2015 | ENER | --- | 2.31 | 3.26 | 0.822 | --- | --- | --- | --- | --- |
| D1 | 3/17/2015 | ENER | --- | 6.41 | 4.50 | 0.243 | --- | --- | --- | --- | --- |
| | 7/15/2015 | ENER | 7.35 | 7.32 | 4.47 | 0.247 | 2.70 | 0.330 | 1.000 | < 0.0100 | 0.200 |
| DA3 | 6/11/2015 | ENER | 8.26 | 15.7 | 18.9 | 0.748 | 2.20 | 0.330 | --- | --- | --- |
| DC | 6/9/2015 | ENER | --- | 0.0940 | < 0.0300 | 0.0320 | 3.50 | --- | --- | --- | --- |
| DD | 2/4/2015 | ENER | --- | 0.137 | < 0.0300 | 0.0480 | --- | --- | --- | --- | --- |
| | 4/30/2015 | ENER | 7.26 | 0.151 | < 0.0300 | 0.0430 | 5.20 | 0.100 | 0.700 | < 0.0100 | 0.0600 |
| | 8/5/2015 | ENER | --- | 0.146 | < 0.0300 | 0.0490 | --- | --- | --- | --- | --- |
| | 10/8/2015 | ENER | --- | 0.108 | < 0.0300 | 0.0620 | --- | --- | --- | --- | --- |
| DD2 | 2/4/2015 | ENER | --- | 0.227 | 0.0800 | < 0.0050 | --- | --- | --- | --- | --- |
| | 4/30/2015 | ENER | 7.32 | 0.226 | < 0.0300 | < 0.0050 | < 0.100 | 0.330 | 0.800 | < 0.0100 | 0.0700 |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DD2 | 8/5/2015 | ENER | --- | 0.217 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| | 10/8/2015 | ENER | --- | 0.193 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| DQ | 6/11/2015 | ENER | 7.72 | 0.449 | 0.880 | 0.101 | 1.50 | 0.140 | --- | --- | --- |
| DR | 6/11/2015 | ENER | 7.55 | 17.2 | 18.7 | 0.747 | 13.0 | 0.800 | --- | --- | --- |
| DT | 6/11/2015 | ENER | 7.29 | 4.78 | 5.37 | 0.180 | 2.20 | 0.340 | --- | --- | --- |
| DZ | 6/9/2015 | ENER | --- | 40.9 | 46.7 | 3.99 | --- | --- | --- | --- | --- |
| EW-1 | 10/29/2015 | ENER | --- | 2.41 | --- | --- | --- | --- | --- | --- | --- |
| EW-4 | 10/29/2015 | ENER | --- | 4.93 | --- | --- | --- | --- | --- | --- | --- |
| EW-7 | 10/29/2015 | ENER | --- | 1.84 | --- | --- | --- | --- | --- | --- | --- |
| F | 3/17/2015 | ENER | --- | 0.0450 | < 0.0300 | 0.0110 | --- | --- | --- | --- | --- |
| | 9/25/2015 | ENER | --- | 0.0463 | < 0.0300 | 0.0110 | 1.90 | --- | --- | --- | --- |
| | 9/25/2015 | ENER | --- | 0.0463 | < 0.0300 | 0.0110 | 1.90 | --- | --- | --- | --- |
| FB | 3/17/2015 | ENER | --- | 0.0485 | < 0.0300 | 0.0080 | --- | --- | --- | --- | --- |
| | 8/6/2015 | ENER | --- | 0.0518 | < 0.0300 | 0.0090 | 1.70 | --- | --- | --- | --- |
| | 9/25/2015 | ENER | --- | 0.0539 | < 0.0300 | 0.0090 | 1.60 | --- | --- | --- | --- |
| GH | 3/12/2015 | ENER | --- | 0.0920 | < 0.0300 | 0.0130 | --- | --- | --- | --- | --- |
| | 8/6/2015 | ENER | --- | 0.0834 | < 0.0300 | 0.0140 | 1.80 | --- | --- | --- | --- |
| GN | 3/10/2015 | ENER | --- | 0.0785 | < 0.0300 | 0.0120 | --- | --- | --- | --- | --- |
| | 8/18/2015 | ENER | --- | 0.0823 | < 0.0300 | 0.0110 | 1.50 | --- | --- | --- | --- |
| GV | 10/1/2015 | ENER | --- | 0.237 | 0.0300 | 0.0260 | --- | --- | --- | --- | --- |
| IW-1D | 4/15/2015 | ENER | 7.20 | 0.583 | 0.980 | 0.0540 | 1.70 | 1.70 | -0.700 | < 0.0100 | 0.500 |
| IW-1S | 4/15/2015 | ENER | 7.17 | 0.0970 | 0.100 | 0.0120 | 0.900 | 2.40 | 1.000 | < 0.0100 | -0.0030 |
| IW-3D | 4/15/2015 | ENER | 7.24 | 1.77 | 2.57 | 0.154 | 1.30 | 2.00 | 0.0900 | < 0.0100 | 0.200 |
| IW-3S | 4/14/2015 | ENER | 7.22 | 0.198 | 0.250 | 0.0150 | 1.20 | 2.10 | 0.100 | < 0.0100 | -0.0090 |
| IW-6S | 4/13/2015 | ENER | 7.12 | 0.210 | 0.150 | 0.0210 | 0.800 | 0.100 | 0.600 | < 0.0100 | -0.0080 |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IW-7D | 4/14/2015 | ENER | 7.09 | 1.44 | 1.76 | 0.200 | 1.80 | 0.490 | 0.800 | < 0.0100 | -0.0090 |
| IW-10D | 4/13/2015 | ENER | 7.13 | 1.07 | 0.850 | 0.0870 | 0.800 | 1.000 | 1.30 | < 0.0100 | 0.100 |
| IW-10S | 4/12/2015 | ENER | 7.23 | 0.278 | 0.0700 | 0.0540 | 0.900 | 0.340 | 0.700 | < 0.0100 | 0.0200 |
| IW-11D | 4/12/2015 | ENER | 7.08 | 2.01 | 1.66 | 0.310 | 1.20 | 0.690 | 0.700 | < 0.0100 | 0.0500 |
| IW-12S | 4/12/2015 | ENER | 7.32 | 1.59 | 0.460 | 0.197 | 1.70 | 0.280 | 0.800 | < 0.0100 | 0.0700 |
| IW-13D | 4/10/2015 | ENER | 7.22 | 1.67 | 0.720 | 0.185 | 1.30 | 0.360 | 0.400 | < 0.0100 | 0.0300 |
| IW-15D | 4/10/2015 | ENER | 7.41 | 1.62 | 0.200 | 0.0700 | 1.10 | 0.640 | 0.900 | < 0.0100 | 0.100 |
| IW-15S | 4/11/2015 | ENER | 7.35 | 0.904 | 0.0900 | 0.0530 | 1.60 | 0.280 | 1.000 | < 0.0100 | 0.700 |
| IW-17D | 4/11/2015 | ENER | 7.29 | 0.680 | 0.220 | 0.0490 | 1.40 | 0.450 | 0.600 | < 0.0100 | 0.0400 |
| IW-17S | 4/11/2015 | ENER | 7.25 | 0.444 | 0.0800 | 0.0570 | 1.40 | 0.410 | 0.200 | < 0.0100 | 0.100 |
| K4 | 2/4/2015 | ENER | — | 0.779 | 1.58 | 0.200 | — | — | — | — | — |
| | 6/11/2015 | ENER | 7.68 | 0.658 | 1.21 | 0.247 | 1.40 | 0.430 | — | — | — |
| | 7/16/2015 | ENER | 7.49 | 0.431 | 0.710 | 0.107 | 1.50 | 0.0600 | — | — | — |
| K5 | 6/11/2015 | ENER | 7.65 | 0.580 | 1.57 | 0.141 | 1.60 | 0.750 | — | — | — |
| | 7/16/2015 | ENER | 7.61 | 0.588 | 1.72 | 0.120 | 1.50 | 0.0800 | — | — | — |
| K7 | 2/4/2015 | ENER | — | 0.424 | 0.710 | 0.106 | — | — | — | — | — |
| | 6/11/2015 | ENER | 7.63 | 0.358 | 0.570 | 0.104 | 1.50 | 0.250 | — | — | — |
| | 7/16/2015 | ENER | 7.55 | 0.414 | 0.680 | 0.111 | 1.50 | 0.170 | — | — | — |
| K8 | 6/11/2015 | ENER | 7.69 | 0.580 | 0.860 | 0.156 | 1.50 | 0.510 | — | — | — |
| | 7/16/2015 | ENER | 7.66 | 0.562 | 0.900 | 0.137 | 1.50 | 0.120 | — | — | — |
| K9 | 2/4/2015 | ENER | — | 0.955 | 2.14 | 0.130 | — | — | — | — | — |
| | 6/11/2015 | ENER | 7.68 | 0.834 | 1.87 | 0.0900 | 1.60 | 0.290 | — | — | — |
| | 7/16/2015 | ENER | 7.62 | 1.19 | 3.26 | 0.133 | 1.70 | 0.210 | — | — | — |
| K10 | 2/4/2015 | ENER | — | 2.30 | 6.97 | 0.630 | — | — | — | — | — |
| | 6/11/2015 | ENER | 7.83 | 1.46 | 3.03 | 0.232 | 1.70 | 0.170 | — | — | — |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| K10 | 7/16/2015 | ENER | 7.61 | 2.27 | 6.13 | 0.441 | 1.70 | 0.120 | --- | --- | --- |
| K11 | 6/11/2015 | ENER | 7.72 | 0.614 | 1.26 | 0.134 | 1.60 | 0.170 | --- | --- | --- |
| | 7/16/2015 | ENER | 7.55 | 0.600 | 1.27 | 0.0640 | 1.70 | 0.100 | --- | --- | --- |
| KF | 7/21/2015 | ENER | --- | 0.0443 | 0.0600 | 0.0080 | --- | --- | --- | --- | --- |
| L | 4/2/2015 | ENER | --- | 0.501 | --- | 0.0640 | 1.60 | --- | --- | --- | --- |
| L5 | 4/2/2015 | ENER | --- | 0.277 | --- | 0.0770 | 1.60 | --- | --- | --- | --- |
| | 11/18/2015 | ENER | --- | 0.222 | 0.340 | 0.0540 | --- | --- | --- | --- | --- |
| L6 | 4/2/2015 | ENER | --- | 0.266 | --- | 0.0670 | 0.800 | --- | --- | --- | --- |
| | 10/16/2015 | ENER | --- | 0.205 | 0.260 | 0.0560 | --- | --- | --- | --- | --- |
| L7 | 4/2/2015 | ENER | --- | 0.288 | --- | 0.0770 | 1.60 | --- | --- | --- | --- |
| | 11/18/2015 | ENER | --- | 0.263 | 0.390 | 0.0860 | --- | --- | --- | --- | --- |
| L8 | 4/2/2015 | ENER | --- | 0.191 | --- | 0.0550 | 1.30 | --- | --- | --- | --- |
| | 10/16/2015 | ENER | --- | 0.216 | 0.450 | 0.134 | --- | --- | --- | --- | --- |
| L9 | 4/2/2015 | ENER | --- | 0.279 | --- | 0.0920 | 1.60 | --- | --- | --- | --- |
| | 11/18/2015 | ENER | --- | 0.196 | 0.310 | 0.0880 | --- | --- | --- | --- | --- |
| L10 | 4/2/2015 | ENER | --- | 0.354 | --- | 0.0470 | 1.60 | --- | --- | --- | --- |
| | 10/16/2015 | ENER | --- | 0.242 | 0.420 | 0.0270 | --- | --- | --- | --- | --- |
| M3 | 6/11/2015 | ENER | 7.45 | 8.80 | 9.49 | 0.322 | 2.60 | 0.390 | --- | --- | --- |
| M5 | 7/28/2015 | ENER | --- | 0.224 | < 0.0300 | 0.0340 | 1.20 | --- | --- | --- | --- |
| M6 | 3/3/2015 | ENER | --- | 2.27 | 2.06 | 0.197 | --- | --- | --- | --- | --- |
| M7 | 3/3/2015 | ENER | --- | 1.24 | 0.950 | 0.0320 | --- | --- | --- | --- | --- |
| M9 | 3/3/2015 | ENER | --- | 1.19 | 0.870 | 0.133 | --- | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.44 | 1.66 | 1.16 | 0.154 | 5.90 | 0.260 | --- | --- | --- |
| | 10/1/2015 | ENER | --- | 2.63 | 1.89 | 0.207 | --- | --- | --- | --- | --- |
| MQ | 3/3/2015 | ENER | --- | 0.823 | 0.320 | 0.0930 | --- | --- | --- | --- | --- |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MQ | 6/11/2015 | ENER | 7.40 | 0.874 | 0.380 | 0.110 | 5.60 | 0.320 | --- | --- | --- |
| | 10/1/2015 | ENER | --- | 0.884 | 0.320 | 0.0990 | --- | --- | --- | --- | --- |
| MX | 3/10/2015 | ENER | --- | 0.0334 | < 0.0300 | 0.0110 | --- | --- | --- | --- | --- |
| | 8/18/2015 | ENER | --- | 0.0355 | < 0.0300 | 0.0120 | 1.50 | --- | --- | --- | --- |
| MZ | 3/3/2015 | ENER | --- | 0.144 | < 0.0300 | 0.0540 | --- | --- | --- | --- | --- |
| NB | 8/27/2015 | ENER | --- | 26.1 | 33.6 | 0.336 | 14.0 | --- | --- | --- | --- |
| NC | 4/14/2015 | ENER | --- | 0.0115 | < 0.0300 | 0.0740 | 4.20 | --- | --- | --- | --- |
| | 8/26/2015 | ENER | --- | 0.233 | 0.200 | 0.0860 | 4.70 | --- | --- | --- | --- |
| ND | 3/26/2015 | ENER | 7.90 | 0.0251 | < 0.0300 | 0.0420 | < 0.100 | 0.510 | --- | --- | --- |
| | 5/12/2015 | ENER | 7.76 | 0.0381 | < 0.0300 | 0.0900 | 1.90 | 0.0800 | --- | --- | --- |
| O | 8/26/2015 | ENER | --- | 0.0431 | < 0.0300 | 0.188 | 10.1 | --- | --- | --- | --- |
| P | 5/19/2015 | ENER | 7.60 | 0.0272 | < 0.0300 | 0.113 | 4.30 | 0.650 | 0.200 | < 0.0100 | 0.300 |
| | 10/20/2015 | ENER | --- | 0.0410 | < 0.0300 | 0.123 | --- | --- | --- | --- | --- |
| P2 | 3/31/2015 | ENER | 7.56 | 0.0281 | < 0.0300 | 0.237 | 10.00 | 0.210 | --- | --- | --- |
| P3 | 3/31/2015 | ENER | 7.50 | 0.0204 | < 0.0300 | 0.220 | 9.00 | 0.0900 | --- | --- | --- |
| P4 | 3/31/2015 | ENER | 7.53 | 0.0147 | < 0.0300 | 0.114 | 4.80 | 0.210 | --- | --- | --- |
| PMW-1D | 4/16/2015 | ENER | 7.18 | 0.877 | 1.17 | 0.0610 | 1.30 | 1.20 | 0.700 | < 0.0100 | 0.200 |
| | 8/25/2015 | ENER | --- | 1.05 | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | --- | 0.967 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 0.838 | --- | --- | --- | --- | --- | --- | --- |
| PMW-1S | 4/16/2015 | ENER | 7.30 | 0.0958 | 0.0260 | 0.0200 | 0.600 | 0.520 | 0.800 | < 0.0100 | 0.0100 |
| | 8/25/2015 | ENER | --- | 0.101 | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | --- | 0.116 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 0.121 | --- | --- | --- | --- | --- | --- | --- |
| PMW-2D | 4/17/2015 | ENER | 7.18 | 1.26 | 0.870 | 0.0630 | 0.600 | 1.50 | 0.500 | < 0.0100 | -0.0070 |
| | 8/26/2015 | ENER | --- | 2.39 | --- | --- | --- | --- | --- | --- | --- |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PMW-2D | 9/16/2015 | ENER | --- | 2.63 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 2.30 | --- | --- | --- | --- | --- | --- | --- |
| PMW-2S | 4/17/2015 | ENER | 7.18 | 0.423 | 0.150 | 0.0190 | 0.800 | 1.80 | 0.700 | < 0.0100 | 0.0700 |
| | 8/26/2015 | ENER | --- | 0.335 | --- | --- | --- | --- | --- | --- | --- |
| | 9/16/2015 | ENER | --- | 0.254 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 0.233 | --- | --- | --- | --- | --- | --- | --- |
| PMW-3D | 4/17/2015 | ENER | 7.20 | 0.496 | 0.170 | 0.0450 | 1.20 | 2.40 | 0.400 | < 0.0100 | 0.0800 |
| | 8/26/2015 | ENER | --- | 0.597 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 0.732 | --- | --- | --- | --- | --- | --- | --- |
| PMW-3S | 4/17/2015 | ENER | 7.17 | 1.30 | 0.120 | 0.0500 | 1.30 | 1.80 | 0.200 | < 0.0100 | 0.0700 |
| | 8/26/2015 | ENER | --- | 1.80 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 2.05 | --- | --- | --- | --- | --- | --- | --- |
| Q | 3/26/2015 | ENER | 7.37 | 0.0533 | < 0.0300 | 0.398 | 15.0 | 0.300 | 1.000 | < 0.0100 | 0.100 |
| | 4/30/2015 | ENER | 7.40 | 0.0524 | < 0.0300 | 0.344 | 12.4 | 0.360 | 0.900 | < 0.0100 | 0.100 |
| R | 3/26/2015 | ENER | 7.43 | 0.0233 | < 0.0300 | 0.680 | 0.500 | 0.380 | 1.30 | < 0.0100 | 0.100 |
| | 5/12/2015 | ENER | 7.31 | 0.0272 | < 0.0300 | 0.610 | 18.0 | 0.260 | 0.400 | < 0.100 | 0.0600 |
| S1 | 4/10/2015 | ENER | 7.19 | 0.352 | 0.570 | 0.0340 | 1.40 | 0.910 | 0.500 | < 0.0100 | 0.0800 |
| | 8/26/2015 | ENER | --- | 0.314 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 0.358 | --- | --- | --- | --- | --- | --- | --- |
| S2 | 1/29/2015 | ENER | --- | 3.60 | 4.66 | 1.21 | --- | --- | --- | --- | --- |
| | 7/16/2015 | ENER | --- | 3.16 | 3.18 | 0.634 | 1.80 | --- | --- | --- | --- |
| S3 | 4/10/2015 | ENER | 7.06 | 13.1 | 5.69 | 0.600 | 3.70 | 0.400 | 0.600 | < 0.0100 | 0.0300 |
| | 7/29/2015 | ENER | --- | 14.8 | 7.52 | 0.734 | 3.80 | --- | --- | --- | --- |
| S4 | 7/16/2015 | ENER | 7.30 | 0.412 | 0.520 | 0.0590 | 1.60 | 0.240 | 0.600 | < 0.0100 | 0.200 |
| S5R | 6/11/2015 | ENER | 7.90 | 22.0 | 44.9 | 0.565 | 1.40 | 0.680 | --- | --- | --- |
| S12 | 2/5/2015 | ENER | 7.66 | 7.30 | 10.8 | 0.180 | < 0.100 | 0.430 | --- | --- | --- |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S14 | 4/11/2015 | ENER | 7.21 | 0.378 | 0.770 | 0.0140 | 1.10 | 0.270 | 1.000 | < 0.0100 | 0.0900 |
| S15 | 4/11/2015 | ENER | 7.19 | 0.166 | 0.240 | 0.0110 | 1.20 | 0.620 | 0.400 | < 0.0100 | 0.0700 |
| S18 | 4/11/2015 | ENER | 7.27 | 0.675 | 1.09 | 0.0710 | 1.40 | 0.390 | 0.600 | < 0.0100 | 0.200 |
| S26 | 4/10/2015 | ENER | 7.22 | 0.170 | 0.340 | 0.0130 | 1.30 | 0.770 | 0.200 | < 0.0100 | 0.100 |
| S27 | 4/10/2015 | ENER | 7.14 | 0.795 | 1.10 | 0.0680 | 1.000 | 0.390 | 0.600 | < 0.0100 | 0.0900 |
| S28 | 4/9/2015 | ENER | 7.33 | 1.01 | 0.0500 | 0.0180 | 0.800 | 0.440 | 0.100 | < 0.0100 | 0.0300 |
| S36 | 4/10/2015 | ENER | 7.23 | 0.952 | 0.180 | 0.0680 | 1.30 | 0.150 | 1.000 | < 0.0100 | 0.0800 |
| | 8/4/2015 | ENER | 7.40 | 0.345 | 0.0460 | 0.123 | 1.60 | 0.400 | 0.200 | < 0.0100 | 0.100 |
| | 8/4/2015 | ENER | 7.41 | 0.348 | 0.0410 | 0.109 | 1.60 | 3.60 | 0.600 | < 0.0100 | 0.100 |
| | 8/26/2015 | ENER | — | 1.04 | — | — | — | — | — | — | — |
| | 10/28/2015 | ENER | — | 2.22 | — | — | — | — | — | — | — |
| SA | 4/17/2015 | ENER | 8.69 | 42.0 | 72.5 | 1.70 | 2.90 | 2.30 | 1.90 | 0.0300 | 0.0500 |
| | 6/11/2015 | ENER | 8.69 | 45.4 | 73.4 | 1.80 | 3.50 | 0.950 | — | — | — |
| SB | 6/11/2015 | ENER | 9.02 | 46.6 | 85.2 | 2.95 | 0.700 | 2.10 | — | — | — |
| SDR-1S | 1/28/2015 | ENER | 7.12 | 0.112 | 0.171 | 0.0050 | 0.900 | 8.20 | — | < 0.0100 | — |
| SE6 | 1/28/2015 | ENER | 7.26 | 31.6 | 24.0 | 0.0250 | < 0.100 | 5.00 | — | < 0.0100 | — |
| | 2/5/2015 | ENER | 7.54 | 27.4 | 22.8 | 0.0080 | 0.900 | 0.630 | — | — | — |
| SM | 5/19/2015 | ENER | — | 0.511 | 0.860 | 0.0950 | — | — | — | — | — |
| SMW-1 | 1/28/2015 | ENER | 7.11 | 0.460 | 0.648 | 0.0160 | 1.000 | 4.60 | — | < 0.0100 | — |
| SMW-3D | 1/28/2015 | ENER | 7.23 | 0.197 | 0.661 | 0.0020 | < 0.100 | 5.00 | — | < 0.0100 | — |
| SMW-4D | 1/28/2015 | ENER | 7.22 | 0.0556 | 0.198 | 0.0020 | < 0.100 | 20.0 | — | < 0.0100 | — |
| SO | 5/19/2015 | ENER | — | 2.90 | 4.14 | 0.0960 | — | — | — | — | — |
| SQ | 6/11/2015 | ENER | 8.89 | 37.3 | 73.2 | 1.91 | 2.60 | 1.70 | — | — | — |
| ST | 6/11/2015 | ENER | 7.78 | 31.6 | 52.6 | 1.17 | 3.20 | 0.850 | — | — | — |
| SV | 6/11/2015 | ENER | 8.12 | 39.1 | 66.3 | 1.72 | 2.00 | 0.920 | — | — | — |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SW | 5/12/2015 | ENER | --- | 25.0 | 28.7 | 1.70 | --- | --- | --- | --- | --- |
| SZ | 2/5/2015 | ENER | 8.65 | 48.0 | 77.0 | 4.00 | 11.0 | 0.470 | --- | --- | --- |
| T | 5/15/2015 | ENER | --- | 4.72 | --- | 0.436 | 9.00 | --- | --- | --- | --- |
| | 6/11/2015 | ENER | 7.71 | 4.42 | 5.18 | 0.626 | 11.0 | 0.210 | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 6.48 | 8.49 | 2.44 | --- | --- | --- | --- | --- |
| T2 | 7/27/2015 | ENER | 8.19 | 12.0 | 26.0 | 0.237 | 1.60 | 1.70 | --- | --- | --- |
| T4 | 7/27/2015 | ENER | 9.71 | 3.22 | 14.7 | 0.101 | 1.20 | 133 | --- | --- | --- |
| T5 | 7/27/2015 | ENER | 9.75 | 7.72 | 25.0 | 0.239 | 1.60 | 5.10 | --- | --- | --- |
| T6 | 5/18/2015 | ENER | 8.73 | 8.62 | 19.0 | 0.138 | 0.300 | 11.0 | --- | --- | --- |
| T7 | 5/18/2015 | ENER | 7.26 | 29.1 | 59.8 | 0.410 | 12.7 | 7.30 | --- | --- | --- |
| T8 | 5/14/2015 | ENER | 9.61 | 17.5 | 32.3 | 2.40 | 5.40 | 4.50 | --- | --- | --- |
| T9 | 7/27/2015 | ENER | 9.76 | 17.0 | 38.2 | 0.0390 | 4.20 | 139 | --- | --- | --- |
| T10 | 7/28/2015 | ENER | 9.63 | 44.5 | 103 | 0.156 | 3.30 | 137 | --- | --- | --- |
| T11 | 7/27/2015 | ENER | 9.44 | 8.65 | 22.2 | 0.0620 | 0.300 | 4.20 | --- | --- | --- |
| T12 | 7/27/2015 | ENER | 9.28 | 1.42 | 5.24 | 0.184 | 0.900 | 47.0 | --- | --- | --- |
| T15 | 6/9/2015 | ENER | 9.62 | 11.0 | 40.4 | 0.0790 | 0.300 | 3.90 | --- | --- | --- |
| T16 | 5/15/2015 | ENER | 8.81 | 54.0 | 77.3 | 0.507 | 5.90 | 6.60 | --- | --- | --- |
| T17 | 5/14/2015 | ENER | 8.98 | 26.3 | 63.6 | 0.244 | 0.200 | 140 | --- | --- | --- |
| T18 | 5/15/2015 | ENER | 7.36 | 3.60 | 3.69 | 1.52 | 88.0 | 19.0 | --- | --- | --- |
| T19 | 5/15/2015 | ENER | 9.52 | 2.31 | 8.69 | 0.0150 | 0.200 | 2.00 | --- | --- | --- |
| T20 | 6/23/2015 | ENER | 9.61 | 3.74 | 11.8 | 0.0740 | 0.400 | 20.0 | --- | --- | --- |
| T21 | 6/9/2015 | ENER | 9.72 | 5.47 | 22.9 | 0.0830 | 0.100 | 114 | --- | --- | --- |
| T22 | 6/9/2015 | ENER | 8.02 | 0.995 | 2.40 | 0.0090 | < 0.100 | 22.0 | --- | --- | --- |
| | 7/28/2015 | ENER | 7.99 | 1.40 | 3.58 | 0.0120 | 0.700 | 19.0 | --- | --- | --- |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T23 | 6/9/2015 | ENER | 7.49 | 75.0 | 70.8 | 0.785 | 495 | 4.40 | --- | --- | --- |
| T36 | 5/14/2015 | ENER | 9.57 | 4.23 | 13.4 | 0.0610 | 0.300 | 104 | --- | --- | --- |
| T39 | 6/9/2015 | ENER | 8.34 | 11.0 | 18.2 | 0.298 | 1.80 | 9.00 | --- | --- | --- |
| T40 | 6/9/2015 | ENER | 9.81 | 8.95 | 37.8 | 0.164 | < 0.100 | 85.0 | --- | --- | --- |
| T41 | 5/14/2015 | ENER | 9.81 | 5.05 | 17.9 | 0.0480 | < 0.100 | 115 | --- | --- | --- |
| TA | 9/29/2015 | ENER | --- | 2.28 | 2.29 | 0.454 | --- | --- | --- | --- | --- |
| TB | 9/30/2015 | ENER | --- | 0.829 | 0.490 | 0.319 | --- | --- | --- | --- | --- |
| TDR-1D | 4/16/2015 | ENER | 7.29 | 9.90 | 11.1 | 1.14 | 3.50 | 4.30 | 0.600 | < 0.0100 | 0.0300 |
| | 8/3/2015 | ENER | 7.16 | 6.23 | 11.2 | 1.05 | 2.10 | 0.400 | 0.0900 | < 0.0100 | 0.100 |
| | 8/25/2015 | ENER | --- | 6.45 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 6.90 | --- | --- | --- | --- | --- | --- | --- |
| TDR-1S | 4/16/2015 | ENER | 7.15 | 0.127 | 0.0500 | 0.0120 | 0.300 | 0.700 | 0.400 | < 0.0100 | 0.0600 |
| | 8/3/2015 | ENER | 7.13 | 0.0747 | 0.0280 | 0.0220 | 0.600 | 0.280 | -0.500 | < 0.0100 | 0.0200 |
| | 8/25/2015 | ENER | --- | 0.0647 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 0.0744 | --- | --- | --- | --- | --- | --- | --- |
| TDR-2D | 4/16/2015 | ENER | 7.14 | 2.28 | 2.62 | 0.750 | 2.20 | 0.450 | 1.000 | < 0.0100 | 0.0700 |
| | 8/4/2015 | ENER | 7.12 | 2.05 | 3.90 | 0.818 | 2.40 | 0.560 | 0.800 | < 0.0100 | 0.100 |
| | 8/25/2015 | ENER | --- | 0.327 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 1.25 | --- | --- | --- | --- | --- | --- | --- |
| TDR-2S | 4/16/2015 | ENER | 7.07 | 0.209 | 0.230 | 0.0110 | 0.900 | 0.950 | 0.800 | < 0.0100 | 0.700 |
| | 8/4/2015 | ENER | 7.11 | 0.176 | 0.232 | 0.0170 | 0.700 | 0.510 | 0.600 | < 0.0100 | 0.0700 |
| | 8/25/2015 | ENER | --- | 0.233 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 0.239 | --- | --- | --- | --- | --- | --- | --- |
| TDR-3D | 4/16/2015 | ENER | 7.17 | 0.816 | 1.03 | 0.0500 | 0.900 | 0.470 | 0.500 | < 0.0100 | 0.0300 |
| | 8/4/2015 | ENER | 7.16 | 0.615 | 1.36 | 0.149 | 1.20 | 0.480 | 3.60 | < 0.0100 | 0.100 |
| | 8/25/2015 | ENER | --- | 0.893 | --- | --- | --- | --- | --- | --- | --- |

# TABLE B.4-2 WATER QUALITY ANALYSES FOR HOMESTAKE'S ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TDR-3D | 10/28/2015 | ENER | --- | 0 | --- | --- | --- | --- | --- | --- | --- |
| TDR-3S | 4/16/2015 | ENER | 7.25 | 0.196 | 0.0700 | 0.0220 | 0.800 | 0.370 | 1.20 | < 0.0100 | 0.0900 |
| | 8/4/2015 | ENER | 7.20 | 0.283 | 0.0210 | 0.306 | 1.60 | 0.500 | 2.00 | < 0.0100 | 0.0200 |
| | 8/25/2015 | ENER | --- | 0.273 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 0.101 | --- | --- | --- | --- | --- | --- | --- |
| TDR-4D | 4/17/2015 | ENER | 7.20 | 1.40 | 1.50 | 0.280 | 1.30 | 0.560 | 2.10 | < 0.0100 | 0.0300 |
| | 8/5/2015 | ENER | 7.17 | 1.34 | 1.48 | 0.155 | 1.20 | 0.380 | -0.600 | < 0.0100 | 0.0200 |
| | 8/25/2015 | ENER | --- | 1.22 | --- | --- | --- | --- | --- | --- | --- |
| TDR-4S | 4/17/2015 | ENER | 7.27 | 0.168 | 0.0700 | 0.0160 | 0.600 | 0.840 | 0.400 | < 0.0100 | 0.100 |
| | 8/5/2015 | ENER | 7.20 | 0.0944 | 0.0060 | 0.0560 | 0.700 | 0.240 | 0.300 | < 0.0100 | 0.0700 |
| | 8/5/2015 | ENER | 7.22 | 0.0954 | 0.0060 | 0.0490 | 0.700 | 2.50 | 0.500 | < 0.0100 | 0.100 |
| | 8/25/2015 | ENER | --- | 0.118 | --- | --- | --- | --- | --- | --- | --- |
| | 10/27/2015 | ENER | --- | 0.135 | --- | --- | --- | --- | --- | --- | --- |
| TDR-5D | 4/17/2015 | ENER | 7.23 | 1.54 | 0.200 | 0.108 | 1.20 | 2.00 | 0.500 | < 0.0100 | 0.0900 |
| | 8/5/2015 | ENER | 7.15 | 1.84 | 0.476 | 0.170 | 1.10 | 0.630 | 2.40 | < 0.0100 | 0.200 |
| | 8/26/2015 | ENER | --- | 2.50 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 2.17 | --- | --- | --- | --- | --- | --- | --- |
| TDR-5S | 4/17/2015 | ENER | 7.32 | 0.356 | 0.0500 | 0.0180 | 1.10 | 0.810 | 0.400 | < 0.0100 | 0.0600 |
| | 8/5/2015 | ENER | 7.30 | 0.154 | 0.0450 | 0.0890 | 1.10 | 0.150 | -0.200 | < 0.0100 | 0.0400 |
| | 8/5/2015 | ENER | 7.34 | 0.152 | 0.0420 | 0.0780 | 1.10 | 4.10 | -0.700 | < 0.0100 | 0.100 |
| | 8/26/2015 | ENER | --- | 0.218 | --- | --- | --- | --- | --- | --- | --- |
| | 10/28/2015 | ENER | --- | 0.185 | --- | --- | --- | --- | --- | --- | --- |
| X | 2/3/2015 | ENER | --- | 0.0517 | 0.160 | 0.0130 | --- | --- | --- | --- | --- |
| | 4/2/2015 | ENER | --- | 0.0415 | 0.120 | 0.0110 | --- | --- | --- | --- | --- |
| | 7/16/2015 | ENER | 7.51 | 0.0492 | 0.110 | 0.0170 | 1.30 | 0.210 | 0.500 | 0.0100 | 0.200 |
| | 10/8/2015 | ENER | 7.35 | 0.0622 | 0.0800 | 0.0100 | --- | --- | --- | --- | --- |

# TABLE B.4-3 WATER QUALITY ANALYSES FOR THE SUBDIVISION ALLUVIAL WELLS

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0490 | 5/21/2015 | ENER | 242 | 66.2 | 5.70 | 339 | 382 | < 5.00 | 204 | 960 | 2140 | * 2832 | 1.01 |
| | 10/15/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 897 | 1950 | * 2648 | --- |
| 0498 | 6/9/2015 | ENER | --- | --- | --- | --- | --- | --- | 167 | 646 | 1630 | * 2785 | --- |
| 0688 | 3/12/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 672 | 1740 | * 2393 | --- |
| 0802 | 3/19/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 713 | 1830 | * 2512 | --- |
| | 8/6/2015 | ENER | 246 | 59.5 | 4.90 | 268 | 538 | < 5.00 | 197 | 663 | 1760 | * 2510 | 1.02 |
| 0844 | 2/25/2015 | ENER | 406 | 140 | 4.60 | 550 | 432 | < 5.00 | 435 | 1790 | 3730 | * 4608 | 0.983 |
| 0845 | 2/25/2015 | ENER | 321 | 97.5 | 5.20 | 453 | 451 | < 5.00 | 362 | 1280 | 2890 | * 3770 | 0.988 |
| AW | 10/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 198 | 656 | 1700 | * 2397 | --- |
| CW44 | 7/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 199 | 887 | 2010 | * 2705 | --- |
| Q3 | 3/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 172 | 702 | 1760 | * 2535 | --- |
| | 4/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 172 | 697 | 1720 | * 2409 | --- |
| Q5 | 3/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 177 | 735 | 1830 | * 2491 | --- |
| | 4/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 173 | 777 | 1920 | * 2555 | --- |
| Q7 | 5/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 205 | 949 | 2120 | * 2816 | --- |
| Q8 | 5/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 152 | 604 | 1590 | * 2244 | --- |
| Q11 | 5/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 161 | 646 | 1650 | * 2308 | --- |
| Q13 | 5/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 205 | 938 | 2060 | * 2769 | --- |
| Q14 | 5/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 198 | 893 | 2040 | * 2750 | --- |
| Q15 | 5/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 151 | 608 | 1570 | * 2241 | --- |
| Q18 | 5/7/2015 | ENER | --- | --- | --- | --- | --- | --- | 157 | 648 | 1630 | * 2319 | --- |
| Q19 | 5/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 211 | 1010 | 2190 | * 2872 | --- |
| Q20 | 5/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 211 | 1120 | 2320 | * 3019 | --- |
| Q21 | 5/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 179 | 754 | 1810 | * 2497 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-3 WATER QUALITY ANALYSES FOR THE SUBDIVISION ALLUVIAL WELLS (cont'd)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q22 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 135 | 561 | 1560 | * 2221 | --- |
| Q24 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 186 | 881 | 2090 | * 2780 | --- |
| Q25 | 5/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 166 | 733 | 1760 | * 2399 | --- |
| Q26 | 5/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 148 | 581 | 1520 | * 2198 | --- |
| Q27 | 5/8/2015 | ENER | --- | --- | --- | --- | --- | --- | 147 | 613 | 1540 | * 2178 | --- |
| Q28 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 172 | 824 | 1940 | * 2605 | --- |
| Q42 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 213 | 1060 | 2270 | * 2994 | --- |
| Q43 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 204 | 875 | 2060 | * 2745 | --- |
| Q49 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 1130 | 2410 | * 3076 | --- |
| Q50 | 8/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 214 | 853 | 1920 | * 2536 | --- |
| SUB2 | 5/12/2015 | ENER | 153 | 41.6 | 4.00 | 220 | 411 | < 5.00 | 132 | 481 | 1330 | --- | 1.00 |
| | 10/20/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 541 | 1360 | * 1917 | --- |
| SUB3 | 4/14/2015 | ENER | 164 | 59.0 | 8.60 | 363 | 585 | < 5.00 | 220 | 677 | 1830 | * 2691 | 0.966 |
| | 11/3/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 632 | 1590 | * 2393 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-4 WATER QUALITY ANALYSES FOR THE SUBDIVISION ALLUVIAL WELLS

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0490 | 5/21/2015 | ENER | 7.46 | 0.129 | < 0.0300 | 0.0470 | 4.20 | 0.100 | 0.600 | < 0.0100 | 0.0600 |
| | 10/15/2015 | ENER | --- | 0.0718 | < 0.0300 | 0.0290 | --- | --- | --- | --- | --- |
| 0498 | 6/9/2015 | ENER | --- | 0.205 | < 0.0300 | 0.0520 | 1.80 | --- | --- | --- | --- |
| 0688 | 3/12/2015 | ENER | --- | 0.0444 | < 0.0300 | 0.0070 | --- | --- | --- | --- | --- |
| 0802 | 3/19/2015 | ENER | --- | 0.0985 | < 0.0300 | 0.0310 | --- | --- | --- | --- | --- |
| | 8/6/2015 | ENER | 7.36 | 0.152 | < 0.0300 | 0.0080 | 1.70 | 0.610 | 1.40 | < 0.0100 | 0.0600 |
| 0844 | 2/25/2015 | ENER | 7.30 | 0.0916 | < 0.0300 | 0.0780 | 13.0 | 0.290 | --- | --- | --- |
| 0845 | 2/25/2015 | ENER | 7.35 | 0.0788 | < 0.0300 | 0.0610 | 8.00 | 0.230 | --- | --- | --- |
| AW | 10/23/2015 | ENER | --- | 0.0988 | 0.0600 | 0.0170 | --- | --- | --- | --- | --- |
| CW44 | 7/29/2015 | ENER | --- | 0.248 | < 0.0300 | 0.0400 | 3.30 | --- | --- | --- | --- |
| Q3 | 3/25/2015 | ENER | --- | 0.590 | < 0.0300 | 0.0470 | --- | --- | --- | --- | --- |
| | 4/29/2015 | ENER | --- | 0.455 | < 0.0300 | 0.0420 | --- | --- | --- | --- | --- |
| Q5 | 3/25/2015 | ENER | --- | 0.761 | < 0.0300 | 0.0390 | --- | --- | --- | --- | --- |
| | 4/29/2015 | ENER | --- | 0.685 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| Q7 | 5/7/2015 | ENER | --- | 0.414 | < 0.0300 | 0.0530 | --- | --- | --- | --- | --- |
| Q8 | 5/6/2015 | ENER | --- | 0.563 | < 0.0300 | 0.0360 | --- | --- | --- | --- | --- |
| Q11 | 5/7/2015 | ENER | --- | 0.790 | < 0.0300 | 0.0440 | --- | --- | --- | --- | --- |
| Q13 | 5/7/2015 | ENER | --- | 0.180 | < 0.0300 | 0.0470 | --- | --- | --- | --- | --- |
| Q14 | 5/7/2015 | ENER | --- | 0.685 | < 0.0300 | 0.0540 | --- | --- | --- | --- | --- |
| Q15 | 5/6/2015 | ENER | --- | 0.554 | < 0.0300 | 0.0400 | --- | --- | --- | --- | --- |
| Q18 | 5/7/2015 | ENER | --- | 0.697 | < 0.0300 | 0.0440 | --- | --- | --- | --- | --- |
| Q19 | 5/8/2015 | ENER | --- | 0.469 | < 0.0300 | 0.0680 | --- | --- | --- | --- | --- |
| Q20 | 5/8/2015 | ENER | --- | 0.426 | < 0.0300 | 0.0740 | --- | --- | --- | --- | --- |
| Q21 | 5/8/2015 | ENER | --- | 0.877 | < 0.0300 | 0.0530 | --- | --- | --- | --- | --- |

# TABLE B.4-4 WATER QUALITY ANALYSES FOR THE SUBDIVISION ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Q22 | 5/11/2015 | ENER | --- | 0.488 | < 0.0300 | 0.0460 | --- | --- | --- | --- | --- |
| Q24 | 5/11/2015 | ENER | --- | 0.700 | < 0.0300 | 0.0600 | --- | --- | --- | --- | --- |
| Q25 | 5/8/2015 | ENER | --- | 0.893 | < 0.0300 | 0.0550 | --- | --- | --- | --- | --- |
| Q26 | 5/8/2015 | ENER | --- | 0.241 | < 0.0300 | 0.0350 | --- | --- | --- | --- | --- |
| Q27 | 5/8/2015 | ENER | --- | 0.514 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| Q28 | 5/11/2015 | ENER | --- | 0.894 | < 0.0300 | 0.0630 | --- | --- | --- | --- | --- |
| Q42 | 5/11/2015 | ENER | --- | 0.229 | 0.0500 | 0.0600 | --- | --- | --- | --- | --- |
| Q43 | 5/14/2015 | ENER | --- | 0.156 | 0.0400 | 0.0490 | --- | --- | --- | --- | --- |
| Q49 | 5/11/2015 | ENER | --- | 0.464 | 0.0300 | 0.0740 | --- | --- | --- | --- | --- |
| Q50 | 8/25/2015 | ENER | --- | 0.0371 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| SUB2 | 5/12/2015 | ENER | 7.41 | 0.0293 | < 0.0300 | 0.0150 | 1.20 | -0.0050 | 0.800 | < 0.0100 | 0.0200 |
| | 10/20/2015 | ENER | --- | 0.0299 | < 0.0300 | 0.0180 | --- | --- | --- | --- | --- |
| SUB3 | 4/14/2015 | ENER | 7.24 | 0.0226 | < 0.0300 | 0.0070 | 0.900 | 0.280 | -0.200 | < 0.0100 | 0.0200 |
| | 11/3/2015 | ENER | --- | 0.0121 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0531 | 10/13/2015 | ENER | 227 | 67.7 | 8.00 | 234 | 456 | < 5.00 | 195 | 734 | 1730 | * 2335 | 0.960 |
| 0540 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 194 | 728 | 1790 | * 2469 | --- |
| 0541 | 7/21/2015 | ENER | --- | --- | --- | --- | --- | --- | 168 | 637 | 1570 | * 2179 | --- |
| 0551 | 2/19/2015 | ENER | 201 | 42.6 | 4.90 | 208 | 410 | < 5.00 | 127 | 623 | 1470 | * 2031 | 0.969 |
| 0553 | 2/19/2015 | ENER | 250 | 58.7 | 5.50 | 245 | 346 | < 5.00 | 151 | 826 | 1810 | * 2395 | 1.03 |
| 0554 | 2/19/2015 | ENER | 252 | 58.9 | 5.70 | 224 | 318 | < 5.00 | 159 | 857 | 1800 | * 2344 | 0.986 |
| 0555 | 2/25/2015 | ENER | 278 | 73.0 | 5.00 | 585 | 478 | < 5.00 | 294 | 1430 | 3060 | * 3946 | 0.987 |
| 0556 | 2/25/2015 | ENER | 249 | 69.3 | 4.80 | 514 | 435 | < 5.00 | 211 | 1350 | 2690 | * 3546 | 0.982 |
| 0557 | 2/25/2015 | ENER | 230 | 63.2 | 4.20 | 501 | 425 | < 5.00 | 205 | 1280 | 2570 | * 3422 | 0.975 |
| 0634 | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 199 | 865 | 2000 | * 2644 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 209 | 932 | 2020 | * 2691 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 200 | 887 | 2040 | * 2662 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 204 | 888 | 2000 | * 2665 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 209 | 888 | 1980 | * 2622 | --- |
| 0641 | 6/30/2015 | ENER | 133 | 36.3 | 4.10 | 219 | 400 | < 5.00 | 136 | 444 | 1220 | * 1740 | 0.972 |
| 0642 | 6/30/2015 | ENER | 148 | 39.2 | 4.20 | 221 | 442 | < 5.00 | 132 | 451 | 1280 | * 1806 | 0.991 |
| 0649 | 3/4/2015 | ENER | 283 | 64.6 | 5.10 | 231 | 373 | < 5.00 | 190 | 902 | 1950 | * 2567 | 0.974 |
| 0650 | 3/17/2015 | ENER | 217 | 59.1 | 5.00 | 316 | 350 | < 5.00 | 125 | 909 | 1880 | * 2481 | 1.04 |
| 0654 | 6/9/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 672 | 1640 | * 2281 | --- |
| 0658 | 2/19/2015 | ENER | 198 | 47.2 | 5.50 | 190 | 357 | < 5.00 | 120 | 639 | 1440 | * 1977 | 0.976 |
| 0659 | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 200 | 897 | 2060 | * 2778 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 213 | 945 | 2070 | * 2761 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 204 | 923 | 2090 | * 2753 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 200 | 855 | 1960 | * 2660 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 216 | 934 | 2040 | * 2611 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0681 | 3/26/2015 | ENER | --- | --- | --- | --- | --- | --- | 200 | 763 | 1860 | * 2523 | --- |
| 0684 | 10/13/2015 | ENER | 211 | 68.2 | 6.80 | 224 | 394 | < 5.00 | 176 | 712 | 1650 | * 2224 | 0.987 |
| 0692 | 6/30/2015 | ENER | 189 | 39.5 | 6.50 | 302 | 502 | < 5.00 | 183 | 644 | 1690 | * 2351 | 0.964 |
| 0846 | 3/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 220 | 2450 | 4230 | * 4902 | --- |
| | 6/30/2015 | ENER | 457 | 117 | 6.50 | 665 | 354 | < 5.00 | 210 | 2390 | 4200 | * 4872 | 0.998 |
| | 8/19/2015 | ENER | 518 | 113 | 6.50 | 660 | 349 | < 5.00 | 205 | 2360 | 4230 | * 4736 | 1.05 |
| 0852 | 6/30/2015 | ENER | 133 | 27.0 | 7.00 | 243 | 216 | < 5.00 | 145 | 573 | 1310 | * 1845 | 0.994 |
| 0862 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 192 | 749 | 1850 | * 2539 | --- |
| 0864 | 8/20/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 762 | 1790 | * 2417 | --- |
| 0865 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 199 | 737 | 1840 | * 2541 | --- |
| | 8/20/2015 | ENER | --- | --- | --- | --- | --- | --- | 193 | 743 | 1830 | * 2491 | --- |
| 0866 | 8/20/2015 | ENER | --- | --- | --- | --- | --- | --- | 184 | 742 | 1820 | * 2432 | --- |
| 0868 | 6/30/2015 | ENER | 183 | 39.4 | 5.90 | 302 | 500 | < 5.00 | 163 | 613 | 1590 | * 2235 | 0.998 |
| 0881 | 2/26/2015 | ENER | 276 | 73.6 | 7.80 | 296 | 467 | < 5.00 | 202 | 950 | 1750 | * 2844 | 0.988 |
| 0882 | 2/26/2015 | ENER | 222 | 55.7 | 5.90 | 290 | 471 | < 5.00 | 186 | 743 | 1450 | * 2469 | 0.994 |
| 0884 | 2/26/2015 | ENER | 200 | 60.8 | 6.50 | 252 | 425 | < 5.00 | 173 | 677 | 1420 | * 2289 | 1.00 |
| 0886 | 2/26/2015 | ENER | 250 | 66.8 | 7.10 | 278 | 429 | < 5.00 | 179 | 863 | 1570 | * 2600 | 1.00 |
| 0887 | 3/24/2015 | ENER | --- | --- | --- | --- | --- | --- | 199 | 670 | 1680 | * 2316 | --- |
| 0888 | 3/24/2015 | ENER | --- | --- | --- | --- | --- | --- | 200 | 820 | 1910 | * 2564 | --- |
| 0890 | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 193 | 796 | 1890 | * 2490 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 207 | 844 | 1900 | * 2566 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 195 | 812 | 1870 | * 2500 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 198 | 807 | 1880 | * 2494 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 204 | 821 | 1890 | * 2421 | --- |
| 0893 | 3/12/2015 | ENER | 249 | 67.4 | 12.1 | 294 | 480 | < 5.00 | 204 | 833 | 2030 | * 2687 | 0.998 |

* Signifies Specific Conductivity from HMC

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0899 | 6/9/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 635 | 1600 | * 2148 | --- |
| 0910 | 9/30/2015 | ENER | 149 | 41.9 | 4.50 | 66.3 | 310 | < 5.00 | 38.0 | 350 | 877 | * 1235 | 1.02 |
| 0920 | 3/4/2015 | ENER | 414 | 76.9 | 8.60 | 247 | 241 | < 5.00 | 62.0 | 1520 | 2700 | * 2964 | 1.01 |
| 0935 | 10/13/2015 | ENER | 223 | 65.9 | 7.70 | 225 | 416 | < 5.00 | 184 | 731 | 1690 | * 2302 | 0.969 |
| 0994 | 4/9/2015 | ENER | 192 | 45.8 | 4.20 | 126 | --- | --- | 99.0 | 502 | 1230 | * 1651 | --- |
| | 10/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 118 | 571 | 1290 | * 1882 | --- |
| H1 | 2/20/2015 | ENER | --- | --- | --- | --- | --- | --- | 188 | 787 | 1860 | * 2507 | --- |
| | 3/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 183 | 758 | 1800 | * 2553 | --- |
| | 3/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 183 | 755 | 1830 | * 2470 | --- |
| | 3/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 189 | 772 | 1820 | * 2481 | --- |
| | 3/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 193 | 767 | 1800 | * 2437 | --- |
| | 4/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 186 | 757 | 1810 | * 2420 | --- |
| | 4/10/2015 | ENER | --- | --- | --- | --- | --- | --- | 178 | 739 | 1850 | --- | --- |
| | 4/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 204 | 711 | 1830 | * 2404 | --- |
| | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 188 | 762 | 1800 | * 2406 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 203 | 817 | 1830 | * 2471 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 756 | 1790 | * 2572 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 186 | 728 | 1730 | * 2290 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 182 | 703 | 1720 | * 2330 | --- |
| H2 | 2/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 184 | 763 | 1840 | * 2543 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 185 | 679 | 1630 | * 2270 | --- |
| H2A | 2/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 831 | 1940 | * 2600 | --- |
| | 2/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 185 | 750 | 1810 | * 2493 | --- |
| | 3/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 180 | 723 | 1760 | * 2491 | --- |
| | 3/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 184 | 719 | 1740 | * 2412 | --- |
| | 3/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 728 | 1760 | * 2424 | --- |
| | 3/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 710 | 1720 | * 2353 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H2A | 4/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 184 | 709 | 1710 | * 2324 | --- |
| | 4/10/2015 | ENER | --- | --- | --- | --- | --- | --- | 172 | 673 | 1750 | --- | --- |
| | 4/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 670 | 1710 | * 2297 | --- |
| | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 180 | 682 | 1670 | * 2290 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 192 | 743 | 1720 | * 2339 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 176 | 657 | 1650 | * 2260 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 173 | 626 | 1550 | * 2174 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 181 | 663 | 1620 | * 2227 | --- |
| H6 | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 188 | 657 | 1490 | * 2120 | --- |
| H7 | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 207 | 875 | 1910 | * 2553 | --- |
| H7B | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 794 | 1870 | * 2545 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 189 | 788 | 1870 | * 2541 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 805 | 1890 | * 2502 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 188 | 770 | 1810 | * 2370 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 180 | 784 | 1790 | * 2383 | --- |
| H8 | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 219 | 908 | 1960 | * 2657 | --- |
| H9 | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 209 | 860 | 1860 | * 2528 | --- |
| H10 | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 214 | 858 | 1880 | * 2514 | --- |
| H11 | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 220 | 922 | 2000 | * 2655 | --- |
| H12 | 4/22/2015 | ENER | --- | --- | --- | --- | --- | --- | 194 | 848 | 1970 | * 2649 | --- |
| | 5/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 211 | 939 | 1970 | * 2655 | --- |
| | 6/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 897 | 2070 | * 2662 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 818 | 1870 | * 2484 | --- |
| | 9/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 200 | 842 | 1860 | * 2493 | --- |
| H42A | 10/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 193 | 859 | 1910 | * 2501 | --- |
| H43 | 10/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 179 | 763 | 1830 | * 2403 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H44 | 10/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 229 | 1230 | 2400 | * 3080 | --- |
| H45 | 10/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 218 | 1170 | 2390 | * 3146 | --- |
| H47 | 10/5/2015 | ENER | --- | --- | --- | --- | --- | --- | 204 | 949 | 2040 | * 2678 | --- |
| H48 | 10/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 233 | 1200 | 2330 | * 3037 | --- |
| H50 | 10/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 226 | 1220 | 2360 | * 3002 | --- |
| H51 | 10/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 208 | 1140 | 2190 | * 2860 | --- |
| H52 | 10/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 263 | 1410 | 2460 | * 3124 | --- |
| H54 | 10/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 1240 | 2280 | * 3193 | --- |
| H57 | 10/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 222 | 1430 | 2640 | * 3257 | --- |
| H58 | 10/16/2015 | ENER | --- | --- | --- | --- | --- | --- | 232 | 1340 | 2600 | * 3188 | --- |
| H59 | 10/20/2015 | ENER | --- | --- | --- | --- | --- | --- | 242 | 1160 | 2260 | * 2956 | --- |
| H60 | 10/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 216 | 993 | 2180 | * 2792 | --- |
| H62 | 10/26/2015 | ENER | --- | --- | --- | --- | --- | --- | 218 | 1450 | 2800 | * 3486 | --- |
| H63 | 10/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 217 | 1260 | 2500 | * 3266 | --- |
| H64 | 10/26/2015 | ENER | --- | --- | --- | --- | --- | --- | 207 | 991 | 2100 | * 2845 | --- |
| H66 | 10/27/2015 | ENER | --- | --- | --- | --- | --- | --- | 214 | 889 | 2010 | * 2658 | --- |
| H67 | 10/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 242 | 1390 | 2630 | * 7230 | --- |
| H68 | 10/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 234 | 992 | 2100 | * 2751 | --- |
| H69 | 10/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 220 | 861 | 1950 | * 2855 | --- |
| H72 | 11/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 224 | 1040 | 2180 | * 2906 | --- |
| H100 | 11/4/2015 | ENER | --- | --- | --- | --- | --- | --- | 214 | 1180 | 2260 | * 3106 | --- |
| H101 | 11/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 215 | 1520 | 2820 | * 3388 | --- |
| H102 | 11/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 220 | 1550 | 2920 | * 3425 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H103 | 11/9/2015 | ENER | --- | --- | --- | --- | --- | --- | 212 | 1550 | 2910 | * 3546 | --- |
| H104 | 11/9/2015 | ENER | --- | --- | --- | --- | --- | --- | 171 | 1840 | 3300 | * 3870 | --- |
| M16 | 10/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 225 | 1280 | 2570 | * 3201 | --- |
| MO | 3/12/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1220 | 2550 | * 3164 | --- |
| | 10/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 224 | 1450 | 2660 | * 3291 | --- |
| MR | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1050 | 2310 | * 3007 | --- |
| | 4/14/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1000 | 2280 | * 3000 | --- |
| | 8/7/2015 | ENER | 302 | 78.4 | 8.50 | 306 | 472 | < 5.00 | 207 | 1120 | 2340 | * 3001 | 0.946 |
| MV | 3/24/2015 | ENER | --- | --- | --- | --- | --- | --- | 210 | 924 | 1980 | * 2826 | --- |
| R1 | 5/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 192 | 761 | 1850 | * 2532 | --- |
| R2 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 177 | 751 | 1790 | * 2606 | --- |
| R3 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 177 | 747 | 1790 | * 2593 | --- |
| R4 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 185 | 712 | 1770 | * 2451 | --- |
| R5 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 166 | 643 | 1580 | * 2260 | --- |
| R10 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 193 | 714 | 1760 | * 2477 | --- |
| R11 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 186 | 726 | 1780 | * 2496 | --- |
| R18 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 732 | 1810 | * 2485 | --- |
| R20 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 194 | 722 | 1770 | * 2448 | --- |
| R22 | 5/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 195 | 723 | 1760 | * 2460 | --- |
| R73 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 778 | 1810 | * 2547 | --- |
| R74 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 196 | 775 | 1780 | * 2539 | --- |
| R75 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 759 | 1810 | * 2512 | --- |
| R76 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 756 | 1800 | * 2514 | --- |
| R77 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 708 | 1830 | * 2518 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-5 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R78 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 738 | 1780 | * 2480 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0531 | 10/13/2015 | ENER | 7.50 | 0.102 | < 0.0300 | 0.0250 | 3.30 | 0.220 | --- | --- | --- |
| 0540 | 5/14/2015 | ENER | --- | 0.0515 | 0.0300 | 0.0290 | --- | --- | --- | --- | --- |
| 0541 | 7/21/2015 | ENER | --- | 0.0963 | < 0.0300 | 0.0220 | 4.20 | --- | --- | --- | --- |
| 0551 | 2/19/2015 | ENER | 7.41 | 0.0443 | < 0.0300 | 0.0310 | 3.20 | 7.20 | --- | --- | --- |
| 0553 | 2/19/2015 | ENER | 7.40 | 0.0311 | < 0.0300 | 0.0310 | 4.20 | 8.00 | --- | --- | --- |
| 0554 | 2/19/2015 | ENER | 7.49 | 0.0205 | < 0.0300 | 0.0420 | 2.20 | 1.10 | --- | --- | --- |
| 0555 | 2/25/2015 | ENER | 7.45 | 0.0779 | < 0.0300 | 0.0580 | 6.50 | 0.250 | --- | --- | --- |
| 0556 | 2/25/2015 | ENER | 7.42 | 0.0629 | < 0.0300 | 0.0620 | 5.70 | 0.180 | --- | --- | --- |
| 0557 | 2/25/2015 | ENER | 7.51 | 0.0495 | < 0.0300 | 0.0590 | 7.70 | 0.190 | --- | --- | --- |
| 0634 | 4/22/2015 | ENER | --- | 0.230 | < 0.0300 | 0.0500 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.265 | < 0.0300 | 0.0500 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.235 | < 0.0300 | 0.0460 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.246 | < 0.0300 | 0.0430 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.254 | < 0.0300 | 0.0460 | --- | --- | --- | --- | --- |
| 0641 | 6/30/2015 | ENER | 7.44 | 0.0265 | < 0.0300 | 0.0190 | 1.50 | 5.00 | --- | --- | --- |
| 0642 | 6/30/2015 | ENER | 7.38 | 0.0707 | < 0.0300 | 0.0170 | 1.60 | 1.40 | --- | --- | --- |
| 0649 | 3/4/2015 | ENER | 7.66 | 0.0290 | < 0.0300 | 0.0380 | 3.50 | 0.190 | 0.800 | < 0.0100 | 0.0400 |
| 0650 | 3/17/2015 | ENER | 7.42 | 0.0340 | < 0.0300 | 0.0380 | 5.90 | 0.230 | --- | --- | --- |
| 0654 | 6/9/2015 | ENER | --- | 0.102 | < 0.0300 | 0.0200 | --- | --- | --- | --- | --- |
| 0658 | 2/19/2015 | ENER | 7.49 | 0.0192 | < 0.0300 | 0.0330 | 2.90 | 1.90 | --- | --- | --- |
| 0659 | 4/22/2015 | ENER | --- | 0.267 | < 0.0300 | 0.0600 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.296 | < 0.0300 | 0.0530 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.276 | < 0.0300 | 0.0560 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.269 | < 0.0300 | 0.0490 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.278 | < 0.0300 | 0.0500 | --- | --- | --- | --- | --- |

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0681 | 3/26/2015 | ENER | --- | 0.0511 | < 0.0300 | 0.0150 | --- | --- | --- | --- | --- |
| 0684 | 10/13/2015 | ENER | 7.51 | 0.0895 | < 0.0300 | 0.0300 | 3.60 | 0.220 | --- | --- | --- |
| 0692 | 6/30/2015 | ENER | 7.46 | 0.0578 | < 0.0300 | 0.0940 | 2.10 | 2.30 | --- | --- | --- |
| 0846 | 3/17/2015 | ENER | --- | 0.0551 | < 0.0300 | 0.141 | --- | --- | --- | --- | --- |
| | 6/30/2015 | ENER | 7.50 | 0.0613 | < 0.0300 | < 0.0050 | 28.0 | 5.40 | --- | --- | --- |
| | 8/19/2015 | ENER | 7.30 | 0.0587 | < 0.0300 | 0.100 | 25.0 | 0.590 | 0.700 | < 0.0100 | 0.100 |
| 0852 | 6/30/2015 | ENER | 7.73 | 0.0171 | < 0.0300 | 0.0580 | 3.40 | 11.0 | --- | --- | --- |
| 0862 | 5/14/2015 | ENER | --- | 0.189 | < 0.0300 | 0.0300 | --- | --- | --- | --- | --- |
| 0864 | 8/20/2015 | ENER | --- | 0.255 | < 0.0300 | 0.0300 | --- | --- | --- | --- | --- |
| 0865 | 5/14/2015 | ENER | --- | 0.103 | < 0.0300 | 0.0260 | --- | --- | --- | --- | --- |
| | 8/20/2015 | ENER | --- | 0.0749 | < 0.0300 | 0.0260 | 3.90 | --- | --- | --- | --- |
| 0866 | 8/20/2015 | ENER | --- | 0.608 | < 0.0300 | 0.0380 | 2.80 | --- | --- | --- | --- |
| 0868 | 6/30/2015 | ENER | 7.52 | 0.0660 | < 0.0300 | 0.0450 | 2.10 | 6.10 | --- | --- | --- |
| 0881 | 2/26/2015 | ENER | 7.46 | 0.347 | 0.0300 | 0.140 | 5.10 | 0.230 | --- | --- | --- |
| 0882 | 2/26/2015 | ENER | 7.63 | 0.0681 | < 0.0300 | < 0.0050 | 0.200 | 0.500 | --- | --- | --- |
| 0884 | 2/26/2015 | ENER | 7.48 | 0.0352 | < 0.0300 | 0.0240 | 4.50 | 0.200 | --- | --- | --- |
| 0886 | 2/26/2015 | ENER | 7.51 | 0.229 | 0.0300 | 0.0370 | 4.40 | 0.160 | --- | --- | --- |
| 0887 | 3/24/2015 | ENER | --- | 0.0280 | < 0.0300 | 0.0220 | --- | --- | --- | --- | --- |
| 0888 | 3/24/2015 | ENER | --- | 0.179 | < 0.0300 | 0.0470 | --- | --- | --- | --- | --- |
| 0890 | 4/22/2015 | ENER | --- | 0.177 | < 0.0300 | 0.0440 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.207 | < 0.0300 | 0.0380 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.183 | < 0.0300 | 0.0350 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.192 | 0.0400 | 0.0360 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.202 | < 0.0300 | 0.0370 | --- | --- | --- | --- | --- |
| 0893 | 3/12/2015 | ENER | 7.39 | 0.232 | 0.0400 | 0.0460 | 2.60 | 0.0700 | --- | --- | --- |

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0899 | 6/9/2015 | ENER | --- | 0.117 | --- | 0.0280 | 4.10 | --- | --- | --- | --- |
| 0910 | 9/30/2015 | ENER | 7.60 | 0.0102 | < 0.0300 | 0.0240 | 3.40 | 0.150 | --- | --- | --- |
| 0920 | 3/4/2015 | ENER | 7.71 | 0.230 | < 0.0300 | 0.410 | 11.0 | 0.220 | 0.700 | < 0.0100 | 0.0080 |
| 0935 | 10/13/2015 | ENER | 7.52 | 0.113 | < 0.0300 | 0.0250 | 3.50 | 0.310 | --- | --- | --- |
| 0994 | 4/9/2015 | ENER | 7.42 | 0.0059 | < 0.0300 | 0.0240 | 4.30 | 1.40 | --- | --- | --- |
| | 10/19/2015 | ENER | --- | 0.0070 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| H1 | 2/20/2015 | ENER | --- | 0.178 | < 0.0300 | 0.0370 | --- | --- | --- | --- | --- |
| | 3/4/2015 | ENER | --- | < 0.0003 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| | 3/11/2015 | ENER | --- | 0.163 | < 0.0300 | 0.0380 | --- | --- | --- | --- | --- |
| | 3/18/2015 | ENER | --- | 0.162 | < 0.0300 | 0.0350 | --- | --- | --- | --- | --- |
| | 3/25/2015 | ENER | --- | 0.170 | < 0.0300 | 0.0350 | --- | --- | --- | --- | --- |
| | 4/1/2015 | ENER | --- | 0.193 | < 0.0300 | 0.0370 | --- | --- | --- | --- | --- |
| | 4/10/2015 | ENER | --- | 0.122 | < 0.0300 | 0.0230 | --- | --- | --- | --- | --- |
| | 4/15/2015 | ENER | --- | 0.121 | < 0.0300 | 0.0500 | --- | --- | --- | --- | --- |
| | 4/22/2015 | ENER | --- | 0.165 | < 0.0300 | 0.0390 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.180 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.149 | < 0.0300 | 0.0330 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.132 | < 0.0300 | 0.0240 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.138 | < 0.0300 | 0.0230 | --- | --- | --- | --- | --- |
| H2 | 2/25/2015 | ENER | --- | 0.184 | 0.0400 | 0.0360 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.168 | < 0.0300 | 0.0200 | --- | --- | --- | --- | --- |
| H2A | 2/17/2015 | ENER | --- | 0.195 | < 0.0300 | 0.0430 | --- | --- | --- | --- | --- |
| | 2/25/2015 | ENER | --- | 0.178 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| | 3/4/2015 | ENER | --- | < 0.0003 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| | 3/11/2015 | ENER | --- | 0.117 | < 0.0300 | 0.0260 | --- | --- | --- | --- | --- |
| | 3/18/2015 | ENER | --- | 0.137 | < 0.0300 | 0.0280 | --- | --- | --- | --- | --- |
| | 3/25/2015 | ENER | --- | 0.131 | < 0.0300 | 0.0250 | --- | --- | --- | --- | --- |

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H2A | 4/1/2015 | ENER | --- | 0.149 | < 0.0300 | 0.0260 | --- | --- | --- | --- | --- |
| | 4/10/2015 | ENER | --- | 0.163 | < 0.0300 | 0.0330 | --- | --- | --- | --- | --- |
| | 4/15/2015 | ENER | --- | 0.129 | < 0.0300 | 0.0270 | --- | --- | --- | --- | --- |
| | 4/22/2015 | ENER | --- | 0.123 | < 0.0300 | 0.0240 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.133 | < 0.0300 | 0.0210 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.105 | < 0.0300 | 0.0190 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.0867 | < 0.0300 | 0.0170 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.101 | < 0.0300 | 0.0190 | --- | --- | --- | --- | --- |
| H6 | 5/5/2015 | ENER | --- | 0.0457 | < 0.0300 | 0.0080 | --- | --- | --- | --- | --- |
| H7 | 5/5/2015 | ENER | --- | 0.213 | < 0.0300 | 0.0430 | --- | --- | --- | --- | --- |
| H7B | 4/22/2015 | ENER | --- | 0.180 | < 0.0300 | 0.0480 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.204 | < 0.0300 | 0.0410 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.179 | < 0.0300 | 0.0410 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.166 | < 0.0300 | 0.0330 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.158 | < 0.0300 | 0.0280 | --- | --- | --- | --- | --- |
| H8 | 5/5/2015 | ENER | --- | 0.250 | < 0.0300 | 0.0440 | --- | --- | --- | --- | --- |
| H9 | 5/5/2015 | ENER | --- | 0.192 | < 0.0300 | 0.0370 | --- | --- | --- | --- | --- |
| H10 | 5/5/2015 | ENER | --- | 0.210 | < 0.0300 | 0.0380 | --- | --- | --- | --- | --- |
| H11 | 5/5/2015 | ENER | --- | 0.215 | < 0.0300 | 0.0410 | --- | --- | --- | --- | --- |
| H12 | 4/22/2015 | ENER | --- | 0.213 | < 0.0300 | 0.0570 | --- | --- | --- | --- | --- |
| | 5/5/2015 | ENER | --- | 0.251 | < 0.0300 | 0.0500 | --- | --- | --- | --- | --- |
| | 6/16/2015 | ENER | --- | 0.233 | < 0.0300 | 0.0560 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.203 | < 0.0300 | 0.0370 | --- | --- | --- | --- | --- |
| | 9/29/2015 | ENER | --- | 0.208 | < 0.0300 | 0.0360 | --- | --- | --- | --- | --- |
| H42A | 10/1/2015 | ENER | --- | 0.185 | < 0.0300 | 0.0360 | --- | --- | --- | --- | --- |
| H43 | 10/1/2015 | ENER | --- | 0.143 | 0.0300 | 0.0310 | --- | --- | --- | --- | --- |

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H44 | 10/13/2015 | ENER | --- | 0 | 0.0700 | 0.0790 | --- | --- | --- | --- | --- |
| H45 | 10/5/2015 | ENER | --- | 0.401 | 0.0500 | 0.0610 | --- | --- | --- | --- | --- |
| H47 | 10/5/2015 | ENER | --- | 0.263 | < 0.0300 | 0.0370 | --- | --- | --- | --- | --- |
| H48 | 10/13/2015 | ENER | --- | 0.503 | 0.0300 | 0.0900 | --- | --- | --- | --- | --- |
| H50 | 10/14/2015 | ENER | --- | 0.547 | < 0.0300 | 0.0970 | --- | --- | --- | --- | --- |
| H51 | 10/15/2015 | ENER | --- | 0.235 | < 0.0300 | 0.0680 | --- | --- | --- | --- | --- |
| H52 | 10/13/2015 | ENER | --- | 0.574 | 0.110 | 0.0720 | --- | --- | --- | --- | --- |
| H54 | 10/15/2015 | ENER | --- | 0.280 | < 0.0300 | 0.0950 | --- | --- | --- | --- | --- |
| H57 | 10/16/2015 | ENER | --- | 0.290 | < 0.0300 | 0.0790 | --- | --- | --- | --- | --- |
| H58 | 10/16/2015 | ENER | --- | 0.518 | 0.0500 | 0.0720 | --- | --- | --- | --- | --- |
| H59 | 10/20/2015 | ENER | --- | 0.574 | 0.0900 | 0.0750 | --- | --- | --- | --- | --- |
| H60 | 10/23/2015 | ENER | --- | 0.645 | 0.140 | 0.0610 | --- | --- | --- | --- | --- |
| H62 | 10/26/2015 | ENER | --- | 0.480 | 0.0500 | 0.0620 | --- | --- | --- | --- | --- |
| H63 | 10/23/2015 | ENER | --- | 0.503 | 0.100 | 0.0920 | --- | --- | --- | --- | --- |
| H64 | 10/26/2015 | ENER | --- | 0.461 | 0.0400 | 0.0540 | --- | --- | --- | --- | --- |
| H66 | 10/27/2015 | ENER | --- | 0.525 | 0.100 | 0.0420 | --- | --- | --- | --- | --- |
| H67 | 10/28/2015 | ENER | --- | 0.644 | 0.140 | 0.0590 | --- | --- | --- | --- | --- |
| H68 | 10/28/2015 | ENER | --- | 0.569 | 0.180 | 0.0490 | --- | --- | --- | --- | --- |
| H69 | 10/29/2015 | ENER | --- | 0.285 | 0.0600 | 0.0250 | --- | --- | --- | --- | --- |
| H72 | 11/2/2015 | ENER | --- | 0.654 | 0.170 | 0.0570 | --- | --- | --- | --- | --- |
| H100 | 11/4/2015 | ENER | --- | 0.113 | < 0.0300 | 0.0760 | --- | --- | --- | --- | --- |
| H101 | 11/6/2015 | ENER | --- | 0.251 | < 0.0300 | 0.0910 | --- | --- | --- | --- | --- |
| H102 | 11/6/2015 | ENER | --- | 0.628 | 0.0400 | 0.0630 | --- | --- | --- | --- | --- |

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H103 | 11/9/2015 | ENER | --- | 0.288 | 0.0400 | 0.0690 | --- | --- | --- | --- | --- |
| H104 | 11/9/2015 | ENER | --- | 0.183 | < 0.0300 | 0.245 | --- | --- | --- | --- | --- |
| M16 | 10/1/2015 | ENER | --- | 0.673 | 0.140 | 0.0780 | --- | --- | --- | --- | --- |
| MO | 3/12/2015 | ENER | --- | 0.251 | < 0.0300 | 0.0900 | --- | --- | --- | --- | --- |
| | 10/15/2015 | ENER | --- | 0.267 | < 0.0400 | 0.0650 | 10.00 | --- | --- | --- | --- |
| MR | 3/10/2015 | ENER | --- | 0.385 | 0.0500 | 0.0770 | --- | --- | --- | --- | --- |
| | 4/14/2015 | ENER | --- | 0.410 | 0.0500 | 0.0710 | --- | --- | --- | --- | --- |
| | 8/7/2015 | ENER | 7.48 | 0.434 | 0.0600 | 0.0790 | 5.90 | 0.310 | 2.70 | < 0.0100 | 0.0090 |
| MV | 3/24/2015 | ENER | --- | 0.412 | 0.0400 | 0.0630 | --- | --- | --- | --- | --- |
| R1 | 5/12/2015 | ENER | --- | 0.225 | < 0.0300 | 0.0350 | --- | --- | --- | --- | --- |
| R2 | 5/14/2015 | ENER | --- | 0.520 | < 0.0300 | 0.0530 | --- | --- | --- | --- | --- |
| R3 | 5/14/2015 | ENER | --- | 0.500 | < 0.0300 | 0.0540 | --- | --- | --- | --- | --- |
| R4 | 5/14/2015 | ENER | --- | 0.389 | < 0.0300 | 0.0400 | --- | --- | --- | --- | --- |
| R5 | 5/14/2015 | ENER | --- | 0.160 | < 0.0300 | 0.0600 | --- | --- | --- | --- | --- |
| R10 | 5/14/2015 | ENER | --- | 0.0590 | < 0.0300 | 0.0220 | --- | --- | --- | --- | --- |
| R11 | 5/14/2015 | ENER | --- | 0.424 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| R18 | 5/14/2015 | ENER | --- | 0.127 | < 0.0300 | 0.0240 | --- | --- | --- | --- | --- |
| R20 | 5/14/2015 | ENER | --- | 0.0459 | < 0.0300 | 0.0260 | --- | --- | --- | --- | --- |
| R22 | 5/12/2015 | ENER | --- | 0.0859 | < 0.0300 | 0.0230 | --- | --- | --- | --- | --- |
| R73 | 5/13/2015 | ENER | --- | 0.281 | < 0.0300 | 0.0360 | --- | --- | --- | --- | --- |
| R74 | 5/13/2015 | ENER | --- | 0.290 | < 0.0300 | 0.0460 | --- | --- | --- | --- | --- |
| R75 | 5/13/2015 | ENER | --- | 0.462 | < 0.0300 | 0.0560 | --- | --- | --- | --- | --- |
| R76 | 5/13/2015 | ENER | --- | 0.458 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| R77 | 5/13/2015 | ENER | --- | 0.0493 | < 0.0300 | 0.0290 | --- | --- | --- | --- | --- |

# TABLE B.4-6 WATER QUALITY ANALYSES FOR THE REGIONAL ALLUVIAL WELLS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R78 | 5/13/2015 | ENER | --- | 0.153 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |

# TABLE B.5-1 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0493 | 3/4/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 676 | 1550 | * 2384 | --- |
| | 3/4/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | # 679 | # 1530 | * 2384 | --- |
| | 5/21/2015 | ENER | 12.3 | 2.40 | 1.80 | 531 | 361 | < 5.00 | 128 | 658 | 1540 | * 2368 | 1.02 |
| 0494 | 3/4/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 827 | 1910 | * 2643 | --- |
| | 5/21/2015 | ENER | 224 | 60.9 | 5.90 | 312 | 479 | < 5.00 | 191 | 776 | 1890 | * 2591 | 1.01 |
| 0498 | 6/9/2015 | ENER | --- | --- | --- | --- | --- | --- | 167 | 646 | 1630 | * 2785 | --- |
| 0853 | 7/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 135 | 731 | 1560 | * 2137 | --- |
| 0929 | 7/1/2015 | ENER | 12.3 | 1.50 | 1.20 | 665 | 609 | 14.0 | 166 | 719 | 1800 | * 2804 | 0.987 |
| 0930 | 6/30/2015 | ENER | --- | --- | --- | --- | --- | --- | 353 | 406 | 1250 | * 1672 | --- |
| 0931 | 7/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 111 | 386 | 1030 | * 2222 | --- |
| 0994 | 4/9/2015 | ENER | 192 | 45.8 | 4.20 | 126 | --- | --- | 99.0 | 502 | 1230 | * 1651 | --- |
| | 10/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 118 | 571 | 1290 | * 1882 | --- |
| ACW | 10/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 451 | 626 | 1840 | * 3068 | --- |
| AW | 10/23/2015 | ENER | --- | --- | --- | --- | --- | --- | 198 | 656 | 1700 | * 2397 | --- |
| CE2 | 5/12/2015 | ENER | 393 | 106 | 4.70 | 838 | 622 | < 5.00 | 342 | 2160 | 4240 | * 5167 | 0.999 |
| | 10/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 306 | 1940 | 3520 | * 4357 | --- |
| CE5 | 7/16/2015 | ENER | 427 | 106 | 5.70 | 399 | 600 | < 5.00 | 237 | 1640 | 3210 | * 3861 | 0.935 |
| CE6 | 7/16/2015 | ENER | 264 | 64.8 | 3.90 | 486 | 574 | < 5.00 | 222 | 1350 | 2770 | * 3553 | 0.904 |
| CE7 | 3/26/2015 | ENER | 154 | 72.0 | 7.00 | 3320 | 1880 | < 5.00 | 743 | 5100 | 10000 | * 12330 | 1.00 |
| | 6/11/2015 | ENER | 134 | 68.6 | 6.20 | 3200 | 1910 | < 5.00 | 731 | 5180 | 10100 | * 12320 | 0.948 |
| CE8 | 3/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 65.0 | 745 | 1560 | * 2370 | --- |
| | 8/18/2015 | ENER | 10.00 | 1.30 | 1.000 | 533 | 372 | 7.00 | 65.0 | 765 | 1610 | * 2345 | 0.989 |
| | 9/25/2015 | ENER | 10.2 | 1.40 | 1.000 | 536 | 367 | < 5.00 | 63.0 | 751 | 1590 | * 2415 | 1.02 |
| CE9 | 3/26/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 723 | 1830 | * 2587 | --- |
| | 8/18/2015 | ENER | 234 | 54.5 | 5.70 | 295 | 494 | < 5.00 | 195 | 778 | 1850 | * 2495 | 0.973 |

# Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

# TABLE B.5-1 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CE10 | 7/16/2015 | ENER | 215 | 56.1 | 4.20 | 624 | 548 | < 5.00 | 220 | 1520 | 2970 | * 3878 | 0.906 |
| CE11 | 8/5/2015 | ENER | 387 | 104 | 5.60 | 488 | 571 | < 5.00 | 243 | 1560 | 3120 | * 3735 | 1.01 |
| CE12 | 8/5/2015 | ENER | 422 | 103 | 5.60 | 876 | 707 | < 5.00 | 326 | 2270 | 4500 | * 5336 | 0.994 |
| CE13 | 7/16/2015 | ENER | 459 | 154 | 8.90 | 2560 | 1820 | < 5.00 | 713 | 5250 | 9700 | * 11490 | 0.923 |
| CE14 | 3/31/2015 | ENER | 186 | 42.3 | 3.90 | 251 | 479 | < 5.00 | 123 | 559 | 1450 | * 2047 | 1.03 |
| | 8/27/2015 | ENER | --- | --- | --- | --- | --- | --- | 126 | 620 | 1530 | * 2046 | --- |
| CE15 | 3/31/2015 | ENER | 222 | 54.7 | 4.70 | 300 | 461 | < 5.00 | 169 | 757 | 1800 | * 2463 | 1.02 |
| CW1 | 7/1/2015 | ENER | 11.2 | 1.90 | 1.30 | 533 | 369 | < 5.00 | 95.0 | 757 | 1600 | * 2388 | 0.971 |
| CW2 | 7/1/2015 | ENER | 8.00 | 1.40 | 1.20 | 550 | 449 | < 5.00 | 126 | 629 | 1500 | * 2294 | 1.01 |
| | 8/6/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 624 | 1510 | * 2316 | --- |
| CW3 | 7/1/2015 | ENER | 43.3 | 10.3 | 2.00 | 525 | 362 | < 5.00 | 67.0 | 847 | 1670 | * 2426 | 1.01 |
| CW15 | 6/30/2015 | ENER | --- | --- | --- | --- | --- | --- | 33.0 | 841 | 1580 | * 2302 | --- |
| CW17 | 7/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 226 | 1230 | 2480 | * 3143 | --- |
| CW18 | 3/30/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 492 | 1260 | * 2077 | --- |
| CW24 | 8/6/2015 | ENER | --- | --- | --- | --- | --- | --- | 73.0 | 1770 | 3080 | * 3525 | --- |
| CW28 | 7/1/2015 | ENER | 8.00 | 1.30 | 1.20 | 430 | 334 | 7.00 | 145 | 519 | 1320 | * 7052 | 0.934 |
| CW29 | 3/19/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 712 | 1690 | * 2419 | --- |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | 170 | 723 | 1690 | * 2389 | --- |
| CW31 | 7/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 60.0 | 936 | 1630 | * 2218 | --- |
| CW32 | 7/2/2015 | ENER | --- | --- | --- | --- | --- | --- | 459 | 1470 | 3270 | * 4701 | --- |
| CW33 | 7/1/2015 | ENER | --- | --- | --- | --- | --- | --- | 353 | 2160 | 3820 | * 5215 | --- |
| CW36 | 7/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 67.0 | 941 | 1780 | * 2377 | --- |
| CW37 | 6/30/2015 | ENER | --- | --- | --- | --- | --- | --- | 81.0 | 1070 | 1910 | * 2441 | --- |
| CW40 | 6/30/2015 | ENER | --- | --- | --- | --- | --- | --- | 209 | 716 | 2050 | * 2491 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.5-1 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CW41 | 7/20/2015 | ENER | --- | --- | --- | --- | --- | --- | 119 | 257 | 965 | * 1561 | --- |
| CW42 | 8/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 147 | 593 | 1450 | * 2250 | --- |
| CW43 | 7/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 189 | 1270 | 2530 | * 3165 | --- |
| CW44 | 7/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 199 | 887 | 2010 | * 2705 | --- |
| CW45 | 3/31/2015 | ENER | 177 | 44.5 | 4.80 | 330 | 558 | < 5.00 | 163 | 637 | 1670 | * 2311 | 0.993 |
| | 8/19/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 638 | 1670 | * 2368 | --- |
| CW50 | 3/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 853 | 1670 | * 2253 | --- |
| | 8/18/2015 | ENER | --- | --- | --- | --- | --- | --- | 66.0 | 865 | 1640 | * 2126 | --- |
| CW55 | 7/29/2015 | ENER | 42.0 | 7.00 | 3.40 | 682 | 607 | < 5.00 | 197 | 744 | 1920 | * 2841 | 1.04 |
| CW56 | 2/20/2015 | ENER | 304 | 74.2 | 5.90 | 440 | 368 | < 5.00 | 262 | 1340 | 2700 | * 3516 | 0.978 |
| | 8/27/2015 | ENER | --- | --- | --- | --- | --- | --- | 275 | 1350 | 2640 | * 3317 | --- |
| CW57 | 2/20/2015 | ENER | 171 | 44.6 | 6.30 | 578 | 493 | < 5.00 | 72.0 | 1320 | 2500 | * 3279 | 0.993 |
| | 8/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 70.0 | 1340 | 2470 | * 3183 | --- |
| CW60 | 2/20/2015 | ENER | 355 | 96.8 | 5.90 | 414 | 362 | < 5.00 | 93.0 | 1700 | 2990 | * 3498 | 0.994 |
| | 8/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 97.0 | 1730 | 2940 | * 3535 | --- |
| CW61 | 3/31/2015 | ENER | 367 | 82.4 | 6.40 | 418 | 345 | < 5.00 | 256 | 1620 | 3120 | * 3814 | 0.929 |
| | 8/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 258 | 1610 | 3020 | * 3657 | --- |
| CW62 | 3/31/2015 | ENER | 438 | 98.4 | 6.80 | 524 | 338 | < 5.00 | 237 | 1950 | 3680 | * 4293 | 0.999 |
| | 8/28/2015 | ENER | --- | --- | --- | --- | --- | --- | 242 | 2050 | 3630 | * 4197 | --- |
| CW73 | 8/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 209 | 1090 | 2230 | * 2839 | --- |
| CW74 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 172 | 895 | 2000 | * 2967 | --- |
| CW75 | 5/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 1200 | 2370 | * 3269 | --- |
| CW76 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 157 | 845 | 1880 | * 2823 | --- |
| CW77 | 5/11/2015 | ENER | --- | --- | --- | --- | --- | --- | 168 | 795 | 1870 | * 2779 | --- |
| CW78 | 8/31/2015 | ENER | --- | --- | --- | --- | --- | --- | 138 | 663 | 1570 | --- | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.5-1 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 5/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 192 | 761 | 1850 | * 2532 | --- |
| R2 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 177 | 751 | 1790 | * 2606 | --- |
| R3 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 177 | 747 | 1790 | * 2593 | --- |
| R4 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 185 | 712 | 1770 | * 2451 | --- |
| R5 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 166 | 643 | 1580 | * 2260 | --- |
| R10 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 193 | 714 | 1760 | * 2477 | --- |
| R11 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 186 | 726 | 1780 | * 2496 | --- |
| R18 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 732 | 1810 | * 2485 | --- |
| R20 | 5/14/2015 | ENER | --- | --- | --- | --- | --- | --- | 194 | 722 | 1770 | * 2448 | --- |
| R22 | 5/12/2015 | ENER | --- | --- | --- | --- | --- | --- | 195 | 723 | 1760 | * 2460 | --- |
| R52 | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 195 | 707 | 1850 | * 2573 | --- |
| R65 | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 781 | 1750 | * 2458 | --- |
| R66 | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 767 | 1780 | * 2500 | --- |
| R67 | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 195 | 786 | 1780 | * 2496 | --- |
| R70 | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 782 | 1770 | * 2476 | --- |
| R71 | 5/15/2015 | ENER | --- | --- | --- | --- | --- | --- | 220 | 734 | 2080 | * 2983 | --- |
| R73 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 778 | 1810 | * 2547 | --- |
| R74 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 196 | 775 | 1780 | * 2539 | --- |
| R75 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 191 | 759 | 1810 | * 2512 | --- |
| R76 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 197 | 756 | 1800 | * 2514 | --- |
| R77 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 187 | 708 | 1830 | * 2518 | --- |
| R78 | 5/13/2015 | ENER | --- | --- | --- | --- | --- | --- | 190 | 738 | 1780 | * 2480 | --- |
| WCW | 7/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 170 | 2520 | 3960 | * 5490 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.5-1 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WR25 | 7/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 170 | 1840 | 3290 | * 3749 | --- |
| Y7 | 3/25/2015 | ENER | --- | --- | --- | --- | --- | --- | 182 | 717 | 1780 | * 2626 | --- |
| | 4/29/2015 | ENER | --- | --- | --- | --- | --- | --- | 176 | 738 | 1770 | * 2640 | --- |

* Signifies Specific Conductivity from HMC

# TABLE B.5-2 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0493 | 3/4/2015 | ENER | --- | < 0.0003 | < 0.0300 | 0.117 | --- | --- | --- | --- | --- |
| | 3/4/2015 | ENER | --- | # 0.188 | # < 0.0300 | # 0.117 | --- | --- | --- | --- | --- |
| | 5/21/2015 | ENER | 7.88 | 0.142 | < 0.0300 | 0.110 | 2.20 | -0.0200 | 1.10 | < 0.0100 | 0.0040 |
| 0494 | 3/4/2015 | ENER | --- | < 0.0003 | 0.0500 | < 0.0050 | --- | --- | --- | --- | --- |
| | 5/21/2015 | ENER | 7.42 | 0.140 | 0.0400 | 0.0300 | 2.70 | -0.0200 | 0.0300 | < 0.0100 | 0.0500 |
| 0498 | 6/9/2015 | ENER | --- | 0.205 | < 0.0300 | 0.0520 | 1.80 | --- | --- | --- | --- |
| 0853 | 7/1/2015 | ENER | --- | 0.0837 | < 0.0300 | 0.101 | 1.70 | --- | --- | --- | --- |
| 0929 | 7/1/2015 | ENER | 8.16 | 0.0326 | < 0.0300 | 0.0150 | 0.800 | 0.110 | --- | --- | --- |
| 0930 | 6/30/2015 | ENER | --- | 0.0004 | < 0.0300 | < 0.0050 | < 0.100 | --- | --- | --- | --- |
| 0931 | 7/1/2015 | ENER | --- | 0.0062 | < 0.0300 | < 0.0050 | < 0.100 | --- | --- | --- | --- |
| 0994 | 4/9/2015 | ENER | 7.42 | 0.0059 | < 0.0300 | 0.0240 | 4.30 | 1.40 | --- | --- | --- |
| | 10/19/2015 | ENER | --- | 0.0070 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| ACW | 10/23/2015 | ENER | --- | 0.0080 | < 0.0300 | 0.0060 | --- | --- | --- | --- | --- |
| AW | 10/23/2015 | ENER | --- | 0.0988 | 0.0600 | 0.0170 | --- | --- | --- | --- | --- |
| CE2 | 5/12/2015 | ENER | 7.36 | 8.20 | 4.05 | 0.430 | 4.70 | 0.0900 | -0.100 | < 0.100 | 0.0400 |
| | 10/15/2015 | ENER | --- | 4.80 | 1.09 | 0.480 | --- | --- | --- | --- | --- |
| CE5 | 7/16/2015 | ENER | 7.33 | 4.71 | 2.47 | 0.0970 | 1.90 | 0.100 | --- | --- | --- |
| CE6 | 7/16/2015 | ENER | 7.39 | 4.78 | 3.64 | 0.171 | 2.30 | 0.0800 | --- | --- | --- |
| CE7 | 3/26/2015 | ENER | 7.75 | 23.8 | 30.9 | 0.723 | 19.0 | 0.760 | 0.200 | 0.0200 | 0.400 |
| | 6/11/2015 | ENER | 7.85 | 25.2 | 30.2 | 0.848 | 6.00 | 0.330 | --- | --- | --- |
| CE8 | 3/19/2015 | ENER | --- | 0.0385 | 0.0500 | < 0.0050 | --- | --- | --- | --- | --- |
| | 8/18/2015 | ENER | 8.02 | 0.0397 | 0.0400 | < 0.0050 | < 0.100 | 0.200 | -0.0300 | < 0.0100 | 0 |
| | 9/25/2015 | ENER | 8.25 | 0.0402 | 0.0400 | < 0.0050 | < 0.100 | 0.140 | 1.30 | < 0.0100 | -0.0100 |
| CE9 | 3/26/2015 | ENER | --- | 0.216 | 0.0800 | 0.0100 | --- | --- | --- | --- | --- |
| | 8/18/2015 | ENER | 7.34 | 0.368 | 0.180 | 0.0630 | 1.50 | 0.200 | 0.200 | < 0.0100 | 0.300 |

# Signifies Quality Control Sample

# TABLE B.5-2 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CE10 | 7/16/2015 | ENER | 7.50 | 4.93 | 3.49 | 0.258 | 1.40 | 0.180 | --- | --- | --- |
| CE11 | 8/5/2015 | ENER | 7.34 | 4.91 | 3.13 | 0.224 | 2.30 | 0.630 | --- | --- | --- |
| CE12 | 8/5/2015 | ENER | 7.27 | 6.92 | 5.74 | 1.17 | 2.50 | 0.390 | --- | --- | --- |
| CE13 | 7/16/2015 | ENER | 7.43 | 28.9 | 27.7 | 0.474 | 4.30 | 0.450 | --- | --- | --- |
| CE14 | 3/31/2015 | ENER | 7.56 | 0.0532 | < 0.0300 | 0.0540 | 4.70 | 0.250 | 0.600 | < 0.0100 | 0.0400 |
| | 8/27/2015 | ENER | --- | 0.0565 | < 0.0300 | 0.0790 | --- | --- | --- | --- | --- |
| CE15 | 3/31/2015 | ENER | 7.36 | 0.603 | 0.380 | 0.118 | 2.20 | 0.310 | -0.0700 | < 0.0100 | 0.0200 |
| CW1 | 7/1/2015 | ENER | 7.98 | 0.0552 | < 0.0300 | 0.0640 | 3.90 | 0.200 | --- | --- | --- |
| CW2 | 7/1/2015 | ENER | 8.25 | 0.0355 | < 0.0300 | 0.0560 | 2.20 | 7.30 | --- | --- | --- |
| | 8/6/2015 | ENER | --- | 0.0463 | < 0.0300 | 0.0610 | --- | --- | --- | --- | --- |
| CW3 | 7/1/2015 | ENER | 7.68 | 0.370 | 0.330 | < 0.0050 | < 0.100 | 9.80 | -1.000 | 0.0200 | 0.100 |
| CW15 | 6/30/2015 | ENER | --- | 0.0301 | < 0.0300 | 0.0140 | 1.50 | --- | --- | --- | --- |
| CW17 | 7/1/2015 | ENER | --- | 0.424 | 0.340 | 0.145 | 5.90 | --- | --- | --- | --- |
| CW18 | 3/30/2015 | ENER | --- | 0.0316 | < 0.0300 | 0.0760 | --- | --- | --- | --- | --- |
| CW24 | 8/6/2015 | ENER | --- | 0.130 | < 0.0300 | 0.0520 | 12.0 | --- | --- | --- | --- |
| CW28 | 7/1/2015 | ENER | 8.41 | 0.0237 | < 0.0300 | 0.101 | 1.60 | 0.0400 | --- | --- | --- |
| CW29 | 3/19/2015 | ENER | --- | 0.206 | < 0.0300 | 0.0440 | --- | --- | --- | --- | --- |
| | 8/19/2015 | ENER | --- | 0.186 | < 0.0300 | 0.0510 | 3.30 | --- | --- | --- | --- |
| CW31 | 7/2/2015 | ENER | --- | 0.0121 | < 0.0300 | < 0.0050 | < 0.100 | --- | --- | --- | --- |
| CW32 | 7/2/2015 | ENER | --- | 0.0031 | < 0.0300 | 0.0110 | < 0.100 | --- | --- | --- | --- |
| CW33 | 7/1/2015 | ENER | --- | 0.0202 | 0.0300 | 0.0090 | < 0.100 | --- | --- | --- | --- |
| CW36 | 7/17/2015 | ENER | --- | 0.0062 | < 0.0300 | < 0.0050 | < 0.100 | --- | --- | --- | --- |
| CW37 | 6/30/2015 | ENER | --- | 0.0302 | < 0.0300 | 0.0750 | 6.50 | --- | --- | --- | --- |
| CW40 | 6/30/2015 | ENER | --- | 0.0279 | < 0.0300 | 0.0100 | 1.60 | --- | --- | --- | --- |

# TABLE B.5-2 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CW41 | 7/20/2015 | ENER | --- | 0.0818 | < 0.0300 | 0.0390 | 6.00 | --- | --- | --- | --- |
| CW42 | 8/18/2015 | ENER | --- | 0.246 | < 0.0300 | 0.0300 | 2.40 | --- | --- | --- | --- |
| CW43 | 7/17/2015 | ENER | --- | 0.0548 | < 0.0300 | 0.0440 | 8.00 | --- | --- | --- | --- |
| CW44 | 7/29/2015 | ENER | --- | 0.248 | < 0.0300 | 0.0400 | 3.30 | --- | --- | --- | --- |
| CW45 | 3/31/2015 | ENER | 7.57 | 0.435 | < 0.0300 | 0.0440 | 1.80 | 0.220 | 0.300 | < 0.0100 | 0.0050 |
| | 8/19/2015 | ENER | --- | 0.386 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| CW50 | 3/10/2015 | ENER | --- | 0.0322 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| | 8/18/2015 | ENER | --- | 0.0310 | < 0.0300 | < 0.0050 | < 0.100 | --- | --- | --- | --- |
| CW55 | 7/29/2015 | ENER | 7.71 | 0.0939 | 0.0600 | 0.0120 | 0.100 | 8.90 | --- | --- | --- |
| CW56 | 2/20/2015 | ENER | 7.35 | 3.09 | 2.45 | 0.260 | 6.90 | 1.10 | --- | --- | --- |
| | 8/27/2015 | ENER | --- | 2.40 | 2.20 | 0.222 | --- | --- | --- | --- | --- |
| CW57 | 2/20/2015 | ENER | 7.29 | 0.178 | < 0.0300 | 0.0980 | 11.0 | 3.70 | --- | --- | --- |
| | 8/31/2015 | ENER | --- | 0.162 | < 0.0300 | 0.134 | --- | --- | --- | --- | --- |
| CW60 | 2/20/2015 | ENER | 7.13 | 0.122 | < 0.0300 | 0.136 | 14.0 | 2.20 | --- | --- | --- |
| | 8/31/2015 | ENER | --- | 0.110 | < 0.0300 | 0.215 | --- | --- | --- | --- | --- |
| CW61 | 3/31/2015 | ENER | 7.31 | 3.23 | 3.43 | 0.380 | 14.5 | 0.270 | 1.90 | < 0.0100 | 0.0400 |
| | 8/28/2015 | ENER | --- | 3.38 | 3.62 | 0.464 | --- | --- | --- | --- | --- |
| CW62 | 3/31/2015 | ENER | 7.39 | 3.08 | 2.23 | 0.430 | 12.4 | 0.730 | 1.80 | < 0.0100 | 0.0700 |
| | 8/28/2015 | ENER | --- | 3.10 | 2.37 | 0.436 | --- | --- | --- | --- | --- |
| CW73 | 8/31/2015 | ENER | --- | 0.204 | < 0.0300 | 0.0590 | --- | --- | --- | --- | --- |
| CW74 | 5/14/2015 | ENER | --- | 0.0711 | < 0.0300 | 0.0540 | --- | --- | --- | --- | --- |
| CW75 | 5/12/2015 | ENER | --- | 0.0705 | < 0.0300 | 0.0820 | --- | --- | --- | --- | --- |
| CW76 | 5/11/2015 | ENER | --- | 0.101 | < 0.0300 | 0.0960 | --- | --- | --- | --- | --- |
| CW77 | 5/11/2015 | ENER | --- | 0.148 | < 0.0300 | 0.0800 | --- | --- | --- | --- | --- |
| CW78 | 8/31/2015 | ENER | --- | 0.220 | < 0.0300 | 0.124 | --- | --- | --- | --- | --- |

# TABLE B.5-2 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 5/12/2015 | ENER | --- | 0.225 | < 0.0300 | 0.0350 | --- | --- | --- | --- | --- |
| R2 | 5/14/2015 | ENER | --- | 0.520 | < 0.0300 | 0.0530 | --- | --- | --- | --- | --- |
| R3 | 5/14/2015 | ENER | --- | 0.500 | < 0.0300 | 0.0540 | --- | --- | --- | --- | --- |
| R4 | 5/14/2015 | ENER | --- | 0.389 | < 0.0300 | 0.0400 | --- | --- | --- | --- | --- |
| R5 | 5/14/2015 | ENER | --- | 0.160 | < 0.0300 | 0.0600 | --- | --- | --- | --- | --- |
| R10 | 5/14/2015 | ENER | --- | 0.0590 | < 0.0300 | 0.0220 | --- | --- | --- | --- | --- |
| R11 | 5/14/2015 | ENER | --- | 0.424 | < 0.0300 | 0.0320 | --- | --- | --- | --- | --- |
| R18 | 5/14/2015 | ENER | --- | 0.127 | < 0.0300 | 0.0240 | --- | --- | --- | --- | --- |
| R20 | 5/14/2015 | ENER | --- | 0.0459 | < 0.0300 | 0.0260 | --- | --- | --- | --- | --- |
| R22 | 5/12/2015 | ENER | --- | 0.0859 | < 0.0300 | 0.0230 | --- | --- | --- | --- | --- |
| R52 | 5/15/2015 | ENER | --- | 0.0250 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| R65 | 5/15/2015 | ENER | --- | 0.235 | < 0.0300 | 0.0540 | --- | --- | --- | --- | --- |
| R66 | 5/15/2015 | ENER | --- | 0.302 | < 0.0300 | 0.0380 | --- | --- | --- | --- | --- |
| R67 | 5/15/2015 | ENER | --- | 0.288 | < 0.0300 | 0.0470 | --- | --- | --- | --- | --- |
| R70 | 5/15/2015 | ENER | --- | 0.269 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| R71 | 5/15/2015 | ENER | --- | 0.160 | < 0.0300 | < 0.0050 | --- | --- | --- | --- | --- |
| R73 | 5/13/2015 | ENER | --- | 0.281 | < 0.0300 | 0.0360 | --- | --- | --- | --- | --- |
| R74 | 5/13/2015 | ENER | --- | 0.290 | < 0.0300 | 0.0460 | --- | --- | --- | --- | --- |
| R75 | 5/13/2015 | ENER | --- | 0.462 | < 0.0300 | 0.0560 | --- | --- | --- | --- | --- |
| R76 | 5/13/2015 | ENER | --- | 0.458 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| R77 | 5/13/2015 | ENER | --- | 0.0493 | < 0.0300 | 0.0290 | --- | --- | --- | --- | --- |
| R78 | 5/13/2015 | ENER | --- | 0.153 | < 0.0300 | 0.0450 | --- | --- | --- | --- | --- |
| WCW | 7/29/2015 | ENER | --- | 0.0052 | 0.0300 | < 0.0050 | < 0.100 | --- | --- | --- | --- |

# TABLE B.5-2 WATER QUALITY ANALYSES FOR THE CHINLE AQUIFERS (cont'd.)

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WR25 | 7/29/2015 | ENER | --- | 0.173 | < 0.0300 | 0.108 | 11.1 | --- | --- | --- | --- |
| Y7 | 3/25/2015 | ENER | --- | 0.555 | < 0.0300 | 0.0550 | --- | --- | --- | --- | --- |
| | 4/29/2015 | ENER | --- | 0.448 | < 0.0300 | 0.0700 | --- | --- | --- | --- | --- |

# TABLE B.6-1 WATER QUALITY ANALYSES FOR THE SAN ANDRES AQUIFER

Ca THROUGH ION_BAL

| Sample Point Name | Date | Lab | Ca (mg/l) | Mg (mg/l) | K (mg/l) | Na (mg/l) | HCO3 (mg/l) | CO3 (mg/l) | Cl (mg/l) | SO4 (mg/l) | TDS (mg/l) | Cond(calc.) (micromhos/ | Ion_B (ratio) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 Deepwell | 2/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 234 | 739 | 1970 | * 2743 | --- |
| | 5/1/2015 | ENER | 257 | 73.1 | 13.1 | 280 | --- | --- | 243 | 760 | 1990 | * 2736 | --- |
| | 8/7/2015 | ENER | 242 | 74.8 | 12.5 | 279 | 587 | < 5.00 | 229 | 739 | 1950 | * 3664 | 0.970 |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 788 | 2010 | * 2798 | --- |
| #2 Deepwell | 2/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 234 | 736 | 1950 | * 2739 | --- |
| | 5/1/2015 | ENER | 253 | 71.3 | 12.5 | 252 | --- | --- | 223 | 711 | 1870 | * 2584 | --- |
| | 8/7/2015 | ENER | 226 | 71.1 | 11.4 | 242 | 517 | < 5.00 | 207 | 705 | 1800 | * 2520 | 0.958 |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 733 | 1840 | * 2535 | --- |
| 0532 | 9/30/2015 | ENER | 75.3 | 30.4 | 2.30 | 28.4 | 249 | < 5.00 | 16.0 | 130 | 450 | * 722 | 1.02 |
| 0806R | 10/15/2015 | ENER | 221 | 72.7 | 10.3 | 218 | 441 | < 5.00 | 209 | 674 | 1660 | * 2423 | 0.979 |
| 0928 | 2/9/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2450 | --- |
| | 2/9/2015 | HMC | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2450 | --- |
| 0938 | 10/13/2015 | ENER | 119 | 41.7 | 3.40 | 50.8 | 297 | < 5.00 | 29.0 | 291 | 720 | * 1043 | 0.979 |
| 0943 | 2/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 194 | 734 | 1790 | * 2472 | --- |
| | 4/30/2015 | ENER | 189 | 58.6 | 9.30 | 283 | 444 | < 5.00 | 205 | 746 | 1760 | * 2434 | 0.932 |
| | 8/7/2015 | ENER | 197 | 59.1 | 9.00 | 283 | 428 | < 5.00 | 184 | 741 | 1730 | * 2397 | 0.980 |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 1410 | 2640 | --- | --- |
| | 12/10/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 740 | 1780 | * 2487 | --- |
| 0951 | 6/24/2015 | ENER | 150 | 43.6 | 5.20 | 84.7 | 364 | < 5.00 | 62.0 | 344 | 928 | * 1324 | 0.990 |
| 0951R | 2/17/2015 | ENER | --- | --- | --- | --- | --- | --- | 171 | 582 | 1510 | * 2107 | --- |
| | 4/30/2015 | ENER | 208 | 58.8 | 9.20 | 169 | 426 | < 5.00 | 176 | 590 | 1490 | * 2106 | 0.935 |
| | 8/7/2015 | ENER | 204 | 64.8 | 9.30 | 182 | 414 | < 5.00 | 167 | 579 | 1500 | * 2091 | 0.998 |
| | 8/10/2015 | ENER | 212 | 65.2 | 9.60 | 182 | 418 | < 5.00 | 168 | 582 | 1490 | * 2117 | 1.01 |
| | 10/8/2015 | ENER | --- | --- | --- | --- | --- | --- | --- | 601 | 1520 | * 2113 | --- |
| 0998 | 9/30/2015 | ENER | 92.5 | 31.0 | 2.80 | 38.4 | 256 | < 5.00 | 18.0 | 183 | 541 | * 811 | 1.03 |
| 0999 | 9/30/2015 | ENER | 158 | 44.3 | 3.90 | 80.0 | 294 | < 5.00 | 52.0 | 409 | 951 | * 1328 | 1.01 |

* Signifies Specific Conductivity from HMC

# TABLE B.6-2 WATER QUALITY ANALYSES FOR THE SAN ANDRES AQUIFER

pH THROUGH Th-230

| Sample Point Name | Date | Lab | pH (std. units) | Unat (mg/l) | Mo (mg/l) | Se (mg/l) | NO3 (mg/l) | Ra226 (pCi/l) | Ra228 (pCi/l) | V (mg/l) | Th230 (pCi/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 Deepwell | 2/17/2015 | ENER | --- | 0.0081 | < 0.0300 | 0.0050 | --- | --- | --- | --- | --- |
| | 5/1/2015 | ENER | 7.18 | 0.0082 | < 0.0300 | < 0.0050 | 1.10 | 0.470 | --- | --- | --- |
| | 8/7/2015 | ENER | 7.15 | 0.0069 | < 0.0300 | < 0.0050 | 0.900 | 2.70 | 2.30 | < 0.0100 | 0.0100 |
| | 10/8/2015 | ENER | --- | 0.0070 | < 0.0300 | 0.0060 | --- | --- | --- | --- | --- |
| #2 Deepwell | 2/17/2015 | ENER | --- | 0.0076 | < 0.0300 | 0.0060 | --- | --- | --- | --- | --- |
| | 5/1/2015 | ENER | 7.17 | 0.0124 | < 0.0300 | 0.0070 | 2.00 | 0.260 | --- | --- | --- |
| | 8/7/2015 | ENER | 7.30 | 0.0115 | < 0.0300 | 0.0080 | 2.00 | 0.310 | 1.60 | < 0.0100 | 0.0900 |
| | 10/8/2015 | ENER | --- | 0.0098 | < 0.0300 | 0.0080 | --- | --- | --- | --- | --- |
| 0532 | 9/30/2015 | ENER | 7.67 | 0.0052 | < 0.0300 | 0.0060 | 2.10 | 0.0700 | --- | --- | --- |
| 0806R | 10/15/2015 | ENER | 7.12 | 0.0203 | 0.0300 | 0.0090 | 3.30 | 0.500 | 1.30 | < 0.0100 | 0.200 |
| 0938 | 10/13/2015 | ENER | 7.53 | 0.0087 | < 0.0300 | < 0.0050 | 3.00 | 0.450 | --- | --- | --- |
| 0943 | 2/17/2015 | ENER | --- | 0.0306 | < 0.0300 | 0.0220 | --- | --- | --- | --- | --- |
| | 4/30/2015 | ENER | 7.30 | 0.0307 | < 0.0300 | 0.0190 | 3.60 | 0.330 | -0.200 | < 0.0100 | 0.100 |
| | 8/7/2015 | ENER | 7.38 | 0.0280 | < 0.0300 | 0.0240 | 3.50 | 0.800 | 1.90 | < 0.0100 | 0.0200 |
| | 10/8/2015 | ENER | --- | 0.0798 | < 0.0300 | 0.0730 | --- | --- | --- | --- | --- |
| | 12/10/2015 | ENER | --- | 0.0303 | < 0.0300 | 0.0220 | --- | --- | --- | --- | --- |
| 0951 | 6/24/2015 | ENER | 7.76 | 0.0306 | < 0.0300 | 0.0060 | 4.30 | 0.470 | -1.000 | < 0.0100 | 0.0100 |
| 0951R | 2/17/2015 | ENER | --- | 0.0502 | < 0.0300 | 0.0100 | --- | --- | --- | --- | --- |
| | 4/30/2015 | ENER | 7.25 | 0.0374 | < 0.0300 | 0.0070 | 3.90 | 0.610 | 0.100 | < 0.0100 | 0.0500 |
| | 8/7/2015 | ENER | 7.37 | 0.0312 | < 0.0300 | 0.0080 | 3.70 | 1.30 | 2.10 | < 0.0100 | 0.0006 |
| | 8/10/2015 | ENER | 7.24 | 0.0323 | < 0.0300 | 0.0090 | 4.00 | 0.730 | 2.20 | < 0.0100 | 0.0600 |
| | 10/8/2015 | ENER | --- | 0.0304 | < 0.0300 | 0.0080 | --- | --- | --- | --- | --- |
| 0998 | 9/30/2015 | ENER | 7.66 | 0.0053 | < 0.0300 | 0.0090 | 2.70 | 0.0600 | --- | --- | --- |
| 0999 | 9/30/2015 | ENER | 7.51 | 0.0149 | < 0.0300 | 0.0140 | 3.50 | 0.420 | --- | --- | --- |

# APPENDIX C
# ANNUAL ALARA AUDIT

# ANNUAL ALARA AUDIT REPORT FOR 2015

**Grants Operations**
**Homestake Mining Company**
**P. O. Box 98**
**Grants, New Mexico 87020**

Prepared by:

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Sopris Environmental
1001 Painted Lady Lane
Carbondale, Colorado 81623

**March 7, 2015**

## ABSTRACT

The Annual ALARA Audit for 2015 was conducted by Janet Johnson, PhD, CHP on December 10 and 11, 2015 at the Homestake facility in Grants, New Mexico. Data for the first three quarters of 2015 were reviewed during the audit. Some fourth quarter 2015 data were not available at the time of the audit. The audit was conducted in accordance with Section 2.3.3 of U. S. Nuclear Regulatory Guide 8.31 (RG 8.31) (USNRC, 2002a) and License Condition 42. The areas reviewed included personal monitoring data for the past four years, bioassay data, worker dose reports, training records and training presentations, inspection records, monthly ALARA reports, environmental data, Radiation Work Permits (RWPs), instrument calibrations and records of Standard Operating Procedure (SOP) reviews by the Radiation Safety Administrator (RSA).[1] All records were found in substantial compliance with the RG 8.31 guidance. In most cases, the records were easily available, clear and transparent. The site is well maintained. There were no findings resulting from this ALARA audit.

The auditor had four recommendations for program improvement: (1) perform an audit of the contract laboratory (Energy Laboratories) (holdover from the 2014 ALARA Audit); (2) consider the value of the bioassay program in light of current site conditions; (3) consider limiting the personal monitoring program to individual with a potential for direct gamma radiation exposure rather than monitoring all contractors and site workers; (4) investigate the options for disposal of unneeded sources. Recommendations 1 and 4 are holdovers from the 2014 ALARA Audit.

The Radiation Safety Program at the Homestake facility is well-organized and implemented. As noted in the 2014 ALARA Audit Report, staffing appears to be adequate at this time for the work currently being performed on site. However, as noted in the 2014 ALARA Audit Report, if current monitoring programs are continued in to the future when additional reclamation work is planned and the number of contractors on-site is increased, additional radiation safety staff may be needed.

[1] As defined in the Homestake Radioactive Materials License, the RSA is equivalent to a radiation safety officer (RSO)

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## TABLES

# 1.0 INTRODUCTION

The Annual ALARA Audit (the Audit), required by License Condition 32 of Homestake Mining Company's Grants Uranium Mill facility (NRC Materials License Number SUA-1471), was conducted on December 10 and 11, 2015 at the facility in Grants, New Mexico, by Janet A. Johnson, PhD, CHP in accordance with the provisions of the U. S. Nuclear Regulatory Commission's Regulatory Guide 8.31[2] (NRC, 2002a). Mr. Jesse Toepfer, Radiation Safety Administrator (RSA) for the facility, Mr. Adrian Venable (Radiation Technician), and Mr. William Archuleta (Radiation/Environmental Technician), were present at the Audit opening and close out sessions. In addition, Mr. Michael Schierman and Mr. Chuck Farr, Environmental Restoration Group (outside consultants to Homestake Mining Company), attended the opening meeting to provide support. All five individuals were present or available to assist the auditor during the entire course of the Audit.

## 1.1 Site History

The Homestake Mining Company Grants Uranium Mill facility is located in the Grants Mining District, 5.5 miles northeast of Milan in Cibola County, New Mexico. Milling operations were conducted at the site from 1958 to 1990. The environmental restoration program began in 1977 and is expected to continue until 2022.

The facility consists of the decommissioned mill site, two tailings impoundments and three evaporation ponds. The mill buildings have been decommissioned and disposed of in backfilled trenches on site. Soil cleanup has been mostly completed except for areas near the evaporation impoundments. A radon barrier has been installed on the large tailings pond embankments and an interim cover installed on top of the impoundment. A pilot zeolite treatment facility for impacted groundwater was constructed on top of the large tailings impoundment in 2014 and augmented with additional units in 2015. A reverse osmosis (RO) facility was also constructed at the site to treat groundwater. Additional capacity was also constructed in the RO facility in 2015.

## 1.2 ALARA Audit Requirements

The NRC Regulatory Guide 8.31 requires review of the following data:

- Employee exposure records
- Bioassay results
- Inspection log entries
- Training program activities
- Radiation safety meeting reports
- Radiological survey and sampling data
- Reports on overexposure of workers
- Operating procedures reviewed during the period covered by the audit.

In addition, the ALARA audit includes reviews of the following:

- Trends in personnel exposures, for identifiable categories of workers and types of operation activities

[2] Regulatory Guide 8.31 "Information relevant to ensuring that occupational exposure at uranium mills will be as low as is reasonably achievable"

- Use, maintenance, and inspection of equipment for exposure control
- Recommendations to further reduce personnel exposures.

The qualifications and training of the health physics staff were reviewed during the audit.

## 1.3 2015 Activities

Activities conducted in 2015 included continued groundwater collection and treatment, operation of the reverse osmosis system with additional capacity added, construction and operation of additional zeolite treatment units and general site maintenance. In the past, a mixture of clean water and treated water was used to flush the groundwater through injection wells. The flushing operation was terminated in 2015. Water from the dewatering wells is pumped to either the reverse osmosis (RO) treatment plant for removal of a number of contaminants including uranium or to the zeolite treatment facility for removal of uranium only, depending on the source of the water. A new RO plant will increase the treatment capacity from approximately 300 gallons per minute to 1200 gallons per minute. The zeolite water treatment facility is operated at a rate of approximately 300 gallons per minute. The addition of four new zeolite treatment units will increase the total capacity to 1500 gallons per minute.

## 1.4 Occupational Dose Summary

All workers, with the exception of one office worker, are currently badged. No internal committed effective doses from intake of radionuclides are calculated for workers as there are limited potential airborne radionuclide sources remaining on the site. The maximum occupational radiation deep dose for 2014, as measured by the quarterly Optically Stimulated Luminescent (OSL) badges was 23 mrem based on a fourth quarter 2014 badge for a contractor who was on site for less than one month. That dose was investigated and will be addressed in Section 2.1.3 of this ALARA Audit Report. The maximum 2015 deep dose to a worker for any quarter through the third quarter of 2015 was 2 mrem. Because no internal doses are calculated, the measured deep dose is the total effective dose equivalent (TEDE) for the year. The trends in occupational doses are discussed in Section 2.1.3.

## 1.5 Public Dose Summary

Radon concentrations, direct gamma radiation doses, and air particulate concentrations are measured at the site boundary and at locations representative of the nearest residents. The maximum annual effective dose equivalent to a member of the public is reported in the Semi-Annual Environmental Monitoring Report for the second half of the year. The dose is calculated assuming a residential scenario at 75 percent total occupancy, 200 equivalent days per year indoors and 71 days per year outdoors. The estimated annual dose to the nearest residents in 2014 were 68 mrem/year at HMC-4 and 54 mrem/year at HMC-5. This is slightly lower than the estimated doses for 2013, 83 mrem/year and 69 mrem/year. The dose is calculated by summing the committed effective dose equivalents from inhalation of radionuclides in airborne particulates and inhalation of radon decay products with the direct gamma radiation dose. The concentration of radon decay products at each location is estimated based on the incremental annual average radon gas concentration (background subtracted) assuming an equilibrium factor of 0.2 for site-derived radon. The dose from direct gamma radiation is calculated by subtracting the measured annual background dose from the measured annual dose at each of the nearest resident locations. The doses from inhalation of radionuclides in airborne particulate material are negligible at the nearest residences. The calculated doses are well within the 10 CFR 20.1301(a)(1) public dose limit of 100 mrem per year and the doses from

airborne radionuclides, excluding radon, meet the ALARA constraint limit of 10 mrem per year (10 CFR 20.1101(d)).

Inhalation of radionuclides in airborne particulate matter resulted in calculated doses less than 1 mrem at both locations in 2014. The calculated dose from direct gamma radiation in 2014 was 6 mrem at HMC-4 and 0 mrem at HMC-5. More than 90 percent of the calculated dose to the nearest residents in 2014 was due to potential inhalation of radon decay products. The data for 2015 were incomplete at the time of the audit but will be reported in the first half 2016 Environmental Monitoring Report.

# 2.0 AUDIT RESULTS

The following sections describe the results of the on-site ALARA audit and review of documents.

## 2.1 Routine Operations

Routine operations at the Homestake Mining Company mill site in 2015 involved water treatment and maintenance of treatment systems, construction of new treatment facilities, and environmental monitoring. Bioassay and direct radiation monitoring programs are conducted in accordance with the Homestake Manual of Standard Practices and specific Radiation Work Permits (RWPs).

### 2.1.1 Bioassay Data

Homestake Mining collects urine bioassay samples from all individuals who work on site. Routine samples are collected semi-annually. Bioassay samples mandated by RWPs are collected at the start of the activity and at termination. The samples are submitted to Energy Laboratories, Inc. (ELI) in Casper Wyoming for analysis for uranium. A total of approximately 680 bioassay samples from employees and contractors had been submitted to ELI from January 1 through November 30, 2015. A blank and a spiked sample were submitted with each batch of samples. The samples were accompanied by a standard Chain of Custody form. One designated sample from each batch was spiked to obtain a known concentration of 15 µg/L of uranium. One spike sample submitted in January 2015 showed a concentration outside of the acceptable limits. The discrepancy was resolved with a re-run of the spike. All other spike samples submitted in 2015 showed acceptable accuracy.

*Recommendation (1): While no specific problems with laboratory analysis that would impact the Radiation Safety Program have been identified, Homestake should audit ELI to ensure that samples are being processed and analyzed in accordance with the NRC and Homestake requirements. (This is a holdover from the 2014 ALARA Audit.)*

All urine bioassay samples, with one exception, had reported concentrations below the laboratory reporting limit of 5 µg/L. In October, 2015 one contractor had a uranium bioassay concentration of 5.2 µg/L with a re-analysis result of 5.4 µg/L. The uranium concentration in a repeat bioassay sample, submitted to ELI in November, 2015, was reported as less than 5 µg/L. While Homestake procedures require investigation of any bioassay samples that exceed 15 µg/L, it is prudent to investigate any exceedance of the reporting limit. There are no exposed sources on the site that could result in an intake of uranium sufficient to produce a urine concentration exceeding 5 µg/L. It is likely that the initial elevated uranium concentration was due to contamination of the sample or laboratory anomaly. ELI should be asked to provide the actual measured concentration with the associated uncertainty for the repeat bioassay sample to verify that this does not represent a real intake or existing body burden.

As noted in the 2014 ALARA Audit it is difficult to track bioassay samples to document that all contractors who worked on the site and were potentially exposed to uranium submitted both entry and termination samples. In response to a recommendation in the 2014 ALARA Audit Report, Homestake developed a spreadsheet to track contractor badging, training and urine bioassays. The system represents a significant improvement but tracking contractor bioassays is still not complete since individual workers come and go from the site without necessarily informing the radiation safety staff so that exit bioassays may be obtained.

*Recommendation (2): Consider discontinuing routine urine bioassay for contractors with little or no potential for contact with contaminated materials. Except for the anomalous elevated urine bioassay reported in October, all measurements have been below the reporting limit of 5 µg/L. Initial bioassay samples may be obtained from contractors as a baseline in the event an incident occurs that has the potential for intake of uranium by workers. However, bioassay should remain an option under specific RWPs where the potential for exposure to uranium exists.*

As noted in the 2014 ALARA Audit Report, workers receive annual written notification of direct radiation doses based on personal dosimetry. 10 CFR 19.13 a requires annual notification of workers of the results of any monitoring if the dose exceeds 100 mrem 10 CFR 19.13 b(1). No worker doses exceeded 100 mrem in 2014 or the first three quarters of 2015; therefore, written notification is not mandatory; however it is good practice to inform monitored workers of their badge results. The existing notification form does not include results of bioassay measurements. Workers are notified if the bioassay result exceeds the laboratory reporting limit so it is assumed that no notification indicates no positive bioassay samples. The bioassay results for the one individual exceeded the reporting limit should be reported to the worker perhaps with the annual dose report.

### 2.1.2 Internal Doses

Internal doses are not assessed for Homestake Mining Company workers, other than through bioassay, because there is little potential for inhalation or ingestion of radioactive materials. The airborne particulate sources have been covered. Radon concentrations in the Reverse Osmosis Building and the Mill Office Building are within the range of normal indoor values. The International Commission on Radiological Protection (ICRP) states that occupational doses for inhalation of radon decay products should not be calculated at levels below the national reference levels (for the United States, 4 pCi/L or approximately 0.02 Working Level) (ICRP, 2007). Radon decay product concentrations are not routinely measured in these areas.

### 2.1.3 External Doses

All Homestake Mining Company on-site contractors and employees, except one office worker, have been badged in 2015 using OSL dosimeters from Landauer, Inc. Badges are exchanged quarterly. Contractor badges are stored on a badge board in the work area or a board in the main office. Contractors sign their badges out each day and log them back in at the end of the work shift. A sample of the badge log forms was reviewed. Workers appear to be conscientious about logging badges in and out.

The annual deep doses reported for the previous three years and for the first three quarters of 2014 are summarized in Table 1 below:

Table 1: Annual Deep Doses

| | 2011 | 2012 | 2013 | 2014 | 2015 Q1-Q3 only |
|---|---|---|---|---|---|
| # Badges – Homestake | 7 | 8 | 7 | 7 | 7 |
| # Badges – contractor | 55 | 65 | 62 | 114 | 171 |
| Deep Dose Range (mrem/y) | 3 – 59 | All below detection | Below detection to 4 | Below detection to 23* | Below detection to 5 mrem |
| Mean Deep Dose (mrem/y) | 28.2 | Not applicable | Not applicable | Not applicable | Not applicable |
| Standard Deviation (mrem/y) | 12.4 | Not applicable | Not applicable | Not applicable | Not applicable |

One short-term contractor received a deep dose greater than 5 mrem for the fourth quarter of 2014. The worker was on site for less than one month. His Q4 2014 badge registered a deep dose of 23 mrem; shallow dose of 92 mrem; and a lens dose of 60 mrem. All other worker doses were less than 5 mrem for 2014 and 2015 through Q3. The source of the elevated dose has not been identified. The disparity between the deep dose and the shallow dose indicates possible beta contamination of the badge or placement of the badge near a uranium source. An anomaly in processing the badge by the vendor (Landauer) cannot be discounted as a source of the reported dose. In any case, the deep dose was less than 25% of the maximum allowable dose to a member of the public.

The doses are reported annually to individual workers on a form comparable to the NRC Form 5. Deep doses are reported as Total Effective Dose Equivalent (TEDE). The Committed Effective Dose Equivalent (CEDE) is reported as zero since airborne radionuclide concentrations to which workers may be exposed are not elevated. Skin and lens doses are not reported on the form. A review of the dose reports submitted by the vendor for 2014 and the first three quarters 2015 demonstrated that, with the exception of the one contractor with an elevated deep dose for Q4 2014, there is no significant difference between the deep dose and the skin or lens dose[3].

As noted in the 2014 ALARA Audit Report, the reason for the discrepancy between the 2011 doses and the doses for subsequent years has not been determined. OSL dosimeters were used in 2011. Given the fact that the doses in 2011 were generally less than one percent of the occupational dose limit, and, with one exception, have been less than 5 mrem per year subsequently, there is no discernable trend in worker doses.

*Recommendation 3: Consider discontinuing the routine OSL badge monitoring program for contractors, in particular those on site for relatively short periods of time, except as required by a Radiation Work Permit. There are sufficient historic data to demonstrate that direct radiation*

[3] The 2013 ALARA Audit Report noted a shallow dose of 19 mrem for the first three quarters of 2013 but no comparable deep dose for that individual.)

*doses to workers at the Homestake facility are, in general, consistent with background and in all cases since 2011 have been less than 0.5 % of the maximum allowable annual dose for a worker and less than 25% of the maximum allowable annual dose to a member of the public. The badge program consumes a significant amount of radiation technician time that could be re-directed to other aspects radiation protection. However, the value of the OSL badge program in providing Homestake with documentation that the workers are not receiving radiation doses should be weighed against the required level of technician effort.*

## 2.2 Safety Meetings and Training Programs

Safety meetings are held weekly and are attended by all Homestake staff. With a few exceptions, the 2015 safety meetings were led by Mr. Dan Kump, the Senior Project Engineer. Meeting subjects are not limited to radiation safety but may cover any aspect of occupational or environmental safety. The 2015 safety meeting logs (up to December 3, 2015) were reviewed and found to cover appropriate subjects with attendance adequately documented.

The training records for the radiation safety staff were reviewed. The RSA attended 40-hour Radiation Safety Officer Training in March of 2015; thus is not due for biennial refresher training until May of 2017. The two Radiation Technicians, Mr. Venable and Mr. Archuleta attended 40-hour radiation safety officer training in October, 2014. Certificates are on file in the training records.

Homestake does not at this time transport or offer for transport radioactive materials that exceed the exempt concentration limit for U-nat in equilibrium with its decay products (27 pCi/g) or U-nat without decay products (270 pC/g). Mr. Venable and Mr. Archuleta received documented training in transportation of radioactive materials in 2014. In the event Homestake should need to transport radioactive materials in 2016, Mr. Venable and Mr. Archuleta should receive in-house "function-specific" training. Transportation re-training would be required for the technicians in 2017.

Annual radiation worker training was provided to Homestake employees on December 15, 2014 and on December 11, 2015 by Environmental Restoration Group (ERG). The training material was reviewed and found to comply with the requirements of Reg. Guide 8.31. Contractors receive radiation safety orientation through a video with additional information provided by the Radiation Technician. Contractors and new employees complete a test prior to receiving a dosimeter. The test is reviewed with the individuals in the class. A training log documenting successful completion of the test is maintained. A total of 225 contractors have been trained in 2015 through November. A spreadsheet to track training, dosimeter issuance, and bioassay was devised in 2015 in response to a recommendation in the 2014 ALARA Audit Report. It is still in the development stage but will be a valuable resource when it is fully implemented and maintained up-to-date.

## 2.3 Inspection Reports

The water system is inspected daily. The inspection includes measurement of water levels in Evaporation Ponds 1 and 2 as well as the east and west collection ponds, the spray system, leak detection sumps, and well and tailings embankment conditions, toe sumps, etc. A sample of site inspection forms was reviewed.

The NRC conducted its routine biennial on-site inspection from August 17 to August 21, 2015. The inspection report, dated September 11, 2015, was submitted to Mr. Toepfer. No violations

were identified during the inspection. The NRC inspectors concluded that "the licensee was conducting reclamation activities in accordance with license and regulatory requirements."

## 2.4 Radiological Surveys and Monitoring Data

Radionuclide concentrations in airborne particulate matter are monitored at seven locations around the site, including four locations at the property boundary in the predominant wind directions, two locations at the boundary representing the nearest occupied residences, and one background location. Filters are exchanged weekly and composited quarterly for analysis by ELI for U-nat, Th-230, and Ra-226 as well as vanadium. Environmental radon gas concentrations were monitored using Landauer RadTrak (alpha track) detectors at ten locations on the site or at the site perimeter as well as in the RO Building and the Mill Office Building. Air monitoring data are provided in the monthly ALARA Reports. The data were reviewed. No discernable trends were noted for the last two quarters of 2014 through the third quarter of 2015 for either air particulates or radon. As expected, the highest indoor radon concentrations (RO Building and office) occurred during the fourth quarter of 2014 and the first quarter of 2015 (fall/winter months). The Environmental Monitoring Program is described in detail in the Semi-Annual Environmental Monitoring Reports.

Personal contamination surveys are conducted in accordance with Radiation Work Permits (RWPs) by the radiation safety staff. There is no designated scan out station. The survey meters is located in the radiation technician office. Surveys are conducted using a Ludlum Model 43-5 alpha probe coupled with a Model 12 meter. As noted in the 2014 ALARA Audit Report, the daily scan log (EDF-15) does not define the pass/fail count rate; however, it does include the alpha background count rate. According to Procedure HP-2, the release limit for personal contamination is background. Equipment surveys are conducted using a Ludlum Model 19 microRmeter, a Model 44-9 detector (pancake probe) coupled to a Model 12 meter and a Model 43-5 alpha detector coupled to a Model 12 meter. Wipe tests are not performed unless the measured surface activity exceeds 250 d/m beta or alpha. Monitoring data are included in the documentation for the RWP. A review of the RWPs showed the data to be complete.

## 2.5 Radiation Work Permits

Five Radiation Work Permits (RWPs) were issued to date in 2015 as shown in Table 2. The RWP was revised in late 2014 to a format that includes a description of the work performed, names of personnel performing the work, equipment being used in the work, monitoring requirements (including personnel contamination surveys and equipment release surveys), protective equipment required, and special instructions. The form has an approval signature and date, as well as a signature form for all participants confirming understanding of the requirements. This information was also included in the old format but was difficult to find. The new format is a significant improvement. It would be helpful to add a section on RWPs issued to the Monthly ALARA Report.

Table 2: RWPs issued in 2015

| RWP # | Subject | Issue date | Term. Date | Cont. surveys |
|---|---|---|---|---|
| 1-2015 | Extend overflow pipes | 1-13-15 | 1-14-15 | OK |
| 2-2015 | Rip ad compaction for 1200 gm Zeolite pad | 3-16-15 | 3-23-15 | OK |
| 3-2015 | Remove sludge from west collection pond | 9/16/15 | 10/1/15 | OK |
| 4-2015 | Work on #1 Clarifier | 9/18/15 | 10/1/15 | OK |
| 5-2015 | LTP Repair | 10/26/15 | 11/11/15 | OK |

## 2.6 Radiological Effluent and Environmental Monitoring Data

The Semi-Annual Environmental Reports for the periods July through December 2014 and January through June 2015 were briefly reviewed. No issues with the environmental data were identified.

## 2.7 Instrument Calibration Record

The calibration dates on the instruments in service were checked with the records and on the instrument labels. The instruments identified by radiation safety staff as currently in use and their calibration dates are given in Table 3. All instruments are in current calibration with the calibration records maintained in a three ring binder. Instruments are calibrated annually in accordance with NRC Regulatory Guide 8.30 (NRC, 2002b)

Table 3: Instrument Current Calibration Dates

| Instrument Type | Meter | Probe | Current Calibration Date* |
|---|---|---|---|
| Alpha/beta scaler | 3030 (245268) | Na | 10-22-15 |
| Pancake | Model 12 (145977) | Model 44-9 (151416) | 9/19/15 |
| Alpha | Model 12 (102859) | Model 43-5 (082781) | 9/19/15 |
| MicroRmeter | Model 19 (310400) | Na | 4-25-15 |
| MicroRmeter | Model 19 (82709) | Na | 9/16/15 |
| Alpha/beta scaler | 3030 (210768) | Na | 2/6/15 |
| pancake | 12 (87919) | 44-9 (077534) | 4/25/15 |
| Pancake | 12(227940) | 44-9 (237615) | 4/25/15 |

The instruments are checked for reproducibility daily when in use in accordance with Regulatory Guide 8.30. The Model 19 microRmeters are checked against a Cs-137 source; alpha meters against a Th-230 source; and beta meters, against a Tc-99 source. Two Cs-137 sources are used for the daily checks. Both Cs-137 sources are relatively old. The nominal 4.44 µCi source is 25 years old; the nominal 1.275 µCi source is 35 years old. The activities should be corrected for decay. However the exposure rate check is used just to demonstrate reproducibility from day to day so the activity is not a critical factor.

## 2.8 Review of Standard Operating Procedures

Standard Operating Procedures are contained in the Homestake Manual of Standard Practices Policy guidance Documents and Standard Operating Procedures (Homestake, 2014). A single controlled copy of the document is maintained in the office of the RSA. The RSA reviewed all radiation safety policies and procedures in 2015. The review is documented in the Manual of Standard Practices.

## 2.9 Source Leak Tests

Three sources in use (Th-230, Tc-99, and Cs-137) are leak tested annually. The results of the most recent leak tests conducted on January 15, 2015 showed removable contamination below the minimum detectable activity.

Sources that are not currently in use are stored in a locked source cabinet with "Caution, Radioactive Materials" signage. The exposure rate at the surface of the source cabinet is approximately 200 µR/hr. As noted in the 2014 ALARA Audit Report, the source cabinet contains a large number of sources that are not currently in use. The source inventory was updated in 2015. A total of 48 sources are listed in the inventory. The four sources currently in use, (Th-230 (15,520 d/m), Tc-99 (12,670 d/m), Cs-137 (1.275 µCi as of 10/6/80) and Cs-137 (4.44 µCi as of 10/26/90)), are also stored in the source cabinet.

*Recommendation (4): Investigate the options for disposal of the unneeded sources. The sources are currently secured and do not represent a significant radiation hazard; however, disposal of the sources is advisable as an ALARA action. Several of the sources are not identified by nuclide or activity. Some assessment of these sources may be necessary before disposal options can be determined and implemented.*

## 2.10 Review of Radiation Protection Data and Exposure Control

Radiation protection data, including personal dosimetry, bioassay results, RWPs, indicated that the program is protective of worker radiation health. No deficiencies were found. The results of the bioassay and personal dosimetry monitoring are described in Sections 2.1.1 and 2.1.3, respectively.

Radon concentrations, measured in two occupied or potentially occupied locations on the site using Landauer alpha track detectors, are within the range of general indoor values, i.e. approximately 2 to 5 pCi/L. Radon concentrations are measured in two locations in the RO Building. The average value for the two detectors is reported in the Monthly ALARA Reports. Concentrations are measured in one location in the HMC Off. The average concentrations for five quarters for both locations was less than the EPA guideline for residences. Ventilation in the RO Building appears to be operating properly to control radon concentrations. The 2014 Q3 and Q4 radon concentrations, as well as the 2015 Q1, Q2, and Q3 concentrations are given in Table 4.

Table 4: Radon Concentrations for Monitored Indoor Locations

| Source – Monthly ALARA Reports | HMC office (pCi/L) | RO Plant (pCi/L |
|---|---|---|
| November 2014 Q3 | 1.30 | 4.15 |
| January – 2014Q4 | 2.40 | 4.35 |
| April – 2015 Q1 | 3.0 | 5.25 |
| July – 2015 Q2 | 1.30 | 0.75 |
| October – 215 Q3 | 1.5 | 1.1 |
| *Average for five quarters* | *1.9* | *3.1* |

## 2.11 Unusual Events

There were no unusual events reported in 2014. There were no overexposures.

## 2.12 Review of 2014 Audit Findings and Recommendation

There were no findings from the 2014 ALARA Audit. Seven recommendations were included in the Audit Report as follows:

*(1) Perform an audit of the contract laboratory (Energy Laboratories).*

This recommendation is carried over to the 2015 ALARA Audit

*(2) Devise and implement a spread sheet to track individual bioassays showing the dates of entry, exit, and routine bioassay samples.*

The radiation safety staff has devised a spreadsheet. It is still in the process of development and implementation.

*(3) Specify in the bioassay procedure that routine bioassay samples should be collected at least 36 hours after the last potential exposure.*

The 2015 Audit Report recommends dropping the routine bioassay program; however, maintaining the option for specific Radiation Work Permits

*(4) Include a line item in the annual dose report or a separate statement for bioassay results (nominally all less than the reporting limit).*

The 2014 TEDE reporting included the following statement: "Note: for 2014 no personnel bioassay (urine) sample analyses from the HMC Grants Reclamation Project resulted in a uranium concentration of greater than 5.0 µg/L. Regulatory Guide 8.22 – BIOASSAY AT URANIUM MILLS notes at the minimum "Predetermined Action Level" that no action is recommended for urinary uranium results of less than 15 µg/L." However In 2015 one contractor had a bioassay result exceeding 5 µg/L. The 2015 TEDE report could include a statement such as: "Your bioassay results for 2015 were all less than the laboratory reporting limit of 5 µg/L and the 15 µg/L action level. Regulatory Guide 8.22 – BIOASSAY AT URANIUM MILLS notes at the minimum "Predetermined Action Level" that no action is recommended for urinary uranium results of less than 15 µg/L.". In rare cases where a bioassay result exceeds the reporting limit, the report should include that information along with subsequent bioassay results.

As noted above, the 2015 Audit Report recommends dropping the routine bioassay program;

*(5) Include a response form with a self-addressed envelope with the annual dose reports for badged contractors to document receipt of the report by the worker.*

The 2015 Audit Report recommends dropping the routine badge program with the option of issuing badges for specific Radiation Work Permits.

*(6) Track training records with badge lists on a spread sheet.*

The spreadsheet has been devised and is in the process of implementation.

*(7) Conduct a physical inventory of sources, update the source list, decay correct the Cs-137 source activities, and dispose of all unnecessary sources.*

The source inventory was conducted in 2015 and a revised list prepared. The Cs-137 sources will be decay corrected. The 2015 ALARA Audit recommends investigating the options for disposal of unneeded sources.

# 3.0 SUMMARY OF AUDIT

## 3.1 Findings

There were no Findings from this ALARA Audit. The ALARA program at the Homestake facility complies with license conditions, regulatory requirements and the guidance provided by US NRC Regulatory Guide 8.31 (NRC, 2002a). Regulatory Guide 8.31 requires the ALARA Audit to review of trends in personnel exposure. Worker doses are very low and have been consistent for the last four years. Therefore there are no trends. Public doses were slightly lower in 2014 than in 2013. However, this does not constitute a trend.

## 3.2 Summary of Recommendations

The auditor had four recommendations for program improvement imbedded in the sections of this report to which they pertain. In summary, the recommendations are as follows:

*Recommendation (1) Perform an audit of the contract laboratory (Energy Laboratories) held over from the 2014 ALARA Audit.[Section 2.1.1]*

*Recommendation (2): Consider discontinuing routine urine bioassay for contractors with little or no potential for contact with contaminated materials. [Section 2.1.1]*

*Recommendation (3): Consider discontinuing the routine OSL badge monitoring program for contractors, in particular, those on site for relatively short periods of time, except as required by a Radiation Work Permit. [Section 2.1.3]*

*Recommendation (4): Investigate the options for disposal of unneeded sources. [Section 2.9]*

## 3.3 Significant Improvements in 2015

Improvements in the clarity of the record keeping, instituted in 2014 were continued through 2015. The improvements to the RWP format and the monthly ALARA Reports have simplified the review process and continue to be "user friendly". The spreadsheet devised to track badging, training and bioassay is a positive step that will allow easier tracking elements of the occupational radiation protection program when fully implemented and continually updated.

The radiation protection program at the Homestake facility continues to operate at a high level of competence. The recommendations contained in this audit report are intended to improve an already well-designed and implemented radiation protection program.

# 4.0 REFERENCES

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# APPENDIX D

# INSPECTION OF TAILINGS PILES AND PONDS

Alan Kuhn Associates LLC 13212 Manitoba Dr. NE, Albuquerque, NM 87111 505 350 9188

February 9, 2016

File No.: HMC2015

Mr. Jesse Toepfer
Homestake Mining Company of California
P.O. Box 98
Grants, NM 87020

**SUBJECT: REPORT OF 2015 ANNUAL INSPECTION OF TAILING IMPOUNDMENTS AND PONDS, HOMESTAKE GRANTS PROJECT, GRANTS, NEW MEXICO**

Dear Mr. Toepfer:

On October 22, 2015 the undersigned performed the annual visual inspection of the tailing impoundments and evaporation ponds at the Homestake Grants Project located at Grants, New Mexico. As the Responsible Engineer for these impoundments, I am required to annually inspect the stability and functionality of the impoundments.

Subsequent to my visual inspection, I reviewed additional information including:

- Impoundment piezometer readings taken by Homestake personnel during 2015 and tabulated at various times through the year,
- Summary of tailing collection well and tailing drainage sump collection rates through 2015,
- Map and table of tailing impoundment phreatic levels most recently measured in 2015, provided by Hydro Engineering on February 2-3, 2015,
- The settlement monument survey performed by Souder Miller dated 11/30/2015,
- Sump discharges and LTP reinjection rates recorded by Homestake during 2015,
- Leak detection monitoring records for evaporation ponds #2 and #3,
- Pond level measurements by Homestake through 2015.

This report addresses the observations and findings of my site inspection as well as assessment of the additional information listed above.

## OBSERVATIONS

The undersigned performed visual observations of the tops and outslopes of both tailing impoundments and of the dikes, slopes, and liners of the evaporation ponds. The weather was partly cloudy and calm with temperatures in the 40's. Heavy rain over the previous two days left the ground surface wet in low-lying locations.

Large Tailing Impoundment (LTP)

Overall, the surface of the LTP was in good condition. Unusually high rainfall this year has produced substantial increase in brush (primarily Russian thistle) on the LTP slopes.

The riprap cover on the outslopes is intact and in generally good condition. In response to heavy rain in early autumn 2015, a washout of cover soil under the riprap occurred near the top of the south outslope near well #T41 (see Photos #1-3), but was subsequently repaired. This washout started near the toe of the top-cover perimeter berm and extended about 25 feet downslope at a depth of 2-3 feet and up to five feet wide. It was similar to washouts that developed in 2013 and were repaired in 2014. It was identified by Homestake personnel who brought it to my attention. Homestake filled this washout using Controlled Low Strength Materials (CLSM), otherwise known as flowable fill, which Homestake used successfully in 2014 in remediating cover washouts that occurred during 2013.

During 2015, Homestake constructed a second zeolite treatment system near the southeast corner of the LTP for treatment of contaminated ground water. At the time of my inspection, the zeolite cells had been constructed and lined and were being filled with zeolite. This new zeolite facility appears to be stable, and there was no visible indication of negative impact of this facility on the stability of the LTP. As part of the zeolite facility, a pipe corridor was constructed on an adjacent portion of the south outslope of the LTP, consisting of an HDPE membrane laid over a bedding layer on the outslope riprap and a parallel set of HDPE pipes to convey water to and from the zeolite cells (Photo #4).

Water injection into the LTP, part of the ground water restoration program, was discontinued in mid-2015. Until then, water was injected at an average rate of 156 gpm. No visible effects of injection on the LTP stability were observed.

The sumps along the toe of the east end of the north outslope of the LTP have continued to collect the toe seepage that previously had emerged at the ground surface, leaving only wet soil. The seepage is related to the clean water injection program to flush contaminants from the tailings and is not affecting the stability of the LTP. At the time of this site visit, the ground surface was wet with puddles from recent heavy rains.

The slope stability analysis of the LTP updated in 2010 is still valid for 2015; the stability parameters have not changed negatively during 2015 and are expected to gradually improve even more now that the flushing program has ended and as the LTP phreatic surface declines. The static and pseudo-static factors of safety remain well above the design minimum values of 1.5 and 1.0, respectively.

Small Tailing Impoundment/ Evaporation Pond #1 (EP1)

The small impoundment (location of evaporation pond #1, or EP1) is in generally good condition. The slump in the subgrade fill of the south inslope, under the pond liner along approximately 200 feet of the pond westward from the southeast corner, has not visibly changed from 2013 and the liner remains intact. Evidently due to wave action, the subgrade fill under the liner has slumped downward and pond-ward, forming an irregular

step or bench about 1-1.5 feet high about 3-4 feet below the crest of the slope. The function of the liner has not been compromised by this condition.

HDPE drain pipes and the HDPE-liner runoff discharge chute on the south end of the small tailings pile remain in good condition and are functioning as intended and effectively discharging runoff.

On 10/22/15, EP1 pond water level was 5.4 feet below crest elevation, 3.4 feet more than the required minimum freeboard of 2.0 feet. This freeboard corresponds with a pond water depth of 9.6 feet. The highest pond level on 8/3/2015 was 12.65 feet with freeboard of 2.35 feet, so more than the minimum required freeboard was maintained throughout the year.

At the time of my inspection, the turbo-misters were being shut down for the remainder of the year. The wave dissipater booms were not deployed.

Homestake performed earthwork during early 2015 to add cover soil to the EP1 outslopes and repair erosional rills. Subsequently, heavy monsoon rains and heavy rains in October caused above-normal erosion on the EP1 outslopes. On the south, southeast, and east outslopes of EP1, rills were up to 6-12 inches deep. Blading had not yet been completed at the time of my inspection because of continuing rainy weather.

Evaporation pond #2 (EP2)

EP2 liner and outslopes are in good condition. The gravel cover on the north and south outslopes is intact and the slopes are free of major rills.

On 10/22/15, the pond water depth was 16.13 feet, 6.87 feet below maximum pond level, and the freeboard was 8.87 feet. At the highest pond level on 3/2/2015, the water depth was 22.58 feet and the freeboard was 2.42 feet. Evaporation sprays were not operating on the date on my inspection.

Evaporation pond #3 (EP3)

EP3 is functioning in accordance with design and the operating plan. During the latter months of 2015, water was transferred to EP3 from EP1 to free up more capacity in EP1 and EP2 for storage during the winter months. By 10/22/15, water transfer had been completed for the year. On 2/16/2015 the maximum pond water depth of the year in cell A was 7.85 feet, giving a freeboard of 5.55 feet. Maximum cell B pond level was 8.45 feet on 10/26/2015, giving a freeboard of 4.95 feet. No excessive leakage was measured since liner repairs were completed in 2014.

The pond outslopes are in good condition with rills up to 3 inches on the north outslope and up to 6 inches in a few locations on other outslopes. There is no visible indication of slope deformation or leakage through the lining system.

## RECORDS REVIEW

### LTP Drainage

HMC's recorded injection and drainage/ withdrawal data for the LTP on a weekly basis. Based on Hydro Engineering reports, the average injection rate for the first half of the year was 156 gpm (highest monthly average was 244 gpm, lowest was 46 gpm). Injection of water into the LTP ceased in mid-2015. The dewatering well system average pumping rate was 16.88 gpm and the toe drains and sumps of the LTP were collecting at an average rate of 19.9 gpm for 2015.

### EP2 and EP3 Leak Detection Systems

During 2015, Homestake obtained and recorded weekly measurements of leakage through the primary liners collected in sumps of the leak detection and recovery system (LDRS) in Evaporation Pond #2 (EP2) and Evaporation Pond #3 (EP3) in accordance with DP 200. Gallons of water removed through the collection sumps each week are recorded, and these records are maintained on site.

For EP2, these records show that the highest leakage in the primary liner occurred in zone 2, as it was in 2014, but at a much lower rate than in 2014. Leakage in zone 2 was sporadic through August, then ceased. Leakage in the other zones was well below the action levels, and leakage rates did not reach levels requiring investigation and development of an action plan per DP 200. HMC is operating the pumps in the collection sumps at rates that are intended to limit the average head across the bottom liner to less than 1.0 feet as required by DP 200 and 40 CFR 264.222.

In EP3, only minor primary liner leakage was observed in cell A. Cell B had sporadic leakage in zones B-1 and B-3, similar to that observed in 2014. However, as a result of repairs performed in 2014, Zone B1 and B3 leakage rates have dropped and were within collection capabilities of the LDRS. Primary liner leakage in the other zones has been intermittent and minor through 2015.

### Piezometer and Settlement Monitoring

The LTP flushing program continued during the first half of 2015. Injection activity during 2015 was concentrated on the sand dikes of both cells of the LTP, rather than in the slimes as in 2014. In 2014 increased injection rates had resulted in a general increase in phreatic surface; that trend has stopped after injection ceased.

Water levels in piezometers CN1 on the north outslope and CS1 on the south slope of the LTP have both decreased in 2015, especially since injection ceased. CN1 was down 2.57 feet since late 2014. CS1 on the south outslope is down 4.53 feet since late 2014. At the end of 2015, water level in piezometer CN1 was more than five feet below the top of cover, and in CS1 the water level was also more than five feet below top of cover. Elsewhere, the phreatic levels generally decreased from 2014 levels by up to 10.96 feet (in CN2), but there were some increases as the result of early-2015 injection; the level in NE9 increased by 26.1 feet.

The settlement-point survey was performed on 11/6/2015 by Souder Miller Associates and submitted to HMC on 11/30/2015. Survey data were reported for 45 points; three points became lost or damaged during 2015. There were no measured elevation increases; all points had measureable and meaningful settlements between 0.06 feet and 0.25 feet. The largest settlements (> 0.20 feet) occurred along the south crest and in the southwest quadrant of the LTP. The survey data display trends in settlement indicative of consolidation and dewatering of the tailings that were expected after conclusion of the water injection phase of the flushing program.

## CONCLUSIONS AND RECOMMENDATIONS

The tailing impoundments and the three evaporation ponds are in generally good condition and are being maintained within the operating limits of the NRC license and NMED permit and the respective facility designs. Recent and ongoing rill management and grade control are important in maintaining the erosional stability of the small tailing impoundment, the evaporation ponds, and the interim cover of the LTP.

The piezometers in the north and south slopes of the LTP should continue to be measured on a quarterly basis until all of them indicate declines in the phreatic surface throughout the LTP. This should occur during 2016.

The slump along the south inslope of EP1 should be protected against further displacement to protect the liner. In its present condition, the EP1 liner continues to be serviceable. Site staff should note any changes in the slump and the condition of the liner at that location. If any tears appear in the liner, repairs should be made immediately.

Outslopes of the LTP should continue to be observed by site staff at least weekly for signs of water emerging from the slope, especially near the toe, and for visible evidence of slumps or other displacements in the slope surface. The undersigned should be notified immediately if slope seepage, surface slumps, or other deformations in the slopes are observed.

Repairs to the LTP slopes, completed in 2014 and 2015 using Controlled Low Strength Materials (CLSM), or what is otherwise known as flowable fill, have been successful in remediating cover washouts. Until the final cover and erosion protection are applied to the top of the LTP, additional washouts on the outslopes are possible. Site staff should continue to be vigilant and to be ready to respond promptly to future washouts.

Until the final top cover is constructed, the interim cover should be graded toward each HDPE drain so that no low spots remain between the pipe collars along the perimeter of the cover.

## LIMITATIONS

The recommendations contained in this report are based on the undersigned's field visit, evaluation of information generated by others and obtained from Homestake, and his understanding of the inspected facilities. If any conditions are encountered at this site which are significantly different than those described in this report, the undersigned

should be immediately notified so that he may make any necessary revisions to findings or recommendations contained in this report.

This report was prepared in accordance with generally accepted standards of practice at the time the report was written. No warranty, express or implied, is made. It is the Client's responsibility to see that all parties to the project are made aware of this report in its entirety. The information contained in this report should be used at the Owner's option and risk.

If you have any questions or need additional information, please contact me.

Respectfully submitted,

Alan K. Kuhn, Ph.D., P.E., D.GE
Consultant and Responsible Engineer

Photo #1 Area of LTP south outslope washout before backfilling

Photo #2 Top of washout on south outslope of the LTP before backfilling

Photo #3 South outslope cover washout viewed down slope, before backfilling

Photo #4 – Pipe corridor on LTP south outslope for transfer of water to/from the zeolite cells.

# APPENDIX E

# GRANTS RECLAMATION PROJECT
# LAND USE REVIEW / SURVEY

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## GRANTS RECLAMATION PROJECT
## LAND USE REVIEW / SURVEY

## APPENDIX E



### FIGURES



### TABLES

# Grants Reclamation Project

## Land Use Review / Survey

***Annual Report No. 13 - CY2014***

## 1.0 Background

As part of Amendment 34 to the Grants Reclamation Project Radioactive Materials License – SUA-1471-Docket 40-8903 (approved June 19, 2002), License Condition (LC) 42 was amended to require submittal of a land use survey with the License annual report to NRC. This report is the fourteenth annual land use review / survey pursuant to LC 42.

The general focus of the land use survey is to document and summarize the current land uses and any identified changes to land use in proximity to the Grants Reclamation Project. In particular, land use activities for those areas proximal to the tailings pile areas undergoing reclamation and closure and immediate surrounding areas where ongoing ground-water restoration continues to be reviewed.

## 2.0 2015 – Land Use – Homestake Properties

Homestake Mining Company of California (HMC) owns and controls a sizeable land area in and around the Grants Reclamation project. Over the last number of years, additional lands have been acquired as opportunity has arisen and acquisition of such lands are deemed appropriate in relation to ongoing ground-water remediation and restoration activities and final reclamation / closure of the site.

Much of the HMC lands held in the area that are not in immediate proximity to the tailings pile complex have been, and are continuing to be, utilized for livestock grazing on a lessor/lessee tenant arrangement. Much of the current land area within the immediate Site Boundary area containing the evaporation ponds, RO plant and both tailings pile areas and office / shop compound have been excluded from livestock grazing and other land use except those directly related to the ongoing ground-water restoration activities. These areas have been livestock fenced to exclude grazing; certain small areas in the southern and western portions of land within the Site Boundary are, however, seasonally utilized for livestock grazing.

Several small lot / small acreage parcels [e.g. residential lot(s)] held by HMC in the general area of the reclamation site are idle and are essentially not in use

except in certain instances where fresh water injection and water collection is underway as part of the ongoing groundwater restoration program or are under agricultural use on selected lot(s). For example, Block 1 Lot 5 and Block 2 Lot 2 in Murray Acres were planted and irrigated in 2008 through 2015.

The other significant land use activity situated on HMC-held lands in the area includes land treatment / crop irrigation utilized for crop production. Water used for irrigation is an integral part of the ongoing ground-water restoration and cleanup program for the project. Prior to 2002, HMC had 270 acres of land under irrigation consisting of flood irrigation area comprising 120 acres and a center pivot spray irrigation area comprising 150 acres. During 2002, an additional center pivot irrigation system was commissioned that comprises 60 acres. In 2003, an additional 24 acres of flood irrigation was added to the irrigation system in Section 33. In 2005, the 60 acre center pivot irrigation system was expanded by 40 acres to a total of 100 acres.

For 2013, 2014 and 2015, HMC lands were not crop irrigated except the two lots in Murray acres (see project location Figure 2.1-1 in report Section 2.1 of this annual report for location of the four areas available for irrigation activity).

## 3.0 2015 – Land Use – Pleasant Valley Estates, Murray Acres, Broadview Acres, Felice Acres and Valle Verde Residential Subdivisions

Aside from the land uses on HMC land in the Grants Reclamation Project area described in the previous section above, the other major land use immediately proximal to the Site consists of residential development located in the Pleasant Valley Estates, Murray Acres, Broadview Acres and Felice Acres Residential subdivisions. By way of background, HMC provided these subdivision areas with a potable water supply system as an extension of the Village of Milan water supply in the mid-1980's. The Village of Milan water supply extension to these areas was provided at that time to address a concern over the quality of groundwater used for domestic purposes in these adjacent subdivision areas.

An assessment of current land use in these four subdivision areas was undertaken in early 2016 to provide an annual review of the present uses, occupancy and status for the various lots within these subdivisions. Over the years, permanent residential homes, modular homes and mobile homes have been established in the subdivision areas, and immediate adjacent areas, as would typify a rural residential neighborhood. A number of lots remain vacant, or are utilized for uses such as horse barns, corrals, equipment storage, etc. In some cases, dwellings are present on several lots throughout the subdivisions but are currently vacant or have been permanently abandoned and in various states of disrepair.

This year, the annual review also included an assessment of the residential areas adjacent to Felice Acres, Pleasant Valley Estates and the Valle Verde residential areas and adjacent lots as was done for 2006 through 2014 surveys.

The primary issue of concern in the subdivision areas is to determine whether current occupied dwellings are utilizing water service from the Village of Milan system for potable water consumption and not private wells, particularly private domestic wells that are completed into the underlying shallow alluvial aquifer.

The survey conducted in early 2016 consisted of first obtaining the records and customer database from the Village of Milan water district. This information was reviewed to prepare a separate residential customer database for the subdivisions that would reflect the lot number, customer, water meter customer ID number and whether the customer utilized Milan water during 2015. See Tables E-1 through E-5 for 2015 database information.

A lot-by-lot reconnaissance was made in each of the subdivisions to determine whether each lot was occupied or vacant, contained a residence(s), and which residences are currently occupied. This information was then checked against the database to determine whether each occupied residence is supplied and metered through the Village of Milan water supply system. Results of this reconnaissance effort are summarized on the subdivision plat maps; see attached Figures E-1 through E-5.

Field review of the subdivisions areas, along with follow-up inquiries as required to confirm the status of water use at each property, indicates that occupied residential sites in, or immediately adjacent to the Felice Acres, Broadview Acres, Murray Acres, and Pleasant Valley subdivisions are on metered water service with the Village of Milan; exceptions to this overall status are discussed below.

In the Valle Verde residential area and immediately adjacent to the subdivision, one residence was identified that is not on the Village of Milan water supply system and is therefore obtaining domestic-use water from private well supply. This residence is currently on a domestic well supply and this property owner has stated that he does not want to be hooked up to the Village water supply system.

## 4.0 New Milan Water Hook-Ups

Homestake (HMC) and the New Mexico Environment Department - Superfund Oversight Section entered into and executed a Memorandum of Agreement (MOA) in January 2009 regarding private well supplies utilized for domestic household use in the area. The MOA established an Area of Concern (AOC) wherein those residences within the area that are not on the Village of Milan water supply for domestic potable water use should be contacted and given the opportunity to be hooked up to that supply with HMC covering the cost of the hookup. Additionally, those residents in the AOC area that arranged for Village hookup after January 2004 would be reimbursed for the related costs if cost records are supplied to HMC. Eight (8) residents in the AOC were identified as eligible for reimbursement of Village potable water supply hookup costs pursuant to terms of the MOA. The current status is as follows:

| | |
|---|---|
| • Number of residents reimbursed | 5 |
| • Number of residents not interested in reimbursement | 1 |
| • Number of residents not providing necessary cost detail | 2 |
| **TOTAL** | **8** |

The last significant facet of the MOA addresses the concern with regard to an offer by HMC to residential property owners in the AOC to arrange for and pay for plugging and abandonment of private wells in the area. In 2010, HMC mailed notice letters and offers to property owners in the MOA that extends the opportunity to have their well(s) plugged and abandoned. The time period for well owners to respond, as specified in the AOC, was reached during 2010. Six property owners had indicated a desire to have their well(s) plugged; HMC sent out consent forms to these property owners to get permission for HMC to plug and abandon these wells. Three of these well owners declined the offer to abandon their wells and three have not responded. Communications have been underway with the New Mexico State Engineers Office (OSE) regarding preparation of plug and abandon permits for these six wells; the permits with the SEO are on hold until consent forms are signed and will proceed if the well owners sign the consent form.

As of December 2012, no residences within the MOA Area of Concern (AOC) are pending with respect to a domestic water supply hook-up to the Village of Milan municipal water supply; all other known and identified residences are currently on the Village municipal supply, except for the one residence in Valle Verde which has stated that he is not interested in being hooked up to the Milan water system and one residence east of Highway 605 which was hooked up to the Milan water but discontinued the use of the Milan water in 2015. This residential hookup in the Valle Verde area is discussed above in Sec 3.0 of this report.

As of December 2012, no residences within the MOA Area of Concern (AOC) are pending with respect to a domestic water supply hook-up to the Village of Milan municipal water supply; all other known and identified residences are currently on the Village municipal supply, except for the one residence in Valle Verde which has stated that he is not interested in being hooked up to the Milan water system. This residential hookup in the Valle Verde area is discussed above in Sec 3.0 of this report.

## 5.0 Conclusion

The review of land use for HMC properties and the five residential subdivision areas to the south and west of the Grants Reclamation Project site indicates that present land uses in the area have not changed significantly. As a result of the annual survey of the residential areas within the Memorandum of Agreement (MOA) Area of Concern (AOC) during early 2016, no residential properties remain to be addressed in terms of providing a domestic water supply hookup. Survey results indicate that all other water users in the AOC area are supplied by the Village of Milan water supply, except the one Valle Verde residence that has stated he is not interested in being hooked up to the Milan water system.

This land use survey / review is completed on an annual basis to meet annual license condition reporting requirements under the NRC License. This will help in assuring that land use activities in the immediate area surrounding the Grants project are regularly reviewed and assist in determining that those uses do not present a new concern with local ground-water usage until project ground-water restoration activities are completed.

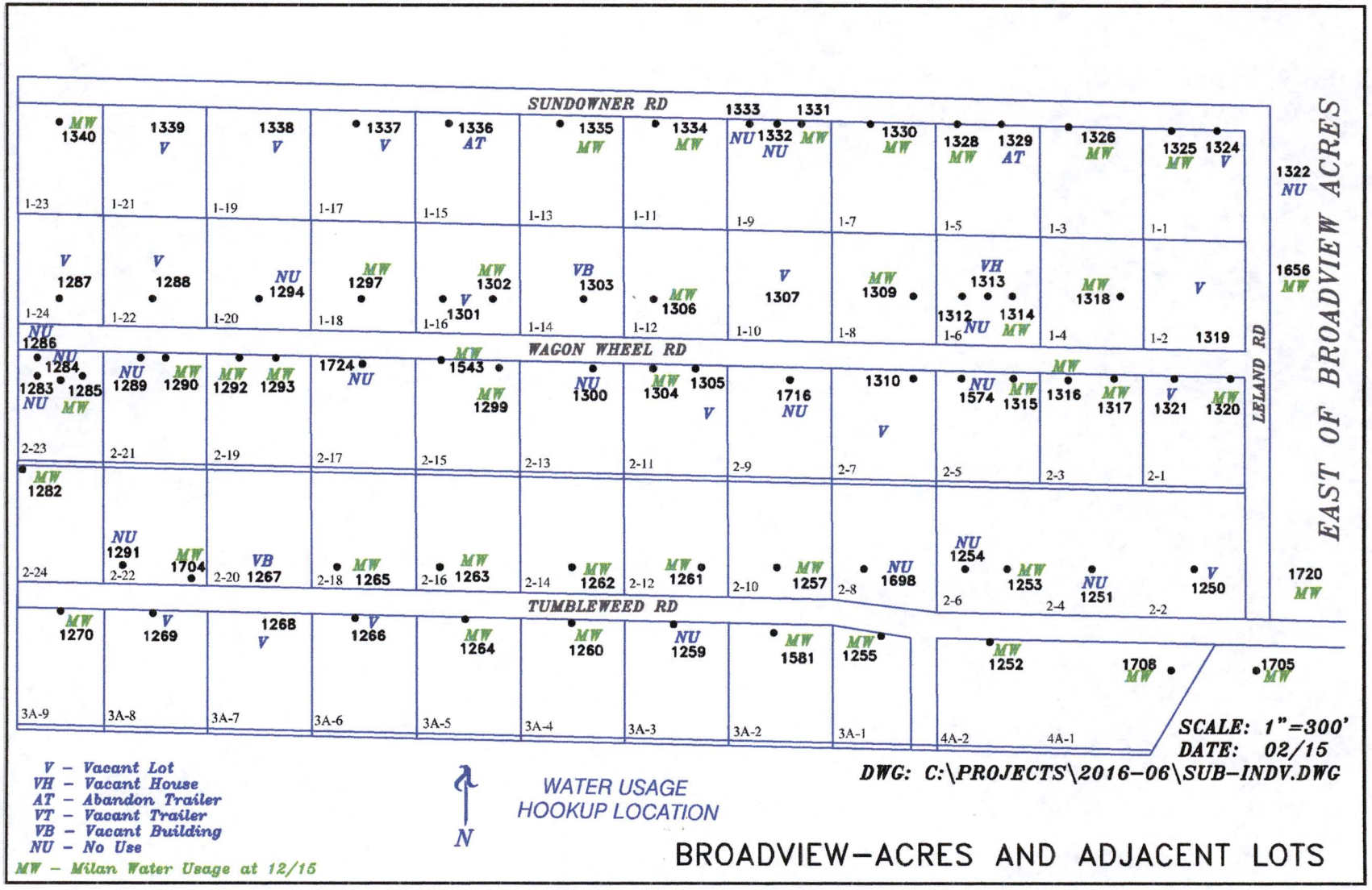


FIGURE E–1. BROADVIEW ACRES–LAND USE STATUS AND WATER USE

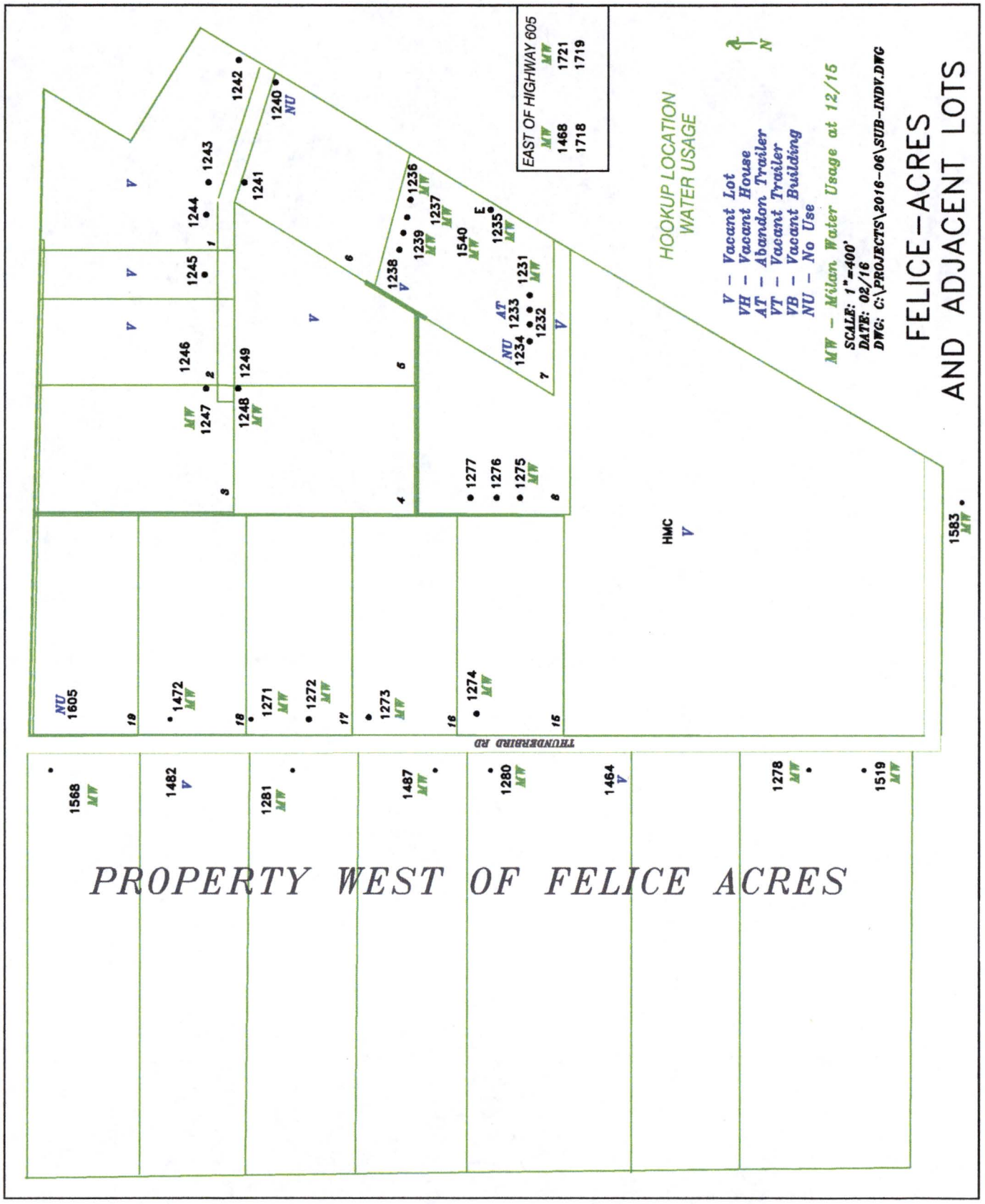


FIGURE E–2. FELICE ACRES – LAND USE STATUS AND WATER USE

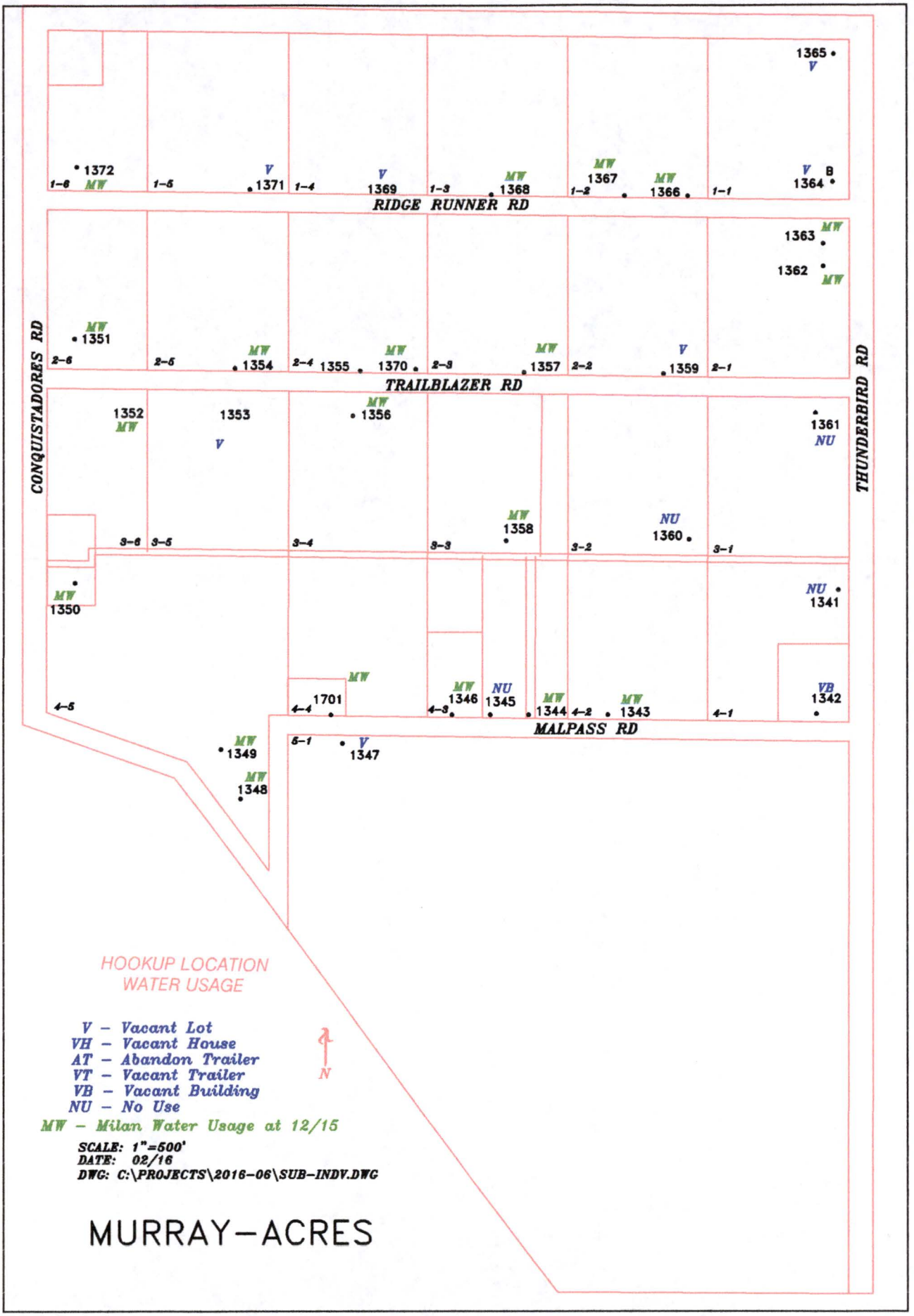


FIGURE E–3. MURRAY ACRES–LAND USE STATUS AND WATER USE

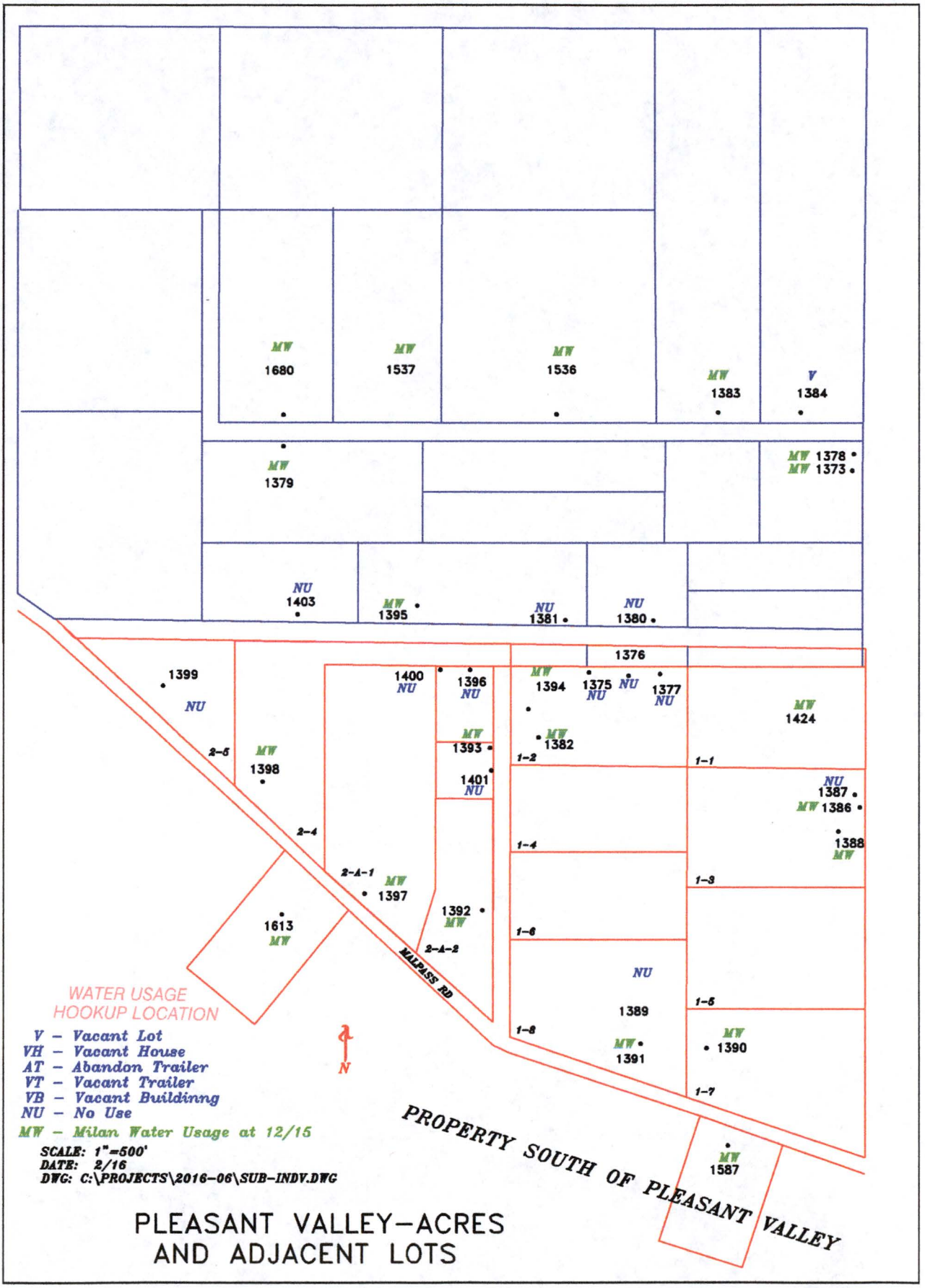


FIGURE E–4. PLEASANT VALLEY ESTATES–
LAND USE STATUS AND WATER USE

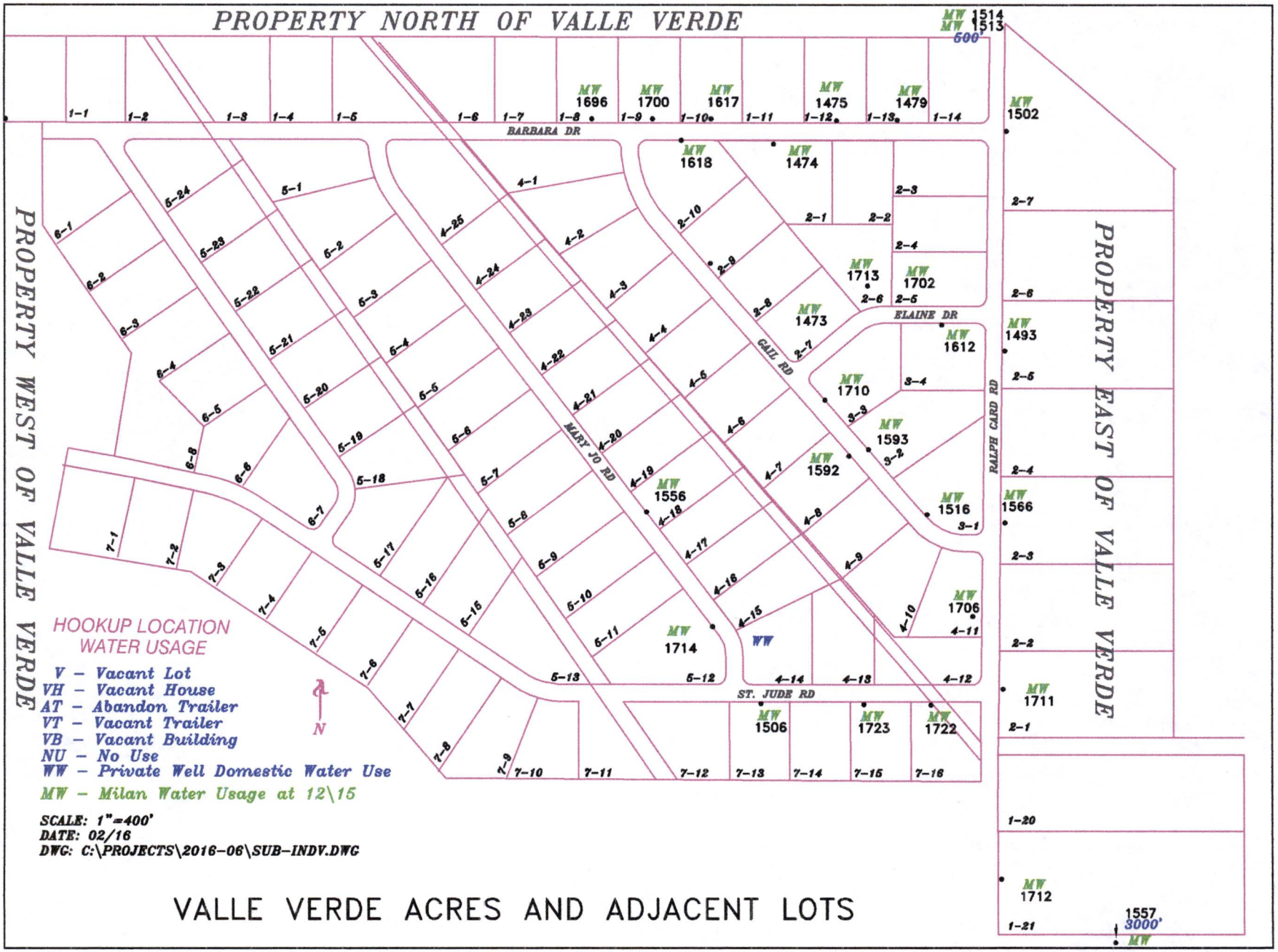


FIGURE E-5. VALLE VERDE ACRES-LAND USE STATUS AND WATER USE

**TABLE E-1 WATER USE OF MILAN WATER IN BROADVIEW ACRES AND ADJACENT LOTS**

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 20154 WATER USAGE |
|---|---|---|---|
| 1 / 1 | 1324 | | |
| 1 / 1 | 1325 | X | X |
| 1 / 2 | 1319 | | |
| 1 / 3 | 1326 | X | X |
| 1 / 4 | 1318 | X | X |
| 1 / 5 | 1328 | X | X |
| 1 / 5 | 1329 | | |
| 1 / 6 | 1312 | | |
| 1 / 6 | 1313 | | |
| 1 / 6 | 1314 | X | X |
| 1 / 7 | 1330 | X | X |
| 1 / 8 | 1309 | X | X |
| 1 / 9 | 1331 | X | X |
| 1 / 9 | 1332 | | |
| 1 / 9 | 1333 | | |
| 1 / 10 | 1307 | | |
| 1 / 11 | 1334 | X | X |
| 1 / 12 | 1306 | X | X |
| 1 / 13 | 1335 | X | X |
| 1 / 14 | 1303 | | |
| 1 / 15 | 1336 | | |
| 1 / 16 | 1301 | | |
| 1 / 16 | 1302 | X | X |
| 1 / 17 | 1337 | | |
| 1 / 18 | 1297 | X | X |
| 1 / 19 | 1338 | | |
| 1 / 20 | 1294 | | |
| 1 / 21 | 1339 | | |
| 1 / 22 | 1288 | | |
| 1 / 23 | 1340 | X | X |
| 1 / 24 | 1287 | | |
| 2 / 1 | 1320 | X | X |
| 2 / 1 | 1321 | | |
| 2 / 2 | 1250 | | |
| 2 / 3 | 1316 | X | X |
| 2 / 3 | 1317 | X | X |
| 2 / 4 | 1251 | X | |

**TABLE E-1 WATER USE OF MILAN WATER IN BROADVIEW ACRES AND ADJACENT LOTS**

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 20154 WATER USAGE |
|---|---|---|---|
| 2 / 5 | 1315 | X | X |
| 2 / 5 | 1574 | | |
| 2 / 6 | 1253 | X | X |
| 2 / 6 | 1254 | | |
| 2 / 7 | 1310 | | |
| 2 / 8 | 1698 | | |
| 2 / 9 | 1308 | | |
| 2 / 10 | 1257 | X | X |
| 2 / 11 | 1304 | X | X |
| 2 / 11 | 1305 | | |
| 2/12 | 1261 | X | X |
| 2 / 13 | 1300 | | |
| 2 / 14 | 1262 | X | X |
| 2 / 15 | 1299 | X | X |
| 2 / 15 | 1543 | X | X |
| 2 / 16 | 1263 | X | X |
| 2 / 17 | 1295 | | |
| 2 / 17 | 1296 | | |
| 2 / 17 | 1298 | | |
| 2 / 18 | 1265 | X | X |
| 2 / 19 | 1292 | X | X |
| 2 / 19 | 1293 | X | X |
| 2 / 20 | 1267 | | |
| 2 / 21 | 1289 | X | |
| 2 / 21 | 1290 | X | X |
| 2 / 22 | 1291 | | |
| 2 / 22 | 1704 | X | X |
| 2 / 23 | 1283 | | |
| 2 / 23 | 1284 | | |
| 2 / 23 | 1285 | X | X |
| 2 / 23 | 1286 | | |
| 2 / 24 | 1282 | X | X |
| 3A / 1 | 1255 | X | X |
| 3A / 2 | 1581 | X | X |
| 3A / 3 | 1259 | | |
| 3A / 4 | 1260 | X | X |
| 3A / 5 | 1264 | X | X |

**TABLE E-1 WATER USE OF MILAN WATER IN BROADVIEW ACRES AND ADJACENT LOTS**

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 20154 WATER USAGE |
|---|---|---|---|
| 3A / 6 | 1266 | | |
| 3A / 7 | 1268 | | |
| 3A / 8 | 1269 | | |
| 3A / 9 | 1270 | X | X |
| 4A / 1 | 1708 | X | X |
| 4A / 2 | 1252 | X | X |
| | 1705 | X | X |
| | 1716 | | |
| | | | |
| EAST OF BROADVIEW ACRES | | | |
| | 1322 | | |
| | 1656 | X | X |
| | 1720 | X | X |

## TABLE E-2 WATER USE OF MILAN WATER IN FELICE ACRES AND ADJACENT LOTS

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2015 WATER USAGE |
|---|---|---|---|
| 1 | 1242 | | |
| 1 | 1243 | | |
| 1 | 1244 | | |
| 2 | 1245 | | |
| 2 | 1246 | | |
| 3 | 1247 | X | X |
| 4 | 1248 | X | X |
| 5 | 1249 | | |
| 6 | 1240 | | |
| 6 | 1241 | | |
| 7 | 1231 | X | X |
| 7 | 1232 | | |
| 7 | 1233 | | |
| 7 | 1234 | | |
| 7 | 1235 | X | X |
| 7 | 1236 | X | X |
| 7 | 1237 | X | X |
| 7 | 1238 | | |
| 7 | 1239 | X | X |
| 7 | 1540 | X | X |
| 8 | 1275 | X | X |
| 8 | 1276 | | |
| 8 | 1277 | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | 1274 | X | X |
| 16 | 1273 | X | X |
| 17 | 1271 | X | X |
| 17 | 1272 | X | X |
| 18 | 1472 | X | X |
| 19 | 1605 | | |

## TABLE E-2 WATER USE OF MILAN WATER IN FELICE ACRES AND ADJACENT LOTS

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2015 WATER USAGE |
|---|---|---|---|
| PROPERTY WEST OF FELICE ACRES | | | |
| | 1519 | X | X |
| | 1278 | X | X |
| | 1279 | | |
| | 1280 | X | X |
| | 1464 | | |
| | 1487 | X | X |
| | 1281 | X | X |
| | 1482 | | |
| | 1568 | X | X |
| PROPERTY SOUTH OF FELICE ACRES | | | |
| | 1583 | X | X |
| PROPERTY EAST OF FELICE ACRES | | | |
| | 1468 | X | X |
| | 1709 | X | |
| | 1718 | X | X |
| | 1719 | X | X |
| | 1721 | X | X |

## TABLE E-3 WATER USE OF MILAN WATER IN MURRAY ACRES

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 20143 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2015 WATER USAGE |
|---|---|---|---|
| 1 / 1 | 1364 | | |
| 1 / 1 | 1365 | | |
| 1 / 2 | 1366 | X | X |
| 1 / 2 | 1367 | X | X |
| 1 / 3 | 1368 | X | X |
| 1 / 4 | 1369 | | |
| 1 / 5 | 1371 | | |
| 1 / 6 | 1372 | X | X |
| 2 / 1 | 1362 | X | X |
| 2 / 1 | 1363 | X | X |
| 2 / 2 | 1359 | | |
| 2 / 3 | 1357 | X | X |
| 2 / 4 | 1355 | | |
| 2 / 4 | 1370 | X | X |
| 2 / 5 | 1354 | X | X |
| 2 / 6 | 1351 | X | X |
| 3 / 1 | 1361 | X | |
| 3 / 2 | 1360 | X | |
| 3 / 3 | 1358 | X | X |
| 3 / 4 | 1356 | X | X |
| 3 / 5 | 1353 | | |
| 3 / 6 | 1352 | | X |
| 4 / 1 | 1341 | | |
| 4 / 1 | 1342 | | |
| 4 / 2 | 1343 | X | X |
| 4 / 3 | 1344 | X | X |
| 4 / 3 | 1345 | | |
| 4 / 3 | 1346 | | X |
| 4 / 4 | 1701 | X | X |
| 4 / 5 | 1349 | X | X |
| 4 / 5 | 1350 | X | X |
| 5 / 1 | 1347 | | |
| | 1348 | X | X |

## TABLE E-4 WATER USE OF MILAN WATER IN PLEASANT VALLEY ESTATES AND ADJACAENT LOTS

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2015 WATER USAGE |
|---|---|---|---|
| 1 / 1 | 1424 | X | X |
| 1 / 2 | 1375 | | |
| 1 / 2 | 1376 | | |
| 1 / 2 | 1377 | | |
| 1 / 2 | 1382 | X | X |
| 1 / 2 | 1394 | X | X |
| 1 / 3 | 1386 | X | X |
| 1 / 3 | 1387 | | |
| 1 / 3 | 1388 | X | X |
| 1 / 7 | 1390 | X | X |
| 1 / 8 | 1389 | | |
| 1 / 8 | 1391 | X | X |
| 2 / 4 | 1398 | X | X |
| 2 / 5 | 1399 | | |
| 2 / A1 | 1397 | X | X |
| 2 / A2 | 1392 | X | X |
| 2 / A2 | 1393 | X | X |
| 2 / A2 | 1396 | | |
| 2 / A2 | 1400 | | |
| 2 / A2 | 1401 | | |
| | 1373 | X | X |
| | 1378 | X | X |
| | 1379 | X | X |
| | 1380 | | |
| | 1381 | X | |
| | 1383 | X | X |
| | 1384 | | |
| | 1395 | X | X |
| | 1403 | | |
| | 1536 | X | X |
| | 1537 | X | X |
| | 1680 | X | X |
| PROPERTY SOUTH OF PLEASANT VALLEY ESTATES | | | |
| 17 - 2 | 1587 | X | X |
| 11 - 2 | 1613 | X | X |

**TABLE E-5 WATER USE IN VALLE VERDE AND ADJACENT LOTS**

| SUBDIVISION BLOCK / LOT | CUSTOMER NUMBER SITE ID | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2014 WATER USAGE | PRIVATE RESIDENTIAL WELL WATER 2014 | VILLAGE OF MILAN WATER SUPPLY SYSTEM 2015 WATER USAGE | PRIVATE RESIDENTIAL WELL WATER 2015 |
|---|---|---|---|---|---|
| 1 / 8 | 1696 | X | | X | |
| 1 / 9 | 1700 | X | | X | |
| 1 / 10 | 1617 | X | | X | |
| 1 / 12 | 1475 | X | | X | |
| 1 / 13 | 1479 | X | | X | |
| 2 / 1 | 1474 | X | | X | |
| 2/5 | 1702 | X | | X | |
| 2 / 6 | 1713 | X | | X | |
| 2 / 7 | 1473 | X | | X | |
| 2 / 9 | | | | | |
| 2/10 | 1618 | X | | X | |
| 3 / 1 | 1516 | X | | X | |
| 3 / 2 | 1593 | | | X | |
| 3 / 3 | 1710 | X | | X | |
| 3 / 4 | 1612 | X | | X | |
| 4/11 | 1706 | | | X | |
| 4 / 8 | 1592 | X | | X | |
| 4 / 14 | | | X | | X |
| 4 / 18 | 1556 | X | | X | |
| 5 / 12 | 1714 | X | | X | |
| 7 / 13 | 1506 | X | | X | |
| 7/ 16 | 1722 | | | X | |
| 7/ 15 | 1723 | | | X | |
| PROPERTY NORTH OF VALLE VERDE | | | | | |
| | 1513 | X | | X | |
| | 1514 | X | | X | |
| PROPERTY EAST OF VALLE VERDE | | | | | |
| 1/21 | 1712 | X | | X | |
| 2 / 1 | 1711 | X | | X | |
| 2 / 5 | 1493 | X | | X | |
| 2 / 7 | 1502 | X | | X | |
| 2 / 3 | 1566 | X | | X | |
| PROPERTY SOUTH OF VALLE VERDE | | | | | |
| | 1557 | X | | X | |

# APPENDIX F

# TAILINGS PILES RADON FLUX SURVEY / REPORT

# Radon Flux Measurements for the HMC Tailings Piles

**December 2015**

**Prepared for:**

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**Prepared by:**

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## Radon Flux Measurements for the HMC Tailings Piles

### 1. Introduction

Reclamation activities associated with the Large Tailings Pile (LTP) at the Grants Uranium Mill, owned by Homestake Mining Company of California (HMC), were completed in phases. The pile was contoured in 1994 at which time an interim cover was placed on the top of the pile to control the dispersal of tailings by wind and water erosion. Radon barriers were applied to the north, west, and south side slopes, with completion of the work in 1994. Radon flux measurements were made on these side slopes on October 24-25, 1994. Completion of the placement of radon barrier on the east side slope and aprons occurred just prior to making the radon flux measurements on July 24-25, 1995. An evaporation pond was constructed on the Small Tailings Pile (STP) and an interim cover placed on the remainder of the pile. Radon flux measurements were made on the top of the LTP and the interim cover of the Small Tailings Pile (STP) on August 18-19, 1995.

As part of a request for a license amendment extending the milestones in the NRC License, radon flux measurements were repeated in the areas with interim cover on October 21-22, 2003. This license amendment required HMC to repeat these measurements annually.

The Year 2015 annual measurements were made on August 20-21, 2015. The measurements for the LTP resulted in an average flux of 22.28 pCi/m$^2$s, or slightly above the desired 20 pCi/m$^2$s goal. The measurements for the STP resulted in an average flux of 7.22 pCi/m$^2$s. HMC decided to increase the interim cover in areas of the LTP containing flux monitoring locations where the measurements were higher than other areas of similar size. New measurements were then made on September 15-16, 2015 at 3 locations and the values were substituted for the data obtained on August 20-21, 2015. The addition of interim cover to these areas resulted in an average flux for the LTP of 19.64 pCi/m$^2$s. This report presents the data for the Year 2015 flux measurements made on August 20-21, 2015 and September 15-16, 2015.

### 2. Radon Flux and Gamma-Ray Exposure Results

The results of the flux measurements on the LTP and STP are presented in Figure 2-1 and in Appendix A. A flux measurement was made at each of the 100 locations as shown in Figure 2-1. In addition, one location on the LTP and one location on the STP had duplicate field measurements made. The distribution of canisters was allocated so that each canister represented an equal area of the total pile surface. All flux measurements made are reported for the 64 locations on the LTP and 36 locations on the STP. The average of the final measured flux was 19.64 pCi/m$^2$s and 7.22 pCi/m$^2$s for the LTP and STP, respectively. When calculating average measured flux for analysis duplicates (same canister analyzed twice) or location duplicates (same location measured twice), the results were averaged.

During the August 20-21, 2015 radon flux canister deployment exposure measurements were made at each canister location using a Ludlum Model 19 microR survey meter. Measurements were made with the survey meter held approximately one meter above the ground surface. Results of the exposure measurements are for the LTP and STP presented in Figure 2-2 and Appendix B. The exposure rate measurement results reflect only the August canister deployment and were not repeated at the locations revisited in September.

### 3. Average Pile Flux

Since all but the top of the LTP has rock cover, canisters were placed on the top of the pile only. The 2015 final average measured flux on the top of the pile was 50.04 pCi/m$^2$s. This compares to 42.1 pCi/m$^2$s measured in 1995. In the earlier data, the average flux on the sides of the pile was 3.27 pCi/m$^2$s, which

constitutes 65 percent of the area. If one assumes that the flux on the side slopes remains constant, the final average flux for the pile in 2015 is calculated to be 19.64 pCi/m$^2$s, using Equation 3-1 below:

$$Flux_w = 0.65 \times Flux_{side} + 0.35 \times Flux_{top} \qquad \text{Eq. 3-1}$$

Where:

w is the = weighted LTP flux average
$Flux_{side}$ = 3.27
$Flux_{top}$ = 50.04

Corrective actions taken this year were similar to those taken for Years 2004, 2006, 2011, and 2014, when the flux slightly exceeded 20 pCi/m$^2$s for the LTP, additional interim cover was placed on the pile and subsequent measurements confirmed that the average flux for the pile was less than 20 pCi/m$^2$s.

An evaporation pond is located on top of the STP and therefore that portion of the pile has 0 pCi/m$^2$s flux. The areas for the side slopes, southern portion, and evaporation pond are 137,000, 874,000, and 1,331,000 square feet, respectively. These areas equate to a percent of total area for the side slopes, southern portion, and evaporation pond of 5.85 percent, 37.32 percent, and 56.83 percent, respectively. The 2015 corresponding average fluxes for these areas were 43.22, 12.58, and 0 pCi/m$^2$s, respectively. The final average flux rate for the STP is calculated to be 7.22 pCi/m$^2$s, using Equation 3-2 below.

$$Flux_w = 0.0585 * Flux_{side} + 0.3732 * Flux_{south} + 0.5683 * Flux_{pond} \qquad \text{Eq. 3-2}$$

Where:

w is the = weighted STP flux average
$Flux_{side}$ = 43.22
$Flux_{south}$ = 12.58
$Flux_{pond}$ = 0.00

The final data show that the average flux of 19.64 pCi/m$^2$s for the LTP, after application of additional interim cover, and the STP average flux of 7.22 pCi/m$^2$s are both below the 20 pCi/m$^2$s standard in 10 CFR 40 Appendix A.

**Figure 2-1 Radon Flux Measurement Results**

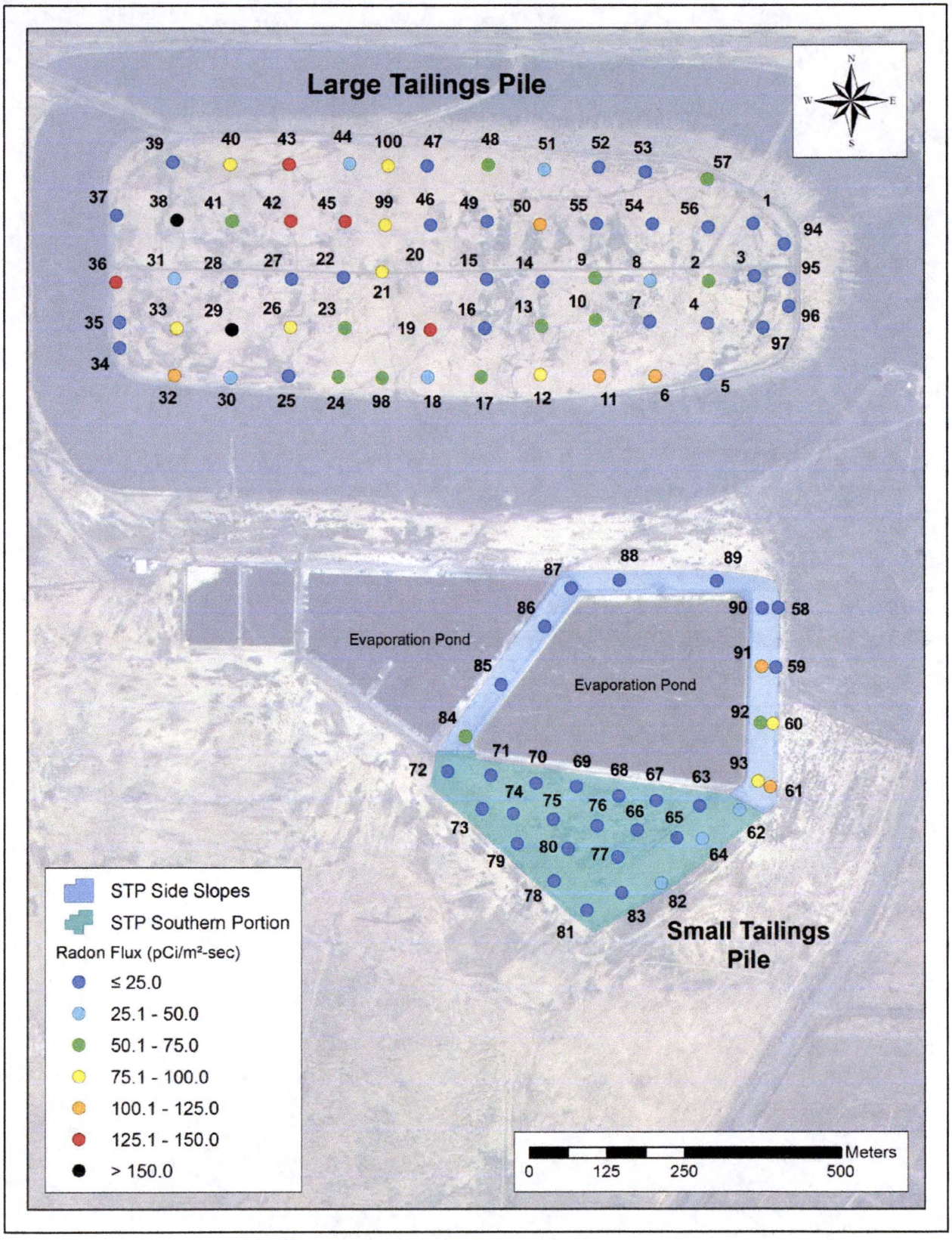
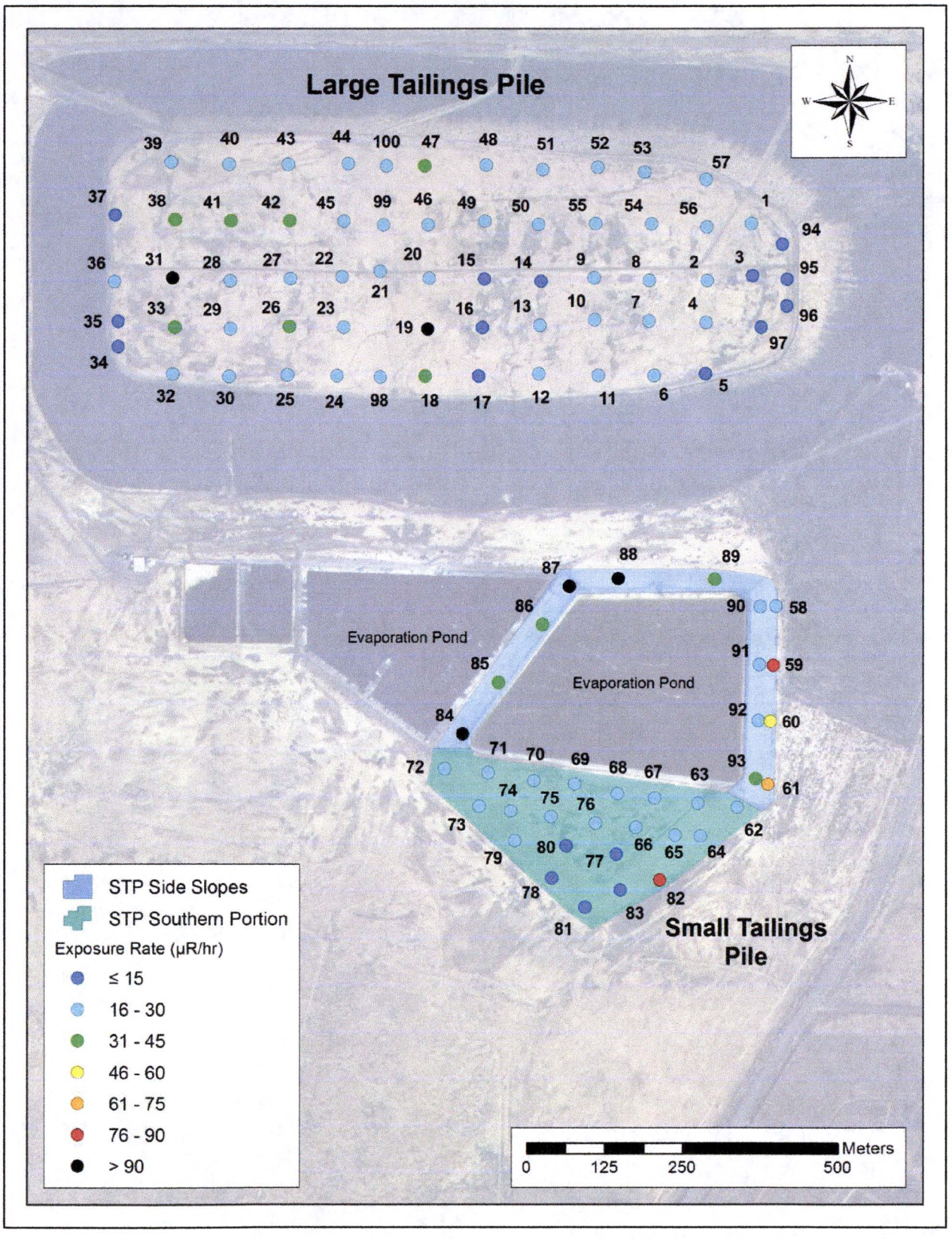


**Figure 2-2 Gamma Exposure Rate Measurement Results**



## 4. Quality Assurance

The EPA Method 115 requirements were met for the measurements. There was no rainfall in the 24 hours prior to or during deployment and ambient temperatures did not fall below 35 degrees Fahrenheit during deployment.

Two independent sources were used to calibrate the spectrometer, using identical geometry conditions to that of the canisters. Good agreement between calibration factors was obtained as shown in Table 4.1. The relative percent difference (RPD) of the average efficiencies for the two sources was 8.5 percent, less than the 10 percent accuracy required by EPA Method 115.

Eleven canisters were reanalyzed for laboratory duplicate analysis comparison. The second analysis is indicated in the Appendix A results table with a "D" shown in the Lab Type column. The comparison results are shown in Table 4.2 and are consistent with typical gamma spectroscopy results. All 11 canisters analyzed for duplicate comparison met the EPA Method 115 criteria requiring a precision of 10 percent for flux rates above 1.0 $pCi/m^2s$. The duplicate comparison results have an RPD of 6.8 percent or less.

One location on the LTP and one location on the STP were chosen for side-by-side measurements (not true duplicates). The results of the measurements are included in Table 4.3. The differences of duplicate sample results range from 10.2 percent (13.97 and 15.48 $pCi/m^2s$) to 105.6 percent (3.01 and 0.94 $pCi/m^2s$). These results are not unexpected since it is known that flux values from a tailings pile can be variable over short distances, and the larger relative percent difference is a result of comparing two very low flux rate values.

Three trip blanks were included in the August batch, and were counted without exposing them to radon. The measured fluxes ranged from 0.06 and 0.18 $pCi/m^2s$ are near the expected 0 $pCi/m^2s$ value. Two trip blanks were included in the September 2015 batch and were counted without exposing them to radon. The measured fluxes ranged from 0.08 and 0.14 $pCi/m^2s$ are near the expected 0 $pCi/m^2s$ value. These results indicate that the canisters had not been exposed while sealed in the plastic bags, confirming the integrity of the bags during both deployments.

**Table 4.1 Quality Assurance Results of Standard Analysis**

| Identifier | Date | Count Duration (sec) | Activity (nCi) | Total Counts | Average BKG Counts | Efficiency | Error |
|---|---|---|---|---|---|---|---|
| STD #3 | 8/21/2015 | 1200 | 78.83 | 42395 | 3709 | 0.011053 | 6.13E-05 |
| STD #1 | 8/21/2015 | 1200 | 80 | 47235 | 3709 | 0.012254 | 6.35E-05 |
| STD #1 | 8/21/2015 | 1200 | 80 | 47127 | 3709 | 0.012224 | 6.35E-05 |
| STD #3 | 8/21/2015 | 1200 | 78.83 | 41691 | 3709 | 0.010852 | 6.09E-05 |
| STD #1 | 8/22/2015 | 1200 | 80 | 47466 | 3709 | 0.012319 | 6.37E-05 |
| STD #3 | 8/22/2015 | 1200 | 78.83 | 43578 | 3709 | 0.011391 | 6.21E-05 |
| STD #3 | 8/22/2015 | 1200 | 78.83 | 42488 | 3709 | 0.01108 | 6.14E-05 |
| STD #1 | 8/22/2015 | 1200 | 80 | 46876 | 3709 | 0.012153 | 6.33E-05 |
| STD #1 | 9/17/2015 | 1200 | 80 | 46243 | 3480.5 | 0.012039 | 6.28E-05 |
| STD #3 | 9/17/2015 | 1200 | 78.83 | 43213 | 3480.5 | 0.011352 | 6.17E-05 |
| STD #3 | 9/17/2015 | 1200 | 78.83 | 43936 | 3480.5 | 0.011559 | 6.22E-05 |
| STD #1 | 9/17/2015 | 1200 | 80 | 46989 | 3480.5 | 0.012249 | 6.32E-05 |
| **Mean of STD #1** | | | | | | 0.0112 | |
| **Mean of STD #3** | | | | | | 0.0122 | |
| **Relative Percent Difference of Standards** | | | | | | 8.5% | |

Note:

[1] Efficiency unit is net counts-per-second per source activity in becquerels.

[2] SD: standard deviation of efficiency.

**Table 4.2 Comparison Data of Every Tenth Sample Analyzed**

| Canister | Analysis 1 (pCi/m²s) | Analysis 2 (pCi/m²s) | Average Flux (pCi/m²s) | RPD (%) |
|---|---|---|---|---|
| 422 | 56.5 | 57.5 | 57 | 1.7 |
| 437 | 4.8 | 4.8 | 4.8 | 0.4 |
| 463 | 2.1 | 2 | 2.1 | 3.3 |
| 450 | 166.8 | 161.4 | 164.1 | 3.3 |
| 455 | 20.1 | 20.2 | 20.1 | 0.5 |
| 426 | 81 | 81.7 | 81.4 | 0.9 |
| 254 | 53.8 | 51.2 | 52.5 | 5.1 |
| 415 | 2.6 | 2.5 | 2.6 | 1.2 |
| 492 | 1.1 | 1 | 1 | 6.8 |
| 436 | 2.6 | 2.6 | 2.6 | 2.4 |
| 1471 | 139 | 139.3 | 139.1 | 0.2 |

**Table 4.3 Comparison Data of Field Duplicates Sample Results**

| Location | Canister 1 | Canister 2 | Canister 1 (pCi/m²s) | Canister 2 (pCi/m²s) | Average Flux (pCi/m²s) | RPD (%) |
|---|---|---|---|---|---|---|
| 1 | 443 | 494 | 13.98 | 15.48 | 14.73 | 10.2 |
| 88 | 49 | 474 | 3.05 | 0.94 | 1.99 | 105.6 |

# Appendix A

## Radon Flux Measurement Results

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

# Radon Flux Measurements

| Location Name | Field Type | Canister Number | Date/Time Deployment | Date/Time Retrieval | Date/Time Counting | Count Time (sec) | BKG Counts | Lab Type | Sample Counts | Efficiency (cps/dps) | Flux (pCi/m²s) Result | LLD | Error | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 443 | 08/20/2015 09:30 | 08/21/2015 10:36 | 08/22/2015 12:45 | 211 | 3709 | | 5009 | 0.0117 | 13.98 | 0.4 | 0.24 | OK |
| 1 | D | 494 | 08/20/2015 14:05 | 08/21/2015 14:09 | 08/21/2015 17:10 | 171 | 3709 | | 5012 | 0.0117 | 15.48 | 0.4 | 0.26 | OK |
| 2 | | 422 | 08/20/2015 09:47 | 08/21/2015 10:49 | 08/22/2015 14:09 | 58 | 3709 | | 5052 | 0.0117 | 57.5 | 0.8 | 0.85 | OK |
| 2 | | 422 | 08/20/2015 09:47 | 08/21/2015 10:49 | 08/22/2015 14:10 | 59 | 3709 | D | 5053 | 0.0117 | 56.51 | 0.8 | 0.84 | OK |
| 3 | | 410 | 08/20/2015 09:45 | 08/21/2015 10:38 | 08/22/2015 12:50 | 255 | 3709 | | 5013 | 0.0117 | 11.3 | 0.4 | 0.2 | OK |
| 4 | | 91 | 08/20/2015 09:50 | 08/21/2015 10:47 | 08/22/2015 13:26 | 1200 | 3709 | | 4554 | 0.0117 | 0.48 | 0.2 | 0.05 | OK |
| 5 | | 105 | 08/20/2015 09:55 | 08/21/2015 10:46 | 08/22/2015 13:04 | 1200 | 3709 | | 4614 | 0.0117 | 0.52 | 0.2 | 0.05 | OK |
| 6 | | 456 | 08/20/2015 09:57 | 08/21/2015 11:02 | 08/22/2015 11:52 | 30 | 3709 | | 5035 | 0.0117 | 110.45 | 1.1 | 1.6 | OK |
| 7 | | 437 | 08/20/2015 10:00 | 08/21/2015 11:00 | 08/22/2015 12:03 | 517 | 3709 | D | 5246 | 0.0117 | 4.76 | 0.2 | 0.11 | OK |
| 7 | | 437 | 08/20/2015 10:00 | 08/21/2015 11:00 | 08/22/2015 11:53 | 545 | 3709 | | 5549 | 0.0117 | 4.77 | 0.2 | 0.11 | OK |
| 8 | | 462 | 08/20/2015 10:05 | 08/21/2015 11:08 | 08/22/2015 12:13 | 118 | 3709 | | 5051 | 0.0117 | 26.71 | 0.5 | 0.42 | OK |
| 9 | | 64 | 08/20/2015 10:07 | 08/21/2015 11:07 | 08/22/2015 12:16 | 59 | 3709 | | 5034 | 0.0117 | 55.43 | 0.8 | 0.83 | OK |
| 10 | | 483 | 08/20/2015 10:10 | 08/21/2015 11:06 | 08/22/2015 12:43 | 47 | 3709 | | 5054 | 0.0117 | 70.82 | 0.9 | 1.04 | OK |
| 11 | | 499 | 08/20/2015 10:12 | 08/21/2015 11:04 | 08/22/2015 11:34 | 32 | 3709 | | 5048 | 0.0117 | 104.25 | 1 | 1.51 | OK |
| 12 | | 430 | 08/20/2015 10:14 | 08/21/2015 11:13 | 08/22/2015 10:01 | 36 | 3709 | | 5196 | 0.0117 | 93.59 | 1 | 1.34 | OK |
| 13 | | 5 | 08/20/2015 10:15 | 08/21/2015 11:12 | 08/22/2015 09:55 | 50 | 3709 | | 5034 | 0.0117 | 64.7 | 0.8 | 0.96 | OK |
| 14 | | 431 | 08/20/2015 10:17 | 08/21/2015 11:11 | 08/22/2015 09:49 | 261 | 3709 | | 5021 | 0.0117 | 10.72 | 0.3 | 0.19 | OK |
| 15 | | 473 | 08/20/2015 10:20 | 08/21/2015 11:19 | 08/22/2015 10:16 | 521 | 3709 | | 5005 | 0.0117 | 4.32 | 0.2 | 0.1 | OK |
| 16 | | 488 | 08/20/2015 10:23 | 08/21/2015 11:17 | 08/22/2015 11:36 | 884 | 3709 | | 5157 | 0.0117 | 1.85 | 0.2 | 0.07 | OK |
| 17 | | 408 | 08/20/2015 10:25 | 08/21/2015 11:15 | 08/22/2015 09:58 | 53 | 3709 | | 5204 | 0.0117 | 63.32 | 0.8 | 0.92 | OK |
| 18 | | 68 | 08/20/2015 10:28 | 08/21/2015 11:44 | 08/22/2015 10:28 | 71 | 3709 | | 5047 | 0.0117 | 44.57 | 0.7 | 0.67 | OK |
| 19 | | 1471 | 09/15/2015 09:03 | 09/16/2015 12:40 | 09/17/2015 08:49 | 30 | 3480.5 | | 7213 | 0.0118 | 139.31 | 0.9 | 1.67 | OK |

Types: D-Duplicate, TB-Trip Blank

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8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

# Radon Flux Measurements

| Location Name | Field Type | Canister Number | Date/Time Deployment | Retrieval | Counting | Count Time (sec) | BKG Counts | Lab Type | Sample Counts | Efficiency (cps/dps) | Flux (pCi/m²s) Result | LLD | Error | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | | 1471 | 09/15/2015 09:03 | 09/16/2015 12:40 | 09/17/2015 08:49 | 30 | 3480.5 | D | 7196 | 0.0118 | 138.98 | 0.9 | 1.67 | OK |
| 20 | | 263 | 08/20/2015 10:32 | 08/21/2015 11:47 | 08/22/2015 10:03 | 557 | 3709 | | 5006 | 0.0117 | 3.86 | 0.2 | 0.1 | OK |
| 21 | | 403 | 08/20/2015 10:35 | 08/21/2015 11:48 | 08/22/2015 10:15 | 36 | 3709 | | 5116 | 0.0117 | 91.1 | 0.9 | 1.32 | OK |
| 22 | | 475 | 08/20/2015 10:38 | 08/21/2015 11:28 | 08/22/2015 11:19 | 723 | 3709 | | 5000 | 0.0117 | 2.57 | 0.2 | 0.08 | OK |
| 23 | | 1406 | 09/15/2015 09:00 | 09/16/2015 12:47 | 09/17/2015 08:51 | 50 | 3480.5 | | 5593 | 0.0118 | 63.52 | 0.7 | 0.88 | OK |
| 24 | | 1428 | 09/15/2015 08:58 | 09/16/2015 12:45 | 09/17/2015 08:47 | 60 | 3480.5 | | 5935 | 0.0118 | 55.96 | 0.6 | 0.76 | OK |
| 25 | | 101 | 08/20/2015 10:48 | 08/21/2015 11:36 | 08/22/2015 10:33 | 579 | 3709 | | 5196 | 0.0117 | 3.93 | 0.2 | 0.1 | OK |
| 26 | | 429 | 08/20/2015 10:50 | 08/21/2015 11:38 | 08/22/2015 11:15 | 45 | 3709 | | 6834 | 0.0117 | 99.86 | 0.9 | 1.25 | OK |
| 27 | | 463 | 08/20/2015 10:53 | 08/21/2015 11:39 | 08/22/2015 10:59 | 847 | 3709 | D | 5278 | 0.0117 | 2.11 | 0.2 | 0.07 | OK |
| 27 | | 463 | 08/20/2015 10:53 | 08/21/2015 11:39 | 08/22/2015 10:44 | 815 | 3709 | | 5001 | 0.0117 | 2.04 | 0.2 | 0.07 | OK |
| 28 | | 470 | 08/20/2015 10:56 | 08/21/2015 11:53 | 08/22/2015 09:31 | 140 | 3709 | | 5011 | 0.0117 | 21.51 | 0.5 | 0.35 | OK |
| 29 | | 450 | 08/20/2015 10:58 | 08/21/2015 11:54 | 08/22/2015 09:45 | 21 | 3709 | | 5209 | 0.0117 | 161.45 | 1.3 | 2.28 | OK |
| 29 | | 450 | 08/20/2015 10:58 | 08/21/2015 11:54 | 08/22/2015 09:47 | 20 | 3709 | D | 5122 | 0.0117 | 166.79 | 1.3 | 2.37 | OK |
| 30 | | 75 | 08/20/2015 11:00 | 08/21/2015 11:56 | 08/22/2015 09:37 | 70 | 3709 | | 5041 | 0.0117 | 45.37 | 0.7 | 0.68 | OK |
| 31 | | 432 | 08/20/2015 11:07 | 08/21/2015 11:59 | 08/22/2015 09:34 | 98 | 3709 | | 5060 | 0.0117 | 32.01 | 0.6 | 0.49 | OK |
| 32 | | 404 | 08/20/2015 11:02 | 08/21/2015 11:57 | 08/22/2015 09:30 | 30 | 3709 | | 5478 | 0.0117 | 118.12 | 1.1 | 1.64 | OK |
| 33 | | 21 | 08/20/2015 11:05 | 08/21/2015 11:58 | 08/22/2015 09:44 | 36 | 3709 | | 5080 | 0.0117 | 91.08 | 1 | 1.32 | OK |
| 34 | | 455 | 08/20/2015 11:14 | 08/21/2015 12:03 | 08/22/2015 08:49 | 203 | 3709 | | 6860 | 0.0117 | 20.16 | 0.4 | 0.28 | OK |
| 34 | | 455 | 08/20/2015 11:14 | 08/21/2015 12:03 | 08/22/2015 08:53 | 149 | 3709 | D | 5009 | 0.0117 | 20.05 | 0.5 | 0.33 | OK |
| 35 | | 476 | 08/20/2015 11:12 | 08/21/2015 12:02 | 08/22/2015 09:22 | 414 | 3709 | | 5013 | 0.0117 | 5.94 | 0.3 | 0.13 | OK |
| 36 | | 477 | 08/20/2015 11:10 | 08/21/2015 12:01 | 08/22/2015 09:18 | 24 | 3709 | | 5335 | 0.0117 | 144.29 | 1.2 | 2.02 | OK |
| 37 | | 1 | 08/20/2015 11:17 | 08/21/2015 12:12 | 08/22/2015 08:56 | 1200 | 3709 | | 5066 | 0.0117 | 0.74 | 0.2 | 0.05 | OK |

Types: D-Dupliente, TB-Trip Blank

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8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

# Radon Flux Measurements

| Location Name | Field Type | Canister Number | Date/Time Deployment | Retrieval | Counting | Count Time (sec) | BKG Counts | Lab Type | Sample Counts | Efficiency (cps/dps) | Flux (pCi/m²s) Result | LLD | Error | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | | 493 | 08/20/2015 11:24 | 08/21/2015 12:07 | 08/22/2015 08:45 | 20 | 3709 | | 5163 | 0.0117 | 167.89 | 1.3 | 2.38 | OK |
| 39 | | 487 | 08/20/2015 11:21 | 08/21/2015 12:06 | 08/22/2015 08:29 | 888 | 3709 | | 5001 | 0.0117 | 1.67 | 0.2 | 0.07 | OK |
| 40 | | 461 | 08/20/2015 11:28 | 08/21/2015 12:09 | 08/22/2015 08:46 | 43 | 3709 | | 5052 | 0.0117 | 75.39 | 0.9 | 1.1 | OK |
| 41 | | 4 | 08/20/2015 11:26 | 08/21/2015 12:08 | 08/22/2015 08:47 | 45 | 3709 | | 5064 | 0.0117 | 72.1 | 0.8 | 1.06 | OK |
| 42 | | 440 | 08/20/2015 11:33 | 08/21/2015 12:18 | 08/22/2015 08:26 | 23 | 3709 | | 5106 | 0.0117 | 143.38 | 1.2 | 2.05 | OK |
| 43 | | 427 | 08/20/2015 11:31 | 08/21/2015 12:16 | 08/22/2015 08:25 | 24 | 3709 | | 5136 | 0.0117 | 138.16 | 1.2 | 1.97 | OK |
| 44 | | 411 | 08/20/2015 11:38 | 08/21/2015 12:21 | 08/22/2015 08:27 | 88 | 3709 | | 5027 | 0.0117 | 35.43 | 0.6 | 0.54 | OK |
| 45 | | 478 | 08/20/2015 11:36 | 08/21/2015 12:20 | 08/22/2015 08:24 | 24 | 3709 | | 5083 | 0.0117 | 136.71 | 1.2 | 1.96 | OK |
| 46 | | 486 | 08/20/2015 11:46 | 08/21/2015 12:25 | 08/22/2015 08:10 | 592 | 3709 | | 5617 | 0.0117 | 4.2 | 0.2 | 0.1 | OK |
| 47 | | 471 | 08/20/2015 11:48 | 08/21/2015 12:27 | 08/22/2015 07:58 | 724 | 3709 | | 5005 | 0.0117 | 2.5 | 0.2 | 0.08 | OK |
| 48 | | 94 | 08/20/2015 11:50 | 08/21/2015 12:30 | 08/22/2015 07:54 | 60 | 3709 | | 5171 | 0.0117 | 54.29 | 0.7 | 0.8 | OK |
| 49 | | 428 | 08/20/2015 11:54 | 08/21/2015 12:32 | 08/21/2015 22:59 | 240 | 3709 | | 5014 | 0.0117 | 10.89 | 0.3 | 0.19 | OK |
| 50 | | 448 | 08/20/2015 11:56 | 08/21/2015 12:34 | 08/22/2015 07:53 | 27 | 3709 | | 5128 | 0.0117 | 122.14 | 1.1 | 1.75 | OK |
| 51 | | 402 | 08/20/2015 11:58 | 08/21/2015 12:35 | 08/22/2015 07:55 | 64 | 3709 | | 5072 | 0.0117 | 49.83 | 0.7 | 0.74 | OK |
| 52 | | 42 | 08/20/2015 12:01 | 08/21/2015 12:36 | 08/22/2015 07:24 | 188 | 3709 | | 5019 | 0.0117 | 15.4 | 0.4 | 0.26 | OK |
| 53 | | 497 | 08/20/2015 12:08 | 08/21/2015 12:40 | 08/22/2015 07:28 | 384 | 3709 | | 6674 | 0.0117 | 9.34 | 0.3 | 0.15 | OK |
| 54 | | 453 | 08/20/2015 12:06 | 08/21/2015 12:39 | 08/22/2015 07:36 | 958 | 3709 | | 5858 | 0.0117 | 1.98 | 0.2 | 0.06 | OK |
| 55 | | 485 | 08/20/2015 12:04 | 08/21/2015 12:37 | 08/22/2015 07:07 | 929 | 3709 | | 5027 | 0.0117 | 1.51 | 0.2 | 0.06 | OK |
| 56 | | 104 | 08/20/2015 12:14 | 08/21/2015 12:42 | 08/21/2015 22:50 | 210 | 3709 | | 5007 | 0.0117 | 12.74 | 0.4 | 0.22 | OK |
| 57 | | 254 | 08/20/2015 12:11 | 08/21/2015 12:41 | 08/21/2015 22:56 | 58 | 3709 | | 5017 | 0.0117 | 51.18 | 0.7 | 0.76 | OK |
| 57 | | 254 | 08/20/2015 12:11 | 08/21/2015 12:41 | 08/22/2015 07:06 | 59 | 3709 | D | 5050 | 0.0117 | 53.84 | 0.7 | 0.8 | OK |
| 58 | | 434 | 08/20/2015 12:35 | 08/21/2015 12:46 | 08/21/2015 22:47 | 132 | 3709 | | 5012 | 0.0117 | 21.62 | 0.5 | 0.35 | OK |

Types: D-Duplicate, TB-Trip Blank

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8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

# Radon Flux Measurements

| Location Name | Field Type | Canister Number | Date/Time Deployment | Retrieval | Counting | Count Time (sec) | BKG Counts | Lab Type | Sample Counts | Efficiency (cps/dps) | Flux (pCi/m²s) Result | LLD | Error | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59 | | 500 | 08/20/2015 12:37 | 08/21/2015 12:47 | 08/21/2015 22:45 | 29 | 3709 | | 5049 | 0.0117 | 106.01 | 1 | 1.53 | OK |
| 60 | | 425 | 08/20/2015 12:42 | 08/21/2015 12:50 | 08/21/2015 22:23 | 41 | 3709 | | 5039 | 0.0117 | 74.13 | 0.8 | 1.08 | OK |
| 61 | | 480 | 08/20/2015 12:46 | 08/21/2015 12:53 | 08/21/2015 22:58 | 39 | 3709 | | 5037 | 0.0117 | 78.36 | 0.9 | 1.14 | OK |
| 62 | | 451 | 08/20/2015 12:48 | 08/21/2015 12:57 | 08/21/2015 22:37 | 91 | 3709 | | 5010 | 0.0117 | 32.16 | 0.6 | 0.49 | OK |
| 63 | | 459 | 08/20/2015 12:51 | 08/21/2015 12:59 | 08/21/2015 22:12 | 588 | 3709 | | 10896 | 0.0117 | 9.53 | 0.2 | 0.12 | OK |
| 64 | | 414 | 08/20/2015 12:53 | 08/21/2015 13:00 | 08/21/2015 21:45 | 69 | 3709 | | 5178 | 0.0117 | 44.28 | 0.6 | 0.65 | OK |
| 65 | | 464 | 08/20/2015 12:56 | 08/21/2015 13:00 | 08/21/2015 21:33 | 187 | 3709 | | 5028 | 0.0117 | 14.65 | 0.4 | 0.25 | OK |
| 66 | | 406 | 08/20/2015 13:17 | 08/21/2015 13:18 | 08/21/2015 16:47 | 151 | 3709 | | 5014 | 0.0117 | 17.88 | 0.4 | 0.29 | OK |
| 67 | | 409 | 08/20/2015 13:20 | 08/21/2015 13:22 | 08/21/2015 18:57 | 477 | 3709 | | 5321 | 0.0117 | 4.86 | 0.2 | 0.1 | OK |
| ~~68~~ 69 | | 454 | 08/20/2015 13:22 | 08/21/2015 13:24 | 08/21/2015 19:11 | 263 | 3709 | | 6509 | 0.0117 | 13.08 | 0.3 | 0.2 | OK |
| 69 | | 492 | 08/20/2015 13:26 | 08/21/2015 13:27 | 08/21/2015 19:16 | 1062 | 3709 | | 5039 | 0.0117 | 1 | 0.2 | 0.05 | OK |
| 69 | | 492 | 08/20/2015 13:26 | 08/21/2015 13:27 | 08/21/2015 19:35 | 1030 | 3709 | D | 5003 | 0.0117 | 1.07 | 0.2 | 0.05 | OK |
| 70 | | 416 | 08/20/2015 13:30 | 08/21/2015 13:33 | 08/21/2015 18:54 | 156 | 3709 | | 5097 | 0.0117 | 17.79 | 0.4 | 0.29 | OK |
| 71 | | 452 | 08/20/2015 13:36 | 08/21/2015 13:54 | 08/21/2015 18:33 | 321 | 3709 | | 5868 | 0.0117 | 9 | 0.3 | 0.15 | OK |
| 72 | | 436 | 08/20/2015 13:39 | 08/21/2015 13:55 | 08/21/2015 17:50 | 698 | 3709 | | 5198 | 0.0117 | 2.57 | 0.2 | 0.07 | OK |
| 72 | | 436 | 08/20/2015 13:39 | 08/21/2015 13:55 | 08/22/2015 06:53 | 717 | 3709 | D | 5116 | 0.0117 | 2.64 | 0.2 | 0.08 | OK |
| 73 | | 467 | 08/20/2015 13:34 | 08/21/2015 13:37 | 08/21/2015 21:19 | 793 | 3709 | | 5042 | 0.0117 | 2 | 0.2 | 0.07 | OK |
| 74 | | 466 | 08/20/2015 13:32 | 08/21/2015 13:36 | 08/21/2015 18:39 | 571 | 3709 | | 5212 | 0.0117 | 3.62 | 0.2 | 0.09 | OK |
| 75 | | 200 | 08/20/2015 13:28 | 08/21/2015 13:30 | 08/21/2015 21:11 | 411 | 3709 | | 5049 | 0.0117 | 5.63 | 0.3 | 0.12 | OK |
| 76 | | 460 | 08/20/2015 13:24 | 08/21/2015 13:25 | 08/21/2015 19:06 | 241 | 3709 | | 5886 | 0.0117 | 12.88 | 0.3 | 0.2 | OK |
| 77 | | 401 | 08/20/2015 13:15 | 08/21/2015 13:17 | 08/21/2015 16:51 | 368 | 3709 | | 6976 | 0.0117 | 9.42 | 0.3 | 0.15 | OK |
| 78 | | 415 | 08/20/2015 13:05 | 08/21/2015 13:07 | 08/21/2015 21:47 | 693 | 3709 | | 5001 | 0.0117 | 2.55 | 0.2 | 0.08 | OK |

Types: D-Duplicate, TB-Trip Blank

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8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

# Radon Flux Measurements

| Location Name | Field Type | Canister Number | Date/Time Deployment | Date/Time Retrieval | Date/Time Counting | Count Time (sec) | BKG Counts | Lab Type | Sample Counts | Efficiency (cps/dps) | Flux (pCi/m²s) Result | LLD | Error | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 78 | | 415 | 08/20/2015 13:05 | 08/21/2015 13:07 | 08/21/2015 21:59 | 691 | 3709 | D | 5017 | 0.0117 | 2.58 | 0.2 | 0.08 | OK |
| 79 | | 446 | 08/20/2015 13:10 | 08/21/2015 13:08 | 08/21/2015 21:37 | 408 | 3709 | | 5137 | 0.0117 | 5.87 | 0.3 | 0.12 | OK |
| 80 | | 83 | 08/20/2015 13:13 | 08/21/2015 13:16 | 08/21/2015 16:58 | 370 | 3709 | | 8061 | 0.0117 | 11.11 | 0.3 | 0.15 | OK |
| 81 | | 405 | 08/20/2015 13:03 | 08/21/2015 13:05 | 08/21/2015 21:00 | 509 | 3709 | | 5016 | 0.0117 | 4.15 | 0.2 | 0.1 | OK |
| 82 | | 457 | 08/20/2015 12:59 | 08/21/2015 13:02 | 08/21/2015 21:09 | 62 | 3709 | | 5030 | 0.0117 | 47.92 | 0.7 | 0.72 | OK |
| 83 | | 468 | 08/20/2015 13:01 | 08/21/2015 13:04 | 08/21/2015 16:39 | 457 | 3709 | | 5007 | 0.0117 | 4.67 | 0.2 | 0.1 | OK |
| 84 | | 439 | 08/20/2015 13:43 | 08/21/2015 13:56 | 08/21/2015 18:52 | 42 | 3709 | | 5066 | 0.0117 | 70.01 | 0.8 | 1.02 | OK |
| 85 | | 424 | 08/20/2015 13:45 | 08/21/2015 13:48 | 08/21/2015 18:26 | 379 | 3709 | | 6028 | 0.0117 | 7.67 | 0.3 | 0.13 | OK |
| 86 | | 445 | 08/20/2015 13:47 | 08/21/2015 13:59 | 08/21/2015 18:15 | 629 | 3709 | | 5442 | 0.0117 | 3.3 | 0.2 | 0.08 | OK |
| 87 | | 256 | 08/20/2015 13:49 | 08/21/2015 14:00 | 08/21/2015 17:45 | 243 | 3709 | | 7023 | 0.0117 | 15.26 | 0.3 | 0.21 | OK |
| 88 | | 49 | 08/20/2015 13:51 | 08/21/2015 14:01 | 08/21/2015 17:13 | 615 | 3709 | | 5080 | 0.0117 | 3.05 | 0.2 | 0.08 | OK |
| 88 | D | 474 | 08/20/2015 13:51 | 08/21/2015 14:01 | 08/21/2015 17:25 | 1074 | 3709 | | 5031 | 0.0117 | 0.94 | 0.1 | 0.05 | OK |
| 89 | | 447 | 08/20/2015 14:00 | 08/21/2015 14:04 | 08/21/2015 17:05 | 198 | 3709 | | 5010 | 0.0117 | 13.12 | 0.4 | 0.22 | OK |
| 90 | | 2 | 08/20/2015 12:34 | 08/21/2015 12:46 | 08/21/2015 22:24 | 713 | 3709 | | 5097 | 0.0117 | 2.51 | 0.2 | 0.07 | OK |
| 91 | | 444 | 08/20/2015 12:37 | 08/21/2015 12:47 | 08/21/2015 22:40 | 257 | 3709 | | 5014 | 0.0117 | 10.17 | 0.3 | 0.18 | OK |
| 92 | | 495 | 08/20/2015 12:41 | 08/21/2015 12:49 | 08/21/2015 22:46 | 37 | 3709 | | 5008 | 0.0117 | 82.08 | 0.9 | 1.2 | OK |
| 93 | | 413 | 08/20/2015 12:45 | 08/21/2015 12:53 | 08/21/2015 22:55 | 26 | 3709 | | 5059 | 0.0117 | 118.91 | 1.1 | 1.71 | OK |
| 94 | | 435 | 08/20/2015 09:34 | 08/21/2015 10:52 | 08/22/2015 12:20 | 1200 | 3709 | | 4375 | 0.0117 | 0.37 | 0.2 | 0.05 | OK |
| 95 | | 438 | 08/20/2015 09:35 | 08/21/2015 10:40 | 08/22/2015 14:12 | 1200 | 3709 | | 3864 | 0.0117 | 0.09 | 0.2 | 0.05 | OK |
| 96 | | 417 | 08/20/2015 09:36 | 08/21/2015 10:42 | 08/22/2015 13:46 | 1200 | 3709 | | 4025 | 0.0117 | 0.18 | 0.2 | 0.05 | OK |
| 97 | | 458 | 08/20/2015 09:39 | 08/21/2015 10:44 | 08/22/2015 12:56 | 423 | 3709 | | 5002 | 0.0117 | 5.92 | 0.3 | 0.13 | OK |
| 98 | | 465 | 08/20/2015 10:45 | 08/21/2015 11:32 | 08/22/2015 11:16 | 54 | 3709 | | 5237 | 0.0117 | 63.11 | 0.8 | 0.92 | OK |

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM. 87113

# Radon Flux Measurements

| Location Name | Field Type | Canister Number | Date/Time Deployment | Date/Time Retrieval | Date/Time Counting | Count Time (sec) | BKG Counts | Lab Type | Sample Counts | Efficiency (cps/dps) | Flux (pCi/m²s) Result | LLD | Error | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 99 | | 479 | 08/20/2015 11:43 | 08/21/2015 12:24 | 08/22/2015 08:23 | 33 | 3709 | | 5074 | 0.0117 | 98.81 | 1 | 1.43 | OK |
| 100 | | 426 | 08/20/2015 11:41 | 08/21/2015 12:23 | 08/22/2015 08:22 | 40 | 3709 | D | 5067 | 0.0117 | 81 | 0.9 | 1.18 | OK |
| 100 | | 426 | 08/20/2015 11:41 | 08/21/2015 12:23 | 08/22/2015 08:21 | 40 | 3709 | | 5110 | 0.0117 | 81.7 | 0.9 | 1.19 | OK |
| | TB | 472 | 08/20/2015 12:00 | 08/21/2015 12:00 | 08/21/2015 20:38 | 1200 | 3709 | | 3829 | 0.0117 | 0.06 | 0.1 | 0.04 | OK |
| | TB | 433 | 08/20/2015 12:00 | 08/21/2015 12:00 | 08/21/2015 20:13 | 1200 | 3709 | | 3965 | 0.0117 | 0.13 | 0.1 | 0.04 | OK |
| | TB | 423 | 08/20/2015 12:00 | 08/21/2015 12:00 | 08/21/2015 19:54 | 1200 | 3709 | | 4058 | 0.0117 | 0.18 | 0.1 | 0.05 | OK |
| | TB | 1413 | 09/15/2015 12:00 | 09/16/2015 12:00 | 09/17/2015 08:52 | 1200 | 3480.5 | | 3627 | 0.0118 | 0.08 | 0.2 | 0.05 | OK |
| | TB | 1500 | 09/15/2015 12:00 | 09/16/2015 12:00 | 09/17/2015 09:17 | 1200 | 3480.5 | | 3736 | 0.0118 | 0.14 | 0.2 | 0.05 | OK |

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____

# Appendix B

## Field Exposure Rate Measurements

## HMC Exposure Rate Measurements

| Location | Exposure Rate (µR/hr) | Pile |
|---|---|---|
| 1 | 17 | LTP |
| 2 | 22 | LTP |
| 3 | 13 | LTP |
| 4 | 18 | LTP |
| 5 | 15 | LTP |
| 6 | 24 | LTP |
| 7 | 29 | LTP |
| 8 | 22 | LTP |
| 9 | 23 | LTP |
| 10 | 24 | LTP |
| 11 | 28 | LTP |
| 12 | 24 | LTP |
| 13 | 16 | LTP |
| 14 | 12 | LTP |
| 15 | 13 | LTP |
| 16 | 13 | LTP |
| 17 | 14 | LTP |
| 18 | 32 | LTP |
| 19 | 170 | LTP |
| 20 | 19 | LTP |
| 21 | 23 | LTP |
| 22 | 22 | LTP |
| 23 | 26 | LTP |
| 24 | 22 | LTP |
| 25 | 25 | LTP |
| 26 | 42 | LTP |
| 27 | 22 | LTP |
| 28 | 24 | LTP |
| 29 | 30 | LTP |
| 30 | 18 | LTP |
| 31 | 100 | LTP |
| 32 | 20 | LTP |
| 33 | 34 | LTP |
| 34 | 12 | LTP |
| 35 | 15 | LTP |
| 36 | 16 | LTP |
| 37 | 15 | LTP |
| 38 | 36 | LTP |
| 39 | 26 | LTP |
| 40 | 30 | LTP |
| 41 | 42 | LTP |
| 42 | 45 | LTP |
| 43 | 25 | LTP |
| 44 | 29 | LTP |
| 45 | 24 | LTP |
| 46 | 22 | LTP |
| 47 | 32 | LTP |
| 48 | 26 | LTP |
| 49 | 25 | LTP |
| 50 | 26 | LTP |

| Location | Exposure Rate (µR/hr) | Pile |
|---|---|---|
| 51 | 28 | LTP |
| 52 | 26 | LTP |
| 53 | 22 | LTP |
| 54 | 23 | LTP |
| 55 | 22 | LTP |
| 56 | 28 | LTP |
| 57 | 20 | LTP |
| 58 | 26 | STP |
| 59 | 28 | STP |
| 60 | 24 | STP |
| 61 | 36 | STP |
| 62 | 24 | STP |
| 63 | 25 | STP |
| 64 | 18 | STP |
| 65 | 18 | STP |
| 66 | 18 | STP |
| 67 | 26 | STP |
| 68 | 24 | STP |
| 69 | 26 | STP |
| 70 | 28 | STP |
| 71 | 22 | STP |
| 72 | 22 | STP |
| 73 | 20 | STP |
| 74 | 16 | STP |
| 75 | 24 | STP |
| 76 | 18 | STP |
| 77 | 14 | STP |
| 78 | 14 | STP |
| 79 | 21 | STP |
| 80 | 12 | STP |
| 81 | 15 | STP |
| 82 | 90 | STP |
| 83 | 12 | STP |
| 84 | 120 | STP |
| 85 | 38 | STP |
| 86 | 42 | STP |
| 87 | 160 | STP |
| 88 | 100 | STP |
| 89 | 44 | STP |
| 90 | 30 | STP |
| 91 | 80 | STP |
| 92 | 60 | STP |
| 93 | 70 | STP |
| 94 | 15 | LTP |
| 95 | 13 | LTP |
| 96 | 12 | LTP |
| 97 | 14 | LTP |
| 98 | 28 | LTP |
| 99 | 26 | LTP |
| 100 | 24 | LTP |

# Appendix C

## Field Deployment and Laboratory Analysis Log Forms

# ERG Canister Deployment and Retrieval Log Form

Site: HMC - GRANTS

- Minimum temperature during canister deployment: 46 °F

  How was onsite minimum temperature measured? HMC MET STATION

- Was there rain onsite in the 24 hours prior to or during deployment? Yes (No) *(circle one)*

  How was the amount of onsite precipitation determined? HMC MET STATION

| Location Number | Canister Number | Deployment Date (mm/dd/yy) | Deployment Time (24:00) | Retreival Date (mm/dd/yy) | Retrieval Time (24:00) | Comments |
|---|---|---|---|---|---|---|
| 1 | 443 | 08/20/2015 | 0930 | 8/21/15 | 1036 | 17 |
| 2 | 435 | | 0934 | 8/21/15 | 1052 | 15 |
| 3 | 438 | | 0935 | 8/21/15 | 1040 | 13 |
| 4 | 417 | | 0936 | 8/21/15 | 1042 | 12 |
| 5 | 458 | | 0939 | 8/21/15 | 1044 | 14 - Relocated |
| 6 | 410 | | 0945 | 8/21/15 | 1038 | 13 |
| 7 | 422 | | 0947 | 8/21/15 | 1049 | 22 |
| 8 | 91 | | 0950 | 8/21/15 | 1047 | 18 |
| 9 | 105 | | 0955 | 8/21/15 | 1046 | 15 |
| 10 | 456 | | 0957 | 8/21/15 | 1102 | 24 |
| 11 | 437 | | 1000 | 8/21/15 | 1100 | 29 |
| 12 | 402 | | 1005 | 8/21/15 | 1108 | 22 |
| 13 | 64 | | 1007 | 8/21/15 | 1107 | 23 |
| 14 | 433 | | 1010 | 8/21/15 | 1106 | 24 |
| 15 | 499 | | 1012 | 8/21/15 | 1104 | 28 |
| 16 | 430 ✓ | | 1014 | 8/21/15 | 1113 | 24 |
| 17 | 5 ✓ | | 1015 | 8/21/15 | 1112 | 16 |
| 18 | 431 ✓ | | 1017 | 8/21/15 | 1111 | 12 |
| 19 | 473 ✓ | | 1020 | 8/21/15 | 1119 | 13 |
| 20 | 488 ✓ | | 1023 | 8/21/15 | 1117 | 10 |
| 21 | 409 ✓ | | 1025 | 8/21/15 | 1115 | 14 |
| 22 | 81 | | 1028 | 8/21/15 | 1140 | 32 |
| 23 | 412 | | 1030 | 8/21/15 | 1142 | 170 |
| 24 | 293 | | 1032 | 8/21/15 | 1147 | 19 |
| 25 | 403 | | 1035 | 8/21/15 | 1148 | 23 |

Review: [signature]

# ERG Canister Deployment and Retrieval Log Form

Site: HMC - Gators

| | Location Number | Canister Number | Deployment Date (mm/dd/yy) | Deployment Time (24:00) | Retreival Date (mm/dd/yy) | Retrieval Time (24:00) | Comments |
|---|---|---|---|---|---|---|---|
| 22 | 26 | 475 | 08/12/15 | 1038 | 08/20/15 | 1128 | 22 |
| 23 | 27 | 484 | | 1042 | | 1130 | 26 |
| 18 | 28 | 465 | | 1045 | | 1132 | 28 |
| 24 | 29 | 489 | | 1046 | | 1133 | 22 |
| 25 | 30 | 101 | | 1048 | | 1136 | 25 |
| 26 | 31 | 479 | | 1050 | | 1138 | 42 |
| 27 | 32 | 463 | | 1053 | | 1139 | 22 |
| 28 | 33 | 470 | | 1056 | | 1153 | 24 |
| 29 | 34 | 452 | | 1058 | | 1154 | 30 |
| 30 | 35 | 75 | | 1100 | | 1156 | 18 |
| 32 | 36 | 404 | | 1102 | | 1157 | 20 |
| 33 | 37 | 21 | | 1105 | | 1158 | 34 |
| 31 | 38 | 432 | | ~~1100~~ 1107 | | 1159 | 100 |
| 36 | 39 | 477 | | 1110 | | 1201 | 16 |
| 35 | 40 | 476 | | 1112 | | 1202 | 15 |
| 34 | 41 | 455 | | 1114 | | 1203 | 12 |
| 37 | 42 | 1 | | 1117 | | 1212 | 15 |
| 39 | 43 | 497 ✓ | | 1121 | | 1206 | 26 |
| 38 | 44 | 493 ✓ | | 1124 | | 1207 | 30 |
| 41 | 45 | 4 | | 1126 | | 1208 | 42 |
| 40 | 46 | 461 ✓ | | 1128 | | 1209 | 30 |
| 43 | 47 | 427 ✓ | | 1131 | | 1216 | 25 |
| 42 | 48 | 440 ✓ | | 1133 | | 1218 | 45 |
| 45 | 49 | 476 ✓ | | 1136 | | 1220 | 24 |
| 44 | 50 | 411 ✓ | | 1138 | | 1221 | 29 |
| 100 | 51 | 426 ✓ | | 1141 | | 1223 | 24 |
| 99 | 52 | 479 ✓ | | 1143 | | 1224 | 26 |
| 46 | 53 | 480 ✓ | | 1146 | | 1225 | 22 |
| 47 | 54 | 471 ✓ | | 1148 | | 1227 | 32 |
| 48 | 55 | 94 ✓ | | 1150 | | 1230 | 26 |

Review: _____

# ERG Canister Deployment and Retrieval Log Form

Site: HMC - GRAVITS

| | Location Number | Canister Number | Deployment Date (mm/dd/yy) | Deployment Time (24:00) | Retreival Date (mm/dd/yy) | Retrieval Time (24:00) | Comments |
|---|---|---|---|---|---|---|---|
| 49 | 56 | 428 | 08/20/2015 | 1154 | 8/21/15 | 1232 | 25 |
| 50 | 57 | 448 ✓ | | 1156 | | 1234 | 26 |
| 51 | 58 | 402 ✓ | | 1158 | | 1235 | 28 |
| 52 | 59 | 42 ✓ | | 1201 | | 1236 | 26 |
| 55 | 60 | 485 ✓ | | 1204 | | 1237 | 22 |
| 54 | 61 | 453 ✓ | | 1206 | | 1239 | 23 |
| 53 | 62 | 497 ✓ | | 1208 | | 1240 | 22 |
| 57 | 63 | 254 ✓ | | 1211 | | 1241 | 20 |
| 56 | 64 | 104 ✓ | | 1214 | | 1242 | 28 |
| 40 | 65 | 2 | | 1234 | | 1246 | 34 |
| 58 | 66 | 434 | | 1235 | | 1246 | 26 |
| 91 | 67 | 444 | | 1237 | | 1247 | 80 |
| 59 | 68 | 500 | | 1239 | | 1247 | 28 |
| 92 | 69 | 495 ✓ | | 1241 | | 1249 | 60 |
| 60 | 70 | 425 ✓ | | 1242 | | 1250 | 24 |
| 93 | 71 | 413 ✓ | | 1245 | | 1253 | 70 |
| 61 | 72 | 480 | | 1246 | | 1253 | 36 |
| 62 | 73 | 451 ✓ | | 1248 | | 1257 | 24 |
| 63 | 74 | 459 ✓ | | 1251 | | 1259 | 24 |
| 64 | 75 | 414 ✓ | | 1253 | | 1300 | 18 |
| 65 | 76 | 464 ✓ | | 1256 | | 1300 | 18 |
| 82 | 77 | 457 ✓ | | 1259 | | 1302 | 90 |
| 83 | 78 | 468 ✓ | | 1301 | | 1304 | 12 |
| 81 | 79 | 405 ✓ | | 1303 | | 1305 | 15 |
| 78 | 80 | 415 ✓ | | ~~1305~~ 1307 | | 1307 | 14 |
| 79 | 81 | 446 ✓ | | 1310 | | 1308 | 21 |
| 80 | 82 | 83 | | 1313 | | 1316 | 17 |
| 77 | 83 | 401 | | 1315 | | 1317 | 14 |
| 66 | 84 | 406 | | 1317 | | 1318 | 18 |
| 67 | 85 | 409 ✓ | | 1320 | | 1322 | 26 |

Review: [signature]

# Canister Deployment and Retrieval Log Form

Site: _____

| Location Number | Canister Number | Deployment Date (mm/dd/yy) | Deployment Time (24:00) | Retreival Date (mm/dd/yy) | Retrieval Time (24:00) | Comments |
|---|---|---|---|---|---|---|
| 86 | 454 | 08/20/2015 | 1322 | 8/21/15 | 1324 | 24 |
| 87 | 460 | | 1324 | | 1325 | 18 |
| 88 | 492 ✓ | | 1326 | | 1327 | 26 |
| 89 | 400 ✓ | | 1328 | | 1330 | 24 |
| 90 | 416 ✓ | | 1330 | | 1333 | 28 |
| 91 | 466 ✓ | | 1332 | | 1336 | 16 |
| 92 | 467 ✓ | | 1334 | | 1337 | 20 |
| 93 | 452 ✓ | | 1336 | | 1354 | 22 |
| 94 | 436 | | 1339 | | 1355 | 22 |
| 95 | 439 | | 1343 | | 1356 | 120 |
| 96 | 424 | | 1345 | | 1357 | 38 |
| 97 | 445 | | 1347 | | 1359 | 42 |
| 98 | 456 | | 1349 | | 1400 | 160 |
| 99 | 449 | | 1351 | | 1401 | 100 |
| 100 | 474 | | 1351 | | 1401 | Duplicate |
| 101 | 447 | | 1400 | | 1404 | 14 |
| 102 | 494 | | 1405 | | 1409 | LTP Duplicate |
| 103 | 472 | | | | | Trip Blank |
| 104 | 433 | " | | | | Trip Blank |
| 105 | | | | | | |
| 106 | | | | | | |
| 107 | | | | | | |
| 108 | | | | | | |
| 109 | | | | | | |
| 110 | | | | | | |
| 111 | | | | | | |
| 112 | | | | | | |
| 113 | | | | | | |
| 114 | | | | | | |
| 115 | | | | | | |

Review: _____

# ERG Canister Analysis Log Form

HMC MACTEC PICE

Site: ~~236~~ Off-Cell

ROI: Channel 743 to Channel 458

| Canister Number | Duplicate Count | Count Date (mm/dd/yy) | Count Time (24:00) | Count Duration (seconds) | Total Counts | Technician Initials |
|---|---|---|---|---|---|---|
| STD 3 | | 8-21-15 | 1249 | 1200 | 42345 | RSH |
| STD 1 | | | 1313 | 1200 | 47235 | RSH |
| BKG 1 | | | 1335 | 1200 | 3654 | RSH |
| 468 | | | 16:39 | 457 | 5007 | HH |
| ~~406 HH~~ | | | ~~16:47 HH~~ | | ~~HH 5007~~ | |
| 406 | | | 16:47 | 151 | 5014 | |
| 401 | | | 16:51 | 368 | 6976 | |
| 83 | | | 16:58 | 370 | 8061 | |
| 447 | | | 17:05 | 198 | 5010 | |
| 494 | | | 17:10 | 171 | 5012 | |
| 49 | | | 17:13 | 615 | 5080 | |
| 474 | | | 17:25 | 1074 | 5031 | |
| 256 | | | 17:45 | 243 | 7023 | |
| * 436 | | | 17:50 | 698 | 5198 | |
| ~~438~~ | Dup HH | | ~~18:02~~ | ~~682~~ | ~~5089~~ | Dup 2 x 2000 |
| 445 | | | 18:15 | 629 | 5442 | |
| 424 | | | 18:26 | 379 | 6028 | |
| 452 | | | 18:33 | 321 | 5868 | |
| 466 | | | 18:39 | 571 | 5212 | |
| 439 | | | 18:52 | 42 | 5066 | |
| 416 | | | 18:54 | 156 | 5097 | |
| 409 | | | 18:57 | 477 | 5321 | |
| 460 | | | 19:06 | 241 | 5886 | |
| 454 | | | 19:11 | 263 | 6509 | |
| * 492 | | | 19:16 | 1062 | 5039 | |
| 492 | dup | | 19:35 | 1030 | 5003 | |
| 423 | | | 19:54 | 1200 | 4058 | |
| 433 | | | 20:16 | 1200 | 3965 | |
| 472 | | | 20:38 | 1200 | 3829 | |

Review: _____ Date: 8/24/15

# ERG Canister Analysis Log Form

Site: HMC Grants 2015
ROI: Channel 773 to Channel 858

| Canister Number | Duplicate Count | Count Date (mm/dd/yy) | Count Time (24:00) | Count Duration (seconds) | Total Counts | Technician Initials |
|---|---|---|---|---|---|---|
| 405 | | 8-21-15 | 21:00 | 509 | 5016 | DH |
| 457 | | | 21:09 | 62 | 5030 | |
| 200 | | | 21:11 | 411 | 5049 | |
| 467 | | | 21:19 | 793 | 5042 | |
| ~~66~~464 | | | 21:33 | 187 | 5028 | |
| 446 | | | 21:37 | 408 | 5137 | |
| 414 | | | 21:45 | 69 | 5178 | |
| 415 | | | 21:47 | 693 | 5001 | |
| 415 | dup | | 21:59 | 691 | 5017 | |
| 459 | | | 22:12 | 588 | 10896 | |
| 425 | | | 22:23 | 41 | 5039 | |
| 2 | | | 22:24 | 713 | 5097 | |
| 491 | | | 22:37 | 91 | 5010 | |
| 444 | | | 22:40 | 257 | 5014 | |
| 500 | | | 22:45 | 29 | 5049 | |
| 495 | | | 22:46 | 37 | 5008 | |
| 434 | | | 22:47 | 132 | 5012 | |
| 104 | | | 22:50 | 210 | 5007 | |
| 413 | | | 22:55 | 26 | 5059 | |
| 254 | | | 22:56 | 58 | 5017 | |
| 480 | | | 22:58 | 39 | 5037 | |
| 428 | | | 22:59 | 240 | 5014 | |
| STD1 | | | 23:04 | 1200 | 47127 | |
| STD3 | | | 23:25 | 1200 | 41691 | |
| BKG | | | 23:48 | 1200 | 3718 | |
| BKG | | 8-22-15 | 0535 | 1200 | 3774 | ESH |
| STD1 | | | 0556 | 1200 | 47466 | ESH |
| STD3 | | | 0618 | 1200 | 43578 | ESH |
| 436 | DUP | | 0653 | 717 | 5116 | ESH |

Review: _____ Date: 8/24/15

# ERG Canister Analysis Log Form

Site: HMC GRANITE
ROI: Channel 743 to Channel 959

| Canister Number | Duplicate Count | Count Date (mm/dd/yy) | Count Time (24:00) | Count Duration (seconds) | Total Counts | Technician Initials |
|---|---|---|---|---|---|---|
| 254 | DUP | 8-22-15 | 0706 | 59 | 50SO | ESH |
| 485 | | | 0707 | ~~5027~~ 929 | 5027 | |
| 42 | | | 0724 | 188 | 5019 | |
| 497 | | | 0728 | 384 | 6674 | |
| 453 | | | 0736 | 958 | 5858 | |
| 448 | | | 0753 | 27 | 5128 | |
| 94 | | | 0754 | 60 | 5171 | |
| 402 | | | 0755 | 64 | 5072 | |
| 471 | | | 0758 | 724 | 5005 | |
| 486 | | | 0810 | 592 | 5617 | |
| 426 | | | 0821 | 40 | 5110 | |
| 426 | DUP | | 0822 | 40 | 5067 | |
| 479 | | | 0823 | 33 | 5074 | |
| 478 | | | 0824 | 24 | 5083 | |
| 427 | | | 0825 | 24 | 5136 | |
| 440 | | | 0826 | 23 | 5106 | |
| 411 | | | 0827 | 88 | 5027 | |
| 487 | | | 0829 | 888 | 5001 | |
| 493 | | | 0845 | 20 | 5163 | |
| 461 | | | 0846 | 43 | 5052 | |
| 4 | | | 0847 | 45 | 5064 | |
| 455 | | | 0849 | 203 | 6860 | |
| 455 | DUP | | 0853 | 149 | 5009 | |
| 1 | | | 0856 | 1200 | 5066 | |
| 477 | | | 0918 | 24 | 5335 | |
| 476 | | | 0922 | 414 | 5013 | |
| 404 | | | 0930 | 30 | 5478 | |
| 470 | | | 0931 | 140 | 5011 | |
| 432 | | | 0934 | 98 | 5060 | ESH |

Review: [signature]

Date: 8/24/15

# ERG Canister Analysis Log Form

Site: _____
ROI: Channel _____ to Channel _____

| Canister Number | Duplicate Count | Count Date (mm/dd/yy) | Count Time (24:00) | Count Duration (seconds) | Total Counts | Technician Initials |
|---|---|---|---|---|---|---|
| 75 | ~~0937~~ ESH | 8-22-15 | 0937 | 70 | 5041 | ESH |
| 418 | NOT | ~~Deployed~~ | 0939 | | | |
| 21 | | 8-22-15 | 0944 | 36 | 5080 | ESH |
| 450 | | | 0945 | 21 | 5209 | RSH |
| 450 | Dup | | 0947 | 20 | 5172 | RSH |
| 431 | | | 0949 | 261 | 5021 | |
| 5 | | | 9:55 | 50 | 5034 | |
| 408 | | | 9:58 | 53 | 5204 | |
| 430 | | | 10:01 | 36 | 5196 | |
| 263 | | | 10:03 | 557 | 5006 | |
| 403 | | | 10:15 | 36 | 5116 | |
| 473 | | | 10:16 | 521 | 5005 | |
| 68 | | | 10:28 | 71 | 5047 | |
| 101 | | | 10:33 | 579 | 5196 | |
| 463 | | | 10:44 | 815 | 5001 | |
| 463 | Dup | | 10:59 | 847 | 5278 | |
| 412 | | | 11:14 | 8 | 5106 | |
| 429 | | | 11:15 | 45 | 6834 | |
| 465 | | | 11:16 | 54 | 5237 | |
| 484 | | | 11:18 | 22 | 5086 | |
| 475 | | | 11:19 | 723 | 5000 | |
| 489 | | | 11:32 | 20 | 5068 | |
| 499 | | | ~~11:34~~ 11:34 | 32 | 5048 | |
| 488 | | | 11:36 | 884 | 5157 | |
| 456 | | | 11:52 | 30 | 5035 | |
| 437 | | | 11:53 | 545 | 5544 | |
| 437 | Dup | | 12:03 | 517 | 5246 | |
| 462 | | | 12:13 | 118 | 5051 | |
| 64 | | | 12:16 | 59 | 5034 | |

Review: _____ Date: 8/24/15

# ERG Canister Analysis Log Form

Site: LMC GRAND JCT
ROI: Channel 743 to Channel 958

| Canister Number | Duplicate Count | Count Date (mm/dd/yy) | Count Time (24:00) | Count Duration (seconds) | Total Counts | Technician Initials |
|---|---|---|---|---|---|---|
| 435 | | 8-22-15 | 12:20 | 1200 | 4375 | ~~HH~~ |
| 483 | | | 12:43 | 47 | 5054 | |
| 443 | | | 12:45 | 211 | 5009 | |
| 410 | | | 12:50 | 255 | 5011 | |
| 458 | | | 12:56 | 423 | 5002 | |
| 105 | | | 13:04 | 1200 | 4614 | |
| 91 | | | 13:26 | 1200 | 4554 | |
| * 417 | | | 1346 | 1200 | 4025 | |
| 422 | | | 1409 | 58 | 5052 | |
| 422 | DUP | | 1410 | 59 | 5053 | |
| 438 | ~~DUP~~ | | 1412 | 1200 | 3864 | NO DUP |
| STO3 | | | 1433 | 1200 | 42483 | |
| STO1 | | | 1453 | 1200 | 46876 | |
| RKG | | | 1515 | 1200 | 3690 | |

Review: _____ Date: 8/24/15

# Canister Deployment and Retrieval Log Form

Site: HWMC LTP

| Location Number | Canister Number | Deployment Date (mm/dd/yy) | Deployment Time (24:00) | Retrieval Date (mm/dd/yy) | Retrieval Time (24:00) | Comments |
|---|---|---|---|---|---|---|
| 24 | 428 | 9/15/15 | 8:58 | 9/16/15 | 12:45 | |
| 23 | 406 | " | 9:00 | " | 12:47 | |
| 19 | 471 | " | 9:03 | " | 12:40 | |
| TB | 413 | " | 12:00 | " | 12:00 | TRIP |
| TB | 500 | " | 12:00 | " | 12:02 | " |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | * | NO | AREA | FOR HWMC |
| | | | | | | MET STATION |
| | | | * | 52° F | MINIMUM | TEMP |

Review: _____

# ERG Canister Analysis Log Form

Site: HMC LTP
ROI: Channel ___ to Channel ___

| Canister Number | Duplicate Count | Count Date (mm/dd/yy) | Count Time (24:00) | Count Duration (seconds) | Total Counts | Technician Initials |
|---|---|---|---|---|---|---|
| BKG | | 9-17-15 | 0700 | 1200 | 3631 | RSH |
| STO 1 | | | 0750 | 1200 | 46243 | |
| STO 3 | | | 0821 | 1200 | 43213 | |
| 428 | | | 0847 | 60 | 5935 | |
| 471 | | | 0849 | 30 | 7213 | |
| 471 | DUP | | 0849 | 30 | 7196 | |
| 406 | | | 0851 | 50 | 5593 | |
| 413 | | | 0852 | 1200 | 3627 | |
| 506 | | | 0917 | 1200 | 3736 | |
| STO3 | | | 0938 | 1200 | 43936 | |
| STO1 | | | 0959 | 1200 | 46989 | |
| BKG | | | 1119 | 1200 | 3330 | |

Review: _____ Date: 9/18/15

Designer and Manufacturer of Scientific and Industrial Instruments

# CERTIFICATE OF CALIBRATION

**LUDLUM MEASUREMENTS, INC.**
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

☐ 10744 Dutchtown Road
865-392-4601
Knoxville, TN 37932, U.S.A.

CUSTOMER ERG ORDER NO. 20257434/414128

Mfg. Ludlum Measurements, Inc Model 19 Serial No 94625

Mfg Model Serial No.

Cal. Date 22-Nov-14 Cal Due Date 22-Nov-15 Cal Interval 1 Year Meterface 202-016

heck mark ✓applies to applicable instr. and/or detector IAW mfg. spec. T 76 °F RH 35 % Alt 692.8 mm Hg

☐ New Instrument Instrument Received ✓ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol ☐ Requiring Repair ☐ Other-See comments

✓ Mechanical ck. ✓ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
✓ F/S Resp. ck ✓ Reset ck. ☐ Window Operation ✓ Geotropism
✓ Audio ck. ☐ Alarm Setting ck. ✓ Batt. ck. (Min. Volt) 2.2 VDC
☐ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ✓ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

strument Volt Set 550 V Input Sens. 31 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☐ HV Readout (2 points) Ref./Inst. 500 / _____ V Ref./Inst. 1500 / _____ V

**COMMENTS:**

mma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

| RANGE/MULTIPLIER | REFERENCE CAL. POINT | INSTRUMENT REC'D "AS FOUND READING" | INSTRUMENT METER READING* |
|---|---|---|---|
| 5000 | 4000µR/hr | 4000 | 4000 |
| 5000 | 1000µR/hr | 1000 | 1000 |
| 500 | 400µR/hr= 32000 cpm | 400 | 400 |
| 500 | 100µR/hr | 100 | 100 |
| 250 | 200µR/hr= 16200 cpm | 200 | 200 |
| 250 | 100µR/hr | 100 | 100 |
| 50 | 3200 cpm | 40 | 40 |
| 50 | 1000 cpm | 10 | 10 |
| 25 | 3620 cpm | 20 | 20 |
| 25 | 900 cpm | 5 | 5 |

*Uncertainty within ± 10% C.F. within ± 20%

50,25 **Range(s) Calibrated Electronically**

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* | | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* |
|---|---|---|---|---|---|---|---|
| tal dout | | | | Log Scale | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

n Measurements Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of international Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques alibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

**eference Instruments and/or Sources:** Cs-137 S/N ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1698 ☐ 1909 ☐ 1916CP ☐ 5105 ☐ 5717CO ☐ 5719CO ☐ 60846 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☐ M565 ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be S/N ☐ T-304 Ra-226 S/N ☐ Y982

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

✓ m 500 S/N 289158 ☐ Oscilloscope S/N _____ ✓ Multimeter S/N 93870637

ibrated By: _____ Date 22 Nov 14

iewed By: _____ Date 24 Nov 14

certificate shall not be reproduced except in full without the written approval of Ludlum Measurements Inc.
M 022A 05/19/2014 Page 1 of 1

AC Inst Only ☐ Passed Dielectric Hi-Pot and Continuity Test ☐ Failed

# APPENDIX G

# SOIL MOISTURE CONCENTRATIONS FROM IRRIGATION LYSIMETERS

## APPENDIX G

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## SOIL MOISTURE CONCENTRATIONS FROM IRRIGATION LYSIMETERS

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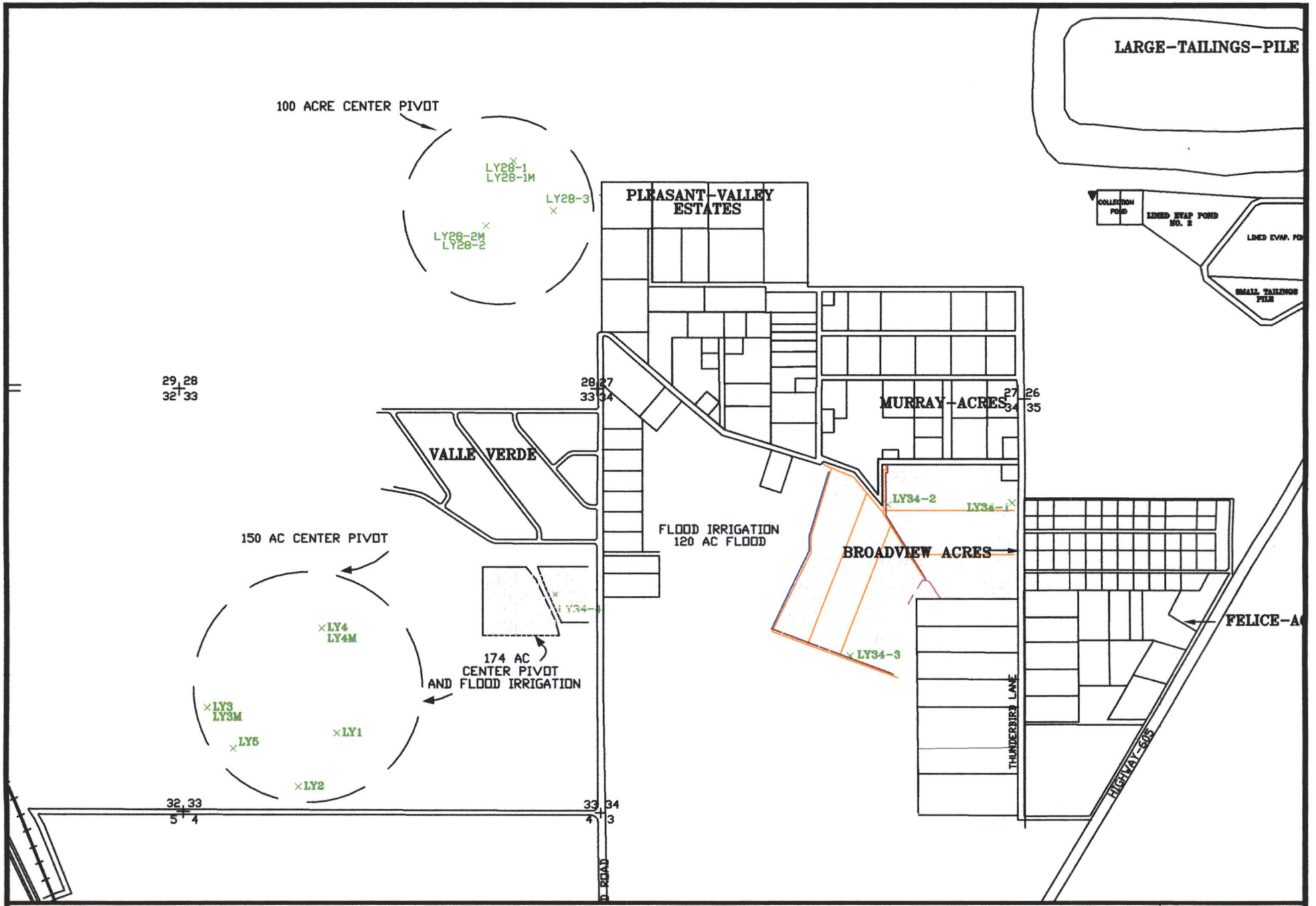
**SOIL MOISTURE CONCENTRATIONS FROM IRRIGATION LYSIMETERS**

**Page Number**

**FIGURES (continued)**




HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

**FIGURE G-1. LOCATIONS OF THE SOIL MOISTURE LYSIMETERS IN THE IRRIGATION AREAS**

| |
|---|
| DATE: 3/3/16 |
| SCALE: 1"=1600' |
| PAGE: G-1 |

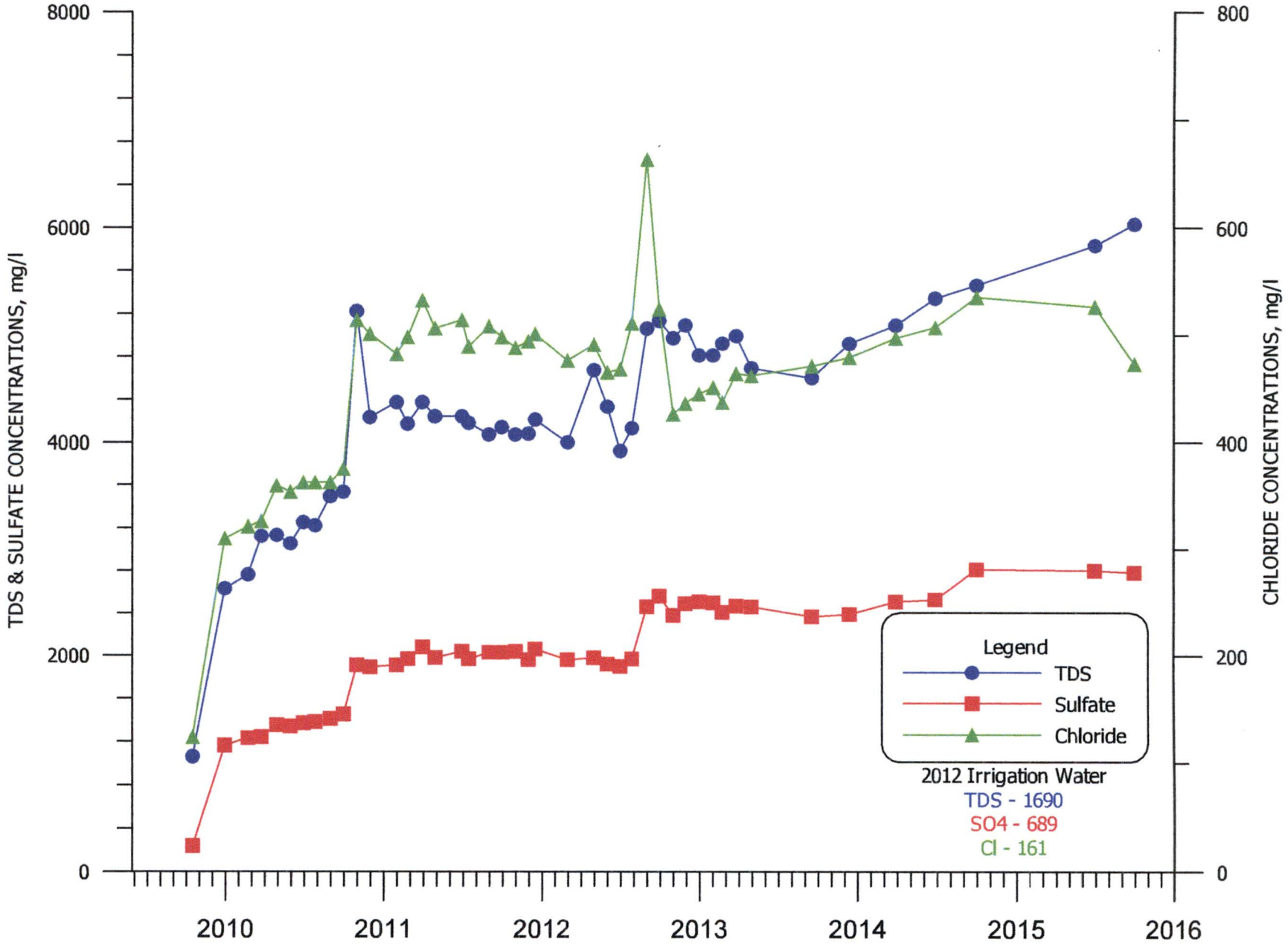



**FIGURE G-2. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY34-1.**

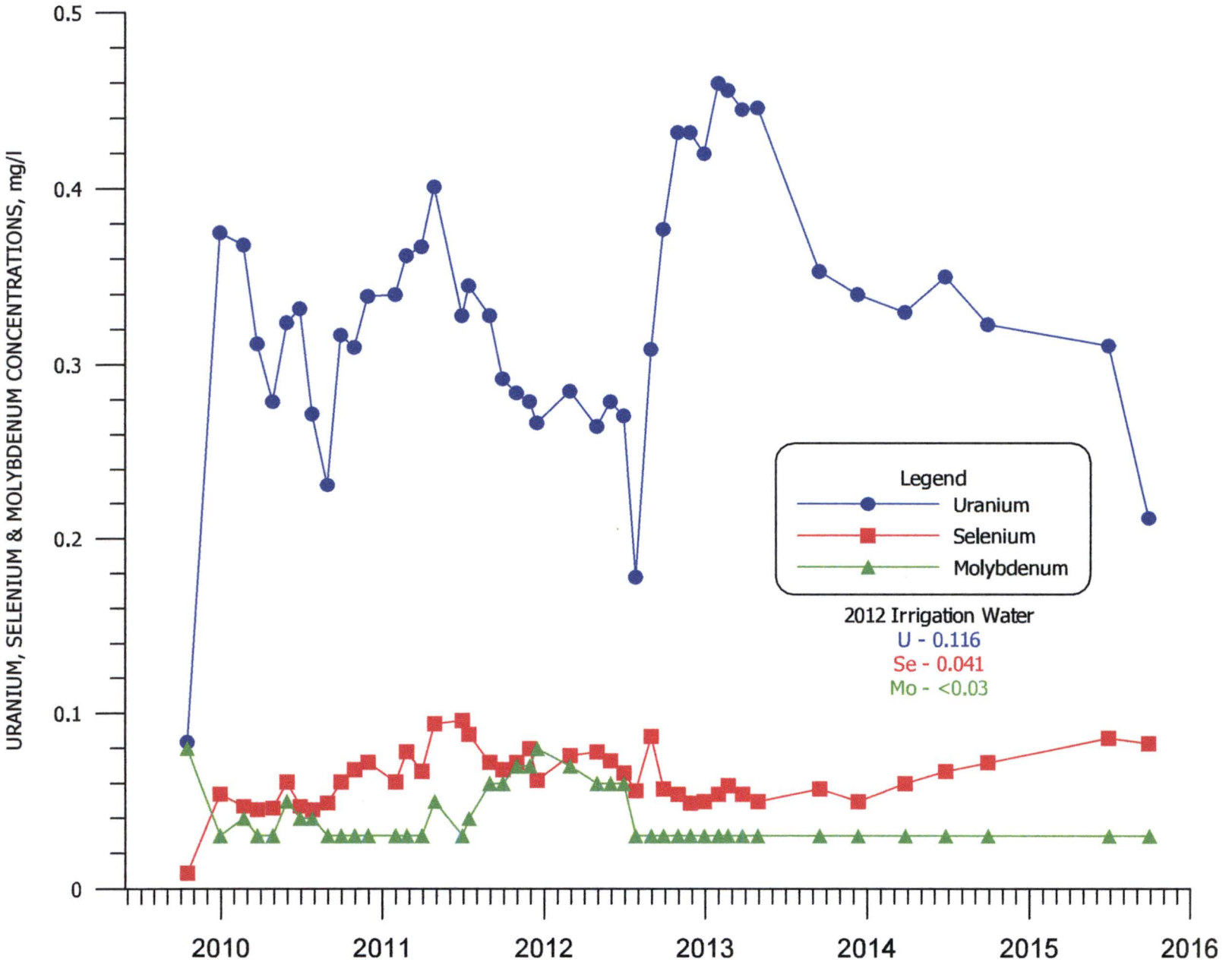



**FIGURE G-3. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY34-1.**

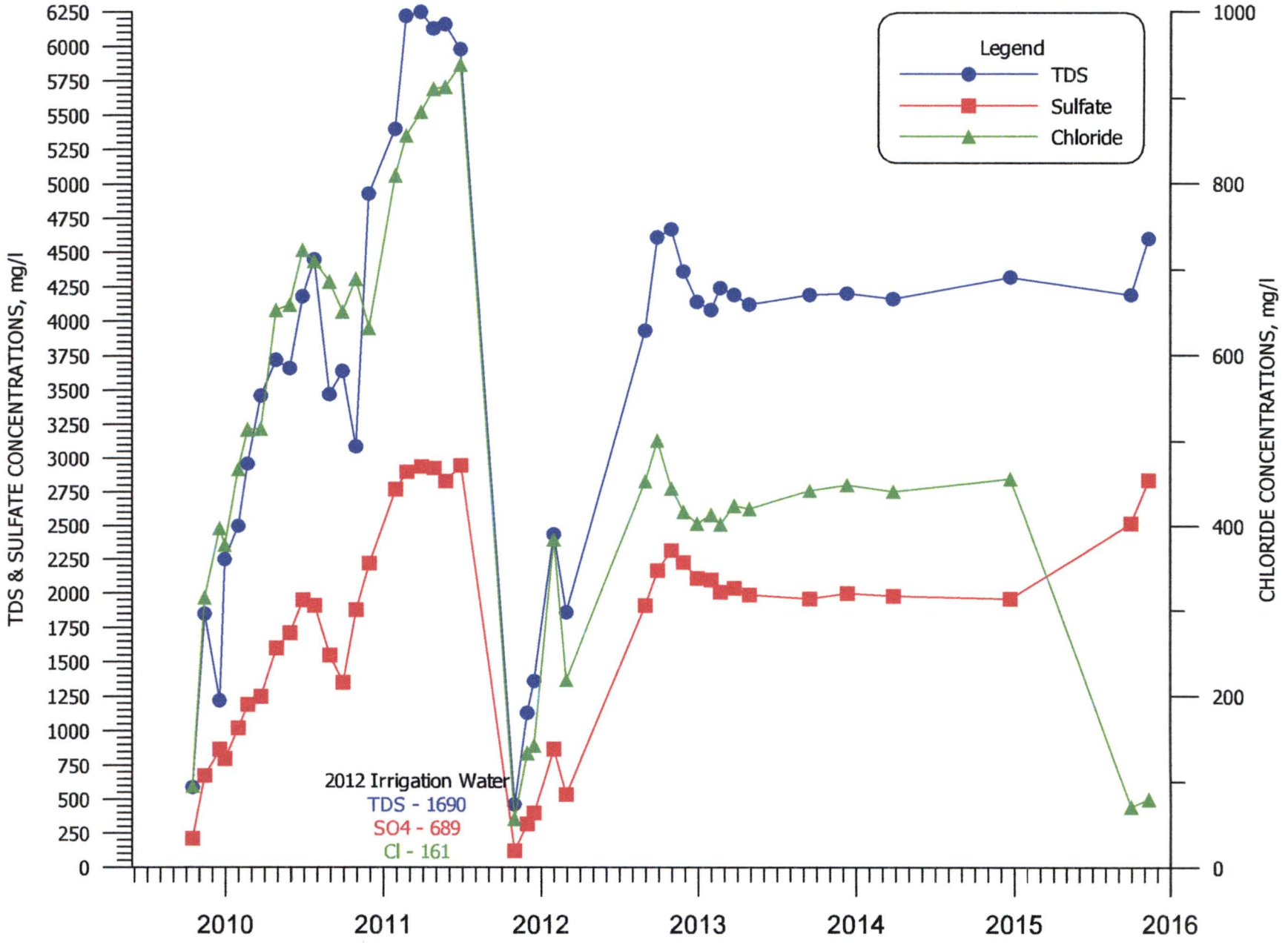



**FIGURE G-4. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY34-2.**

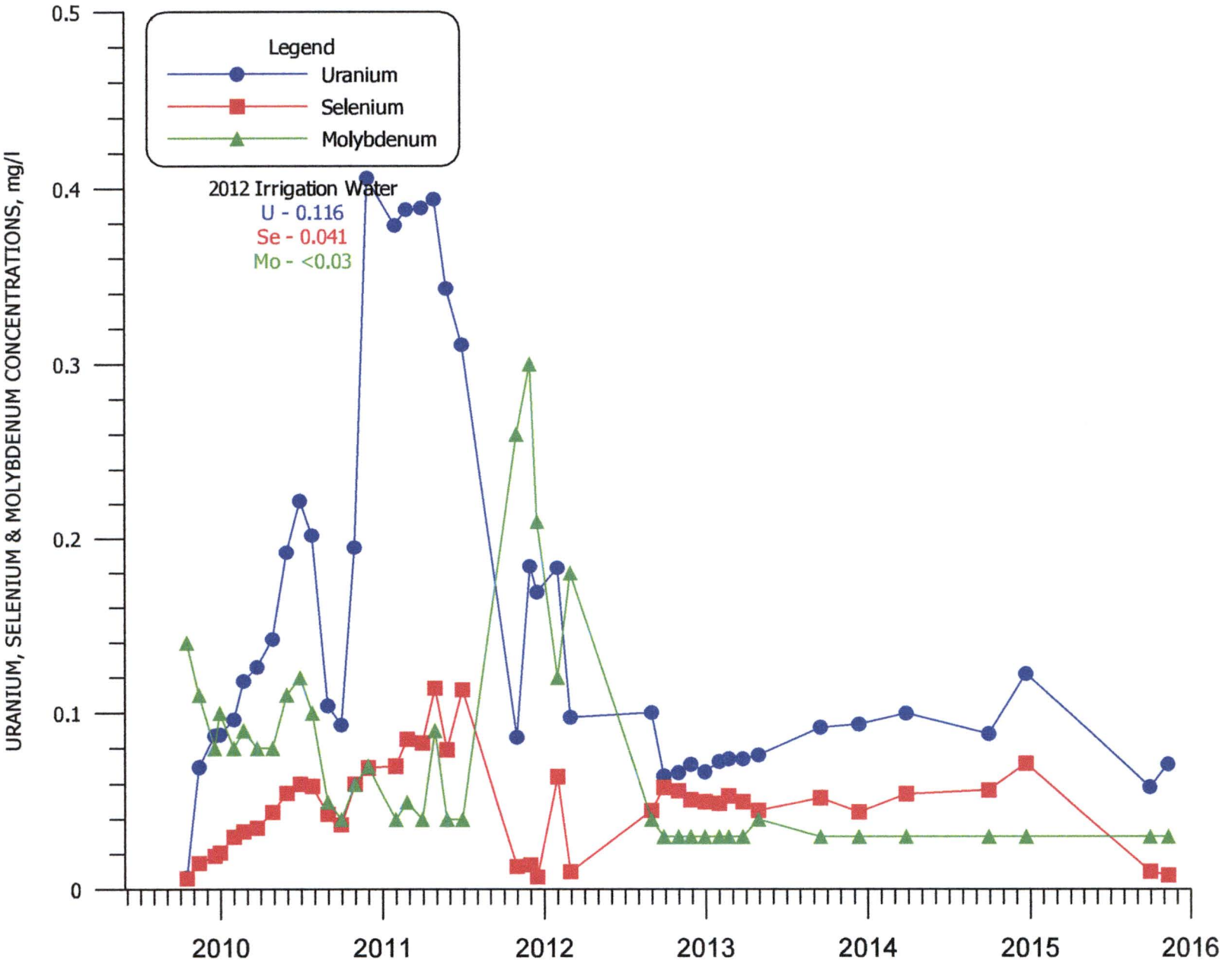



**FIGURE G-5. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY34-2.**

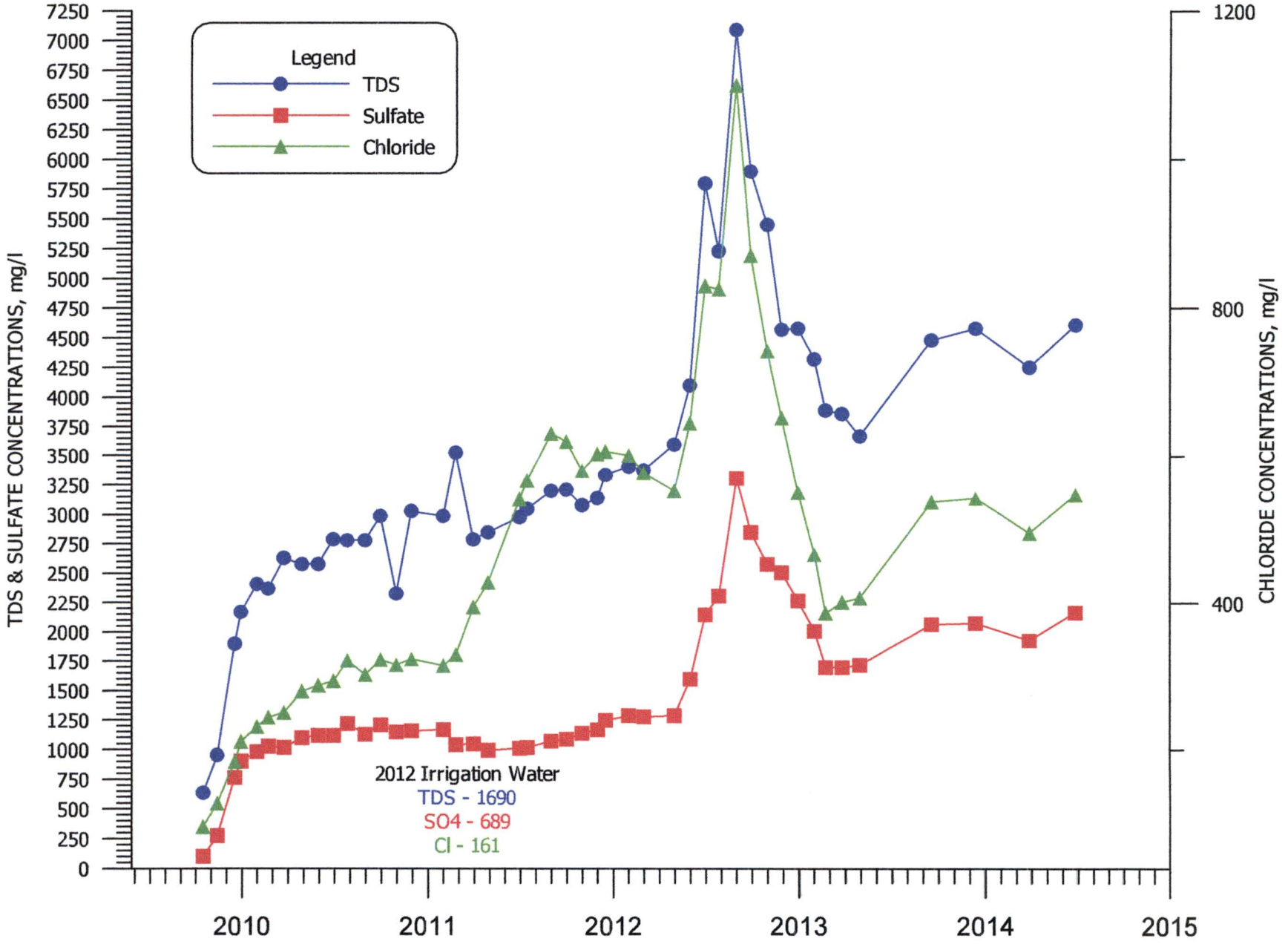



**FIGURE G-6. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY34-3.**

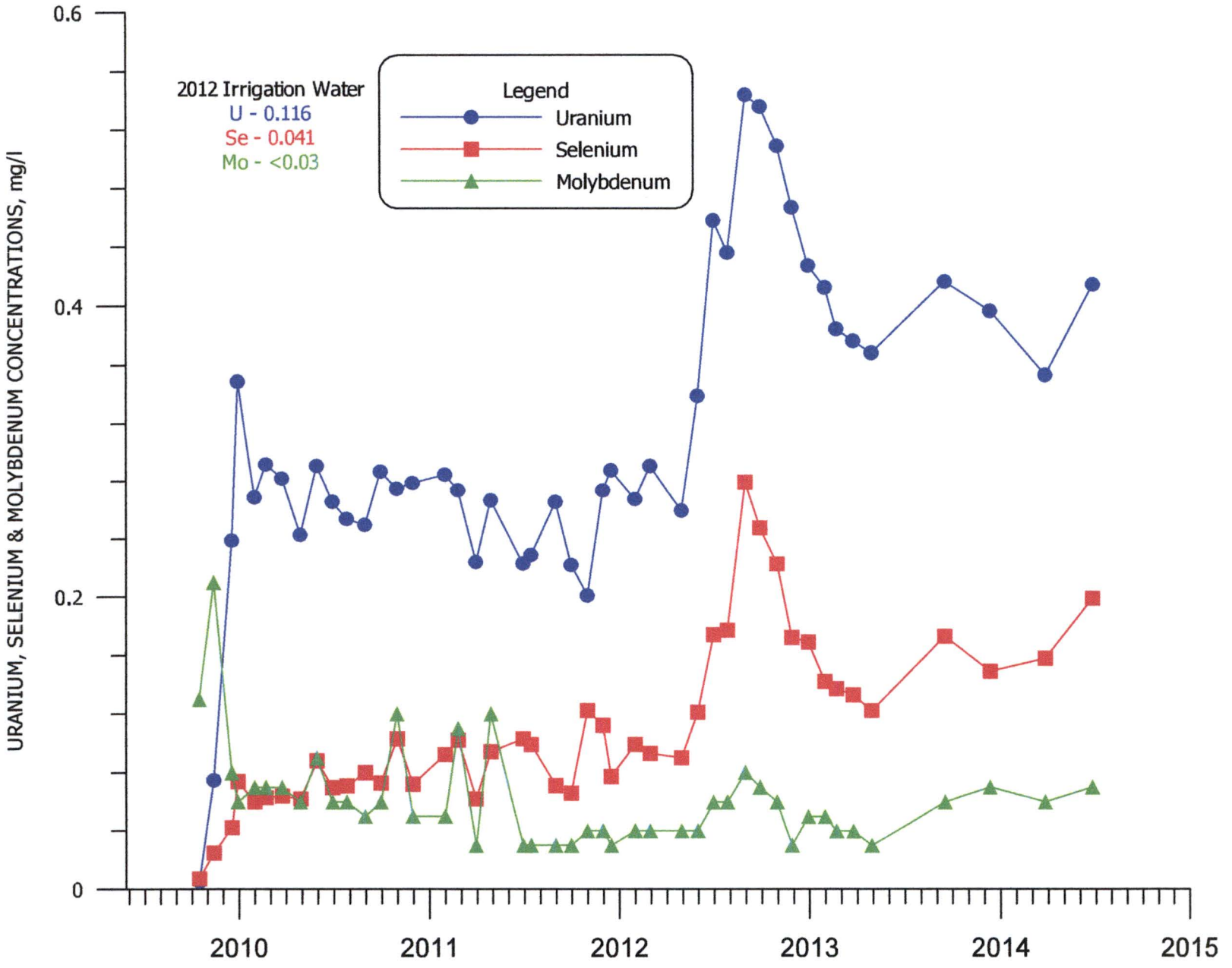



**FIGURE G-7. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY34-3.**

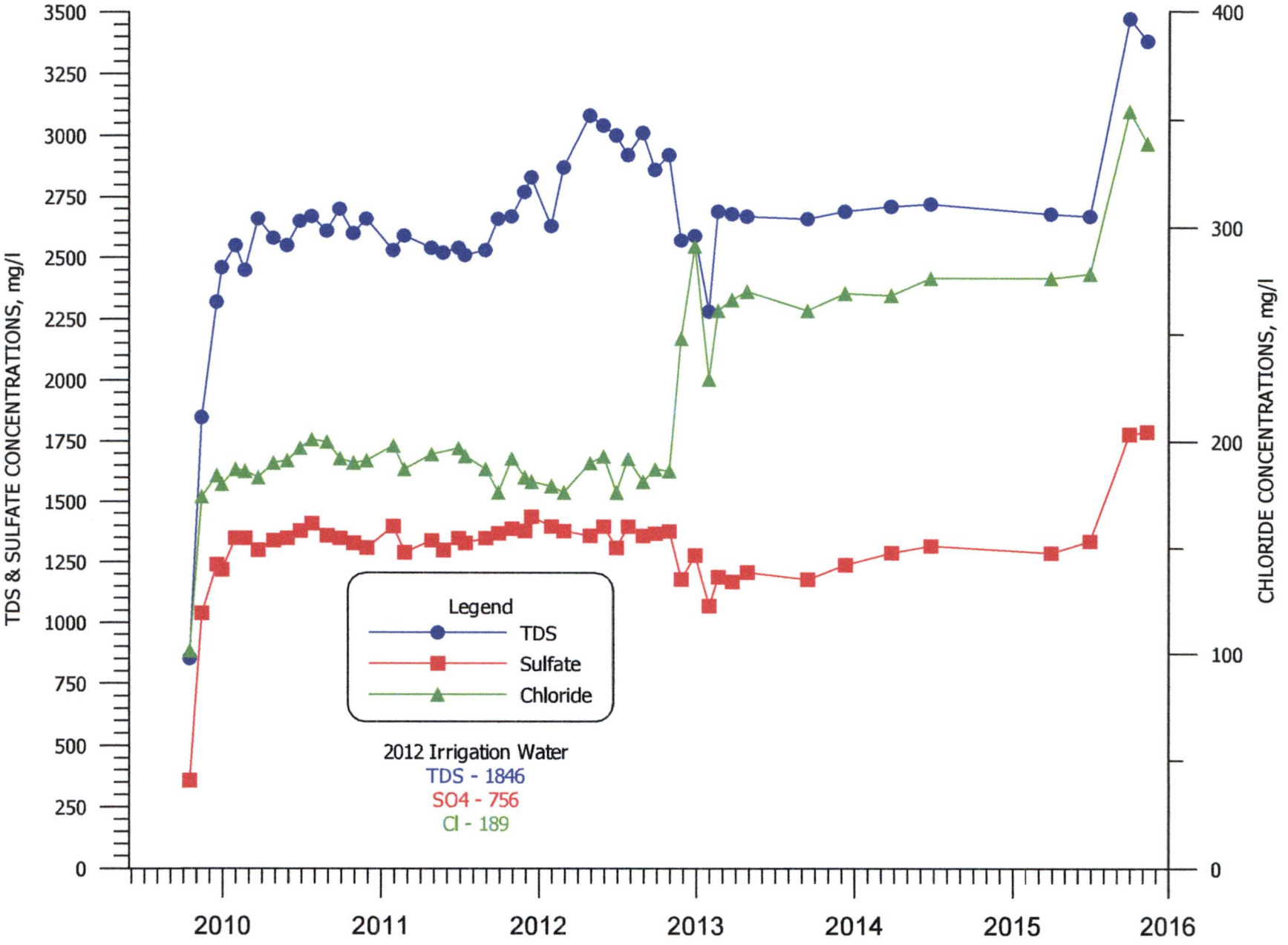



**FIGURE G-8. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-1.**

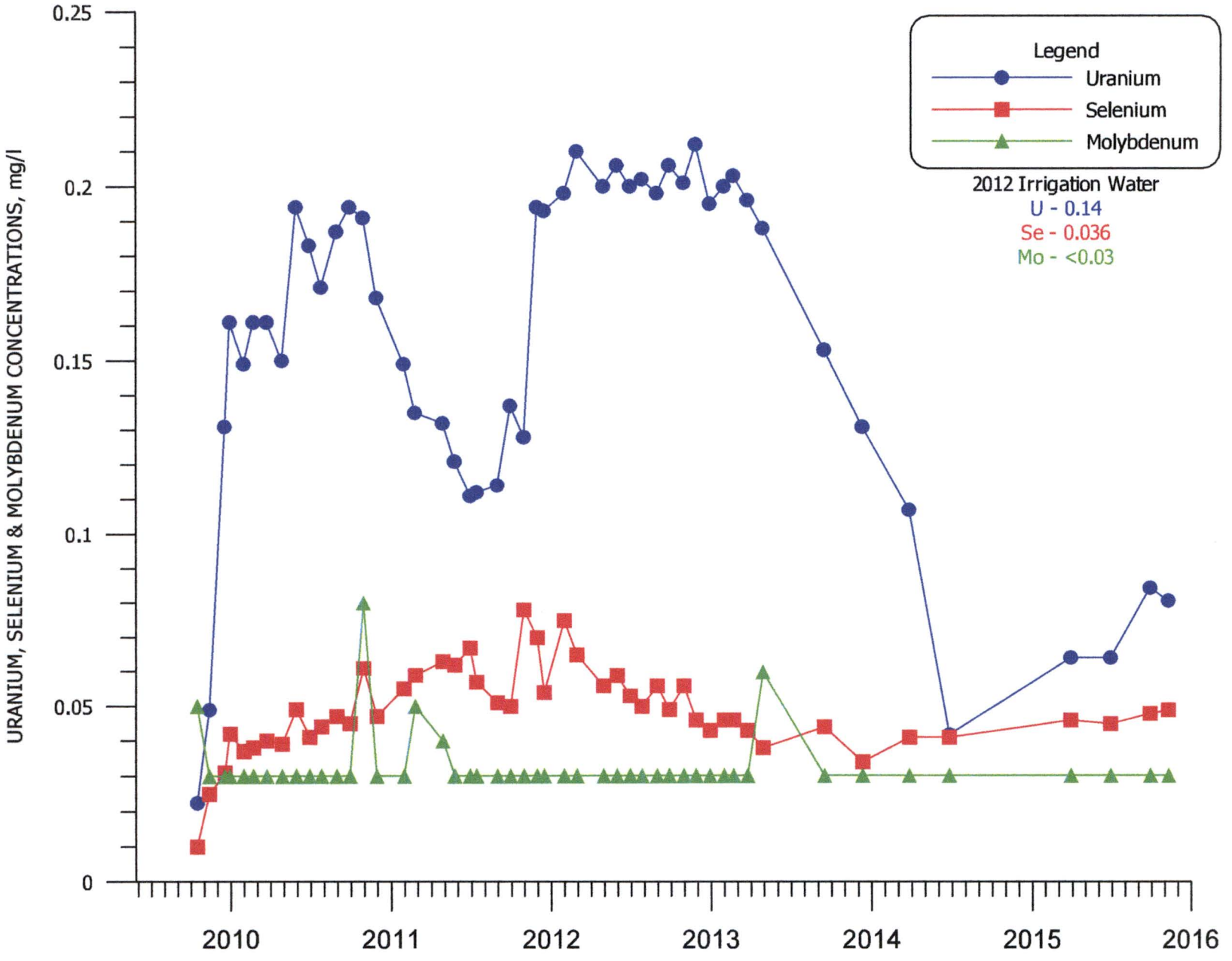



**FIGURE G-9. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-1.**

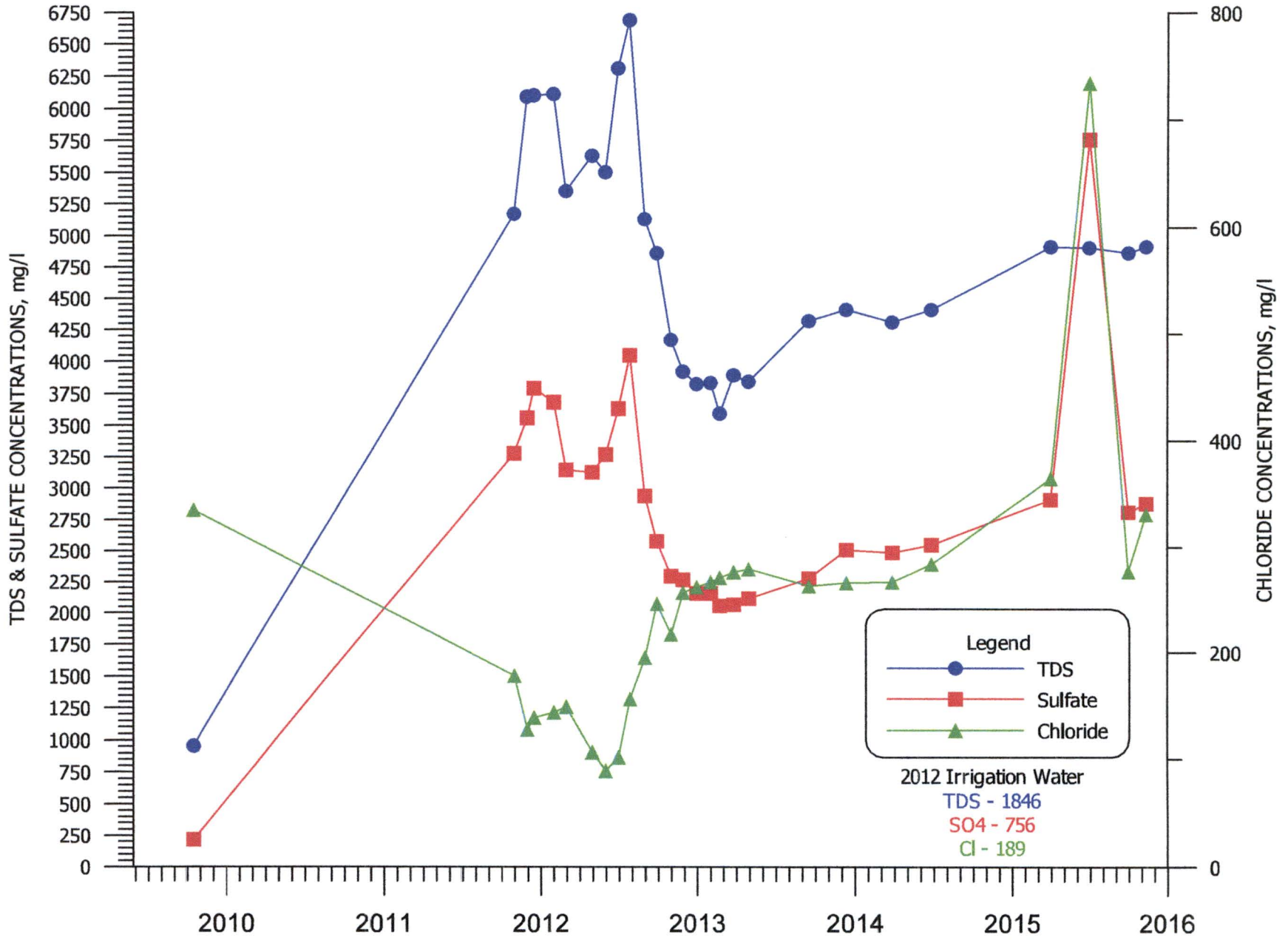



**FIGURE G-10. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-2.**

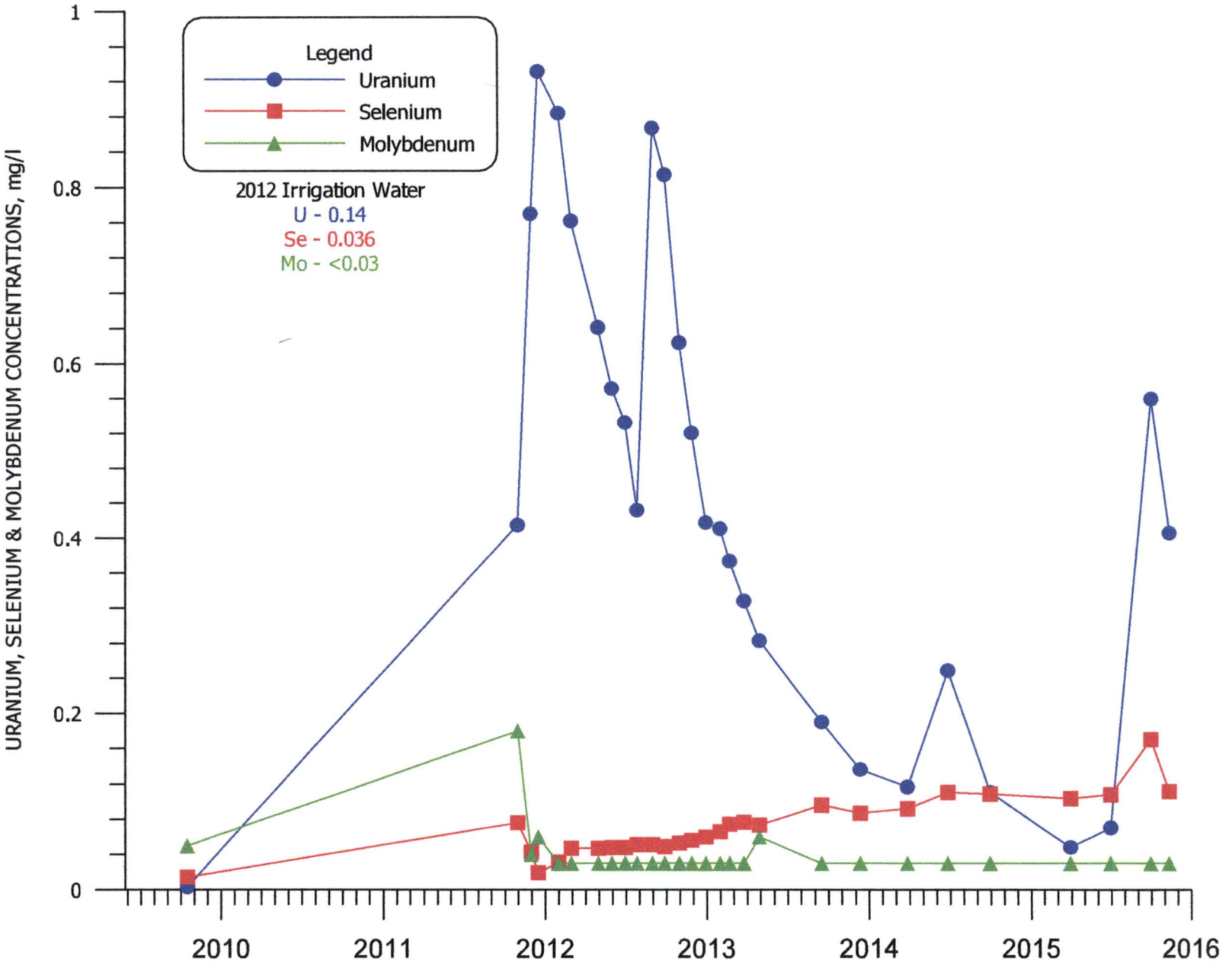



**FIGURE G-11. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-2.**

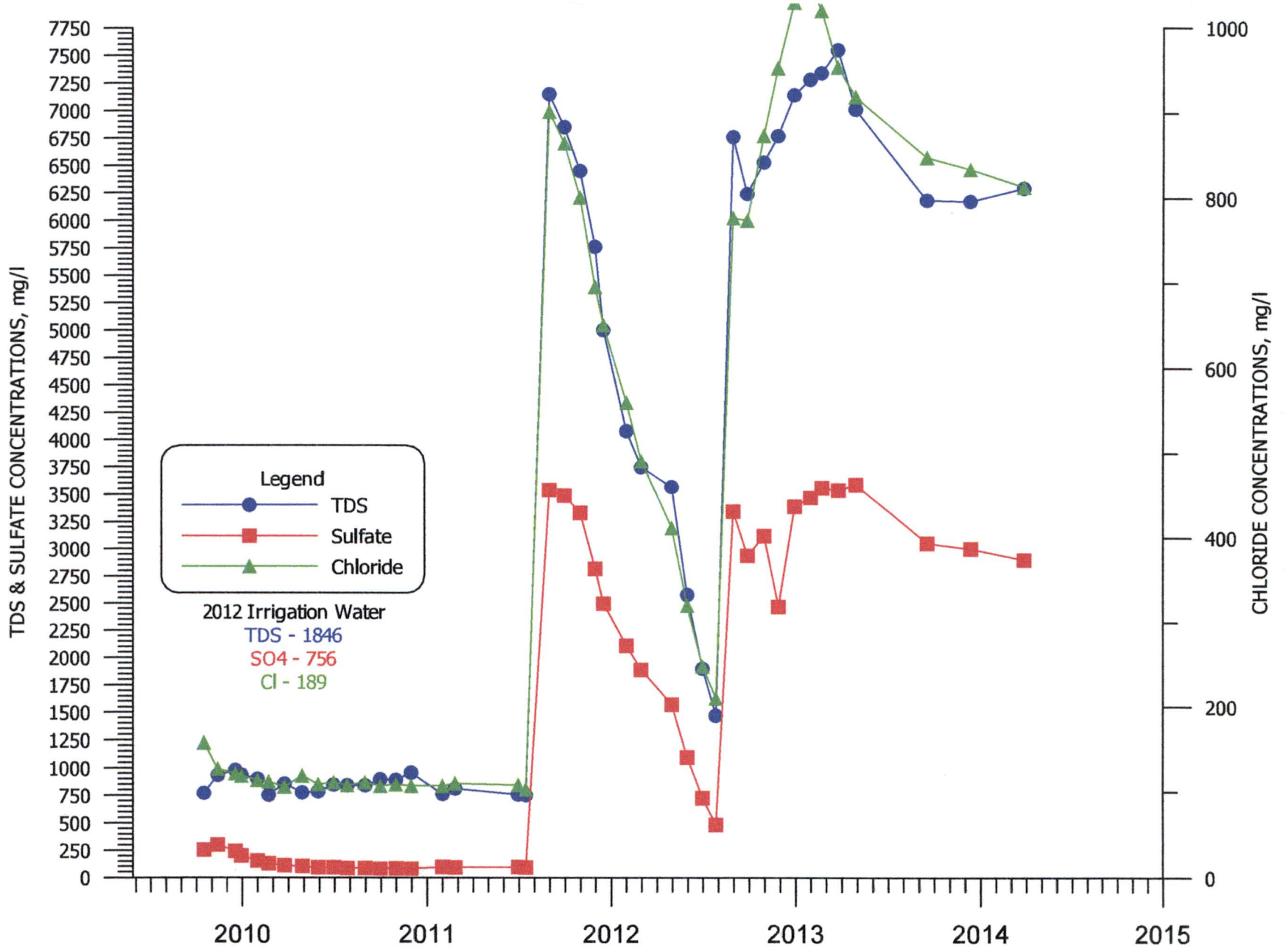



**FIGURE G-12. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-2M.**

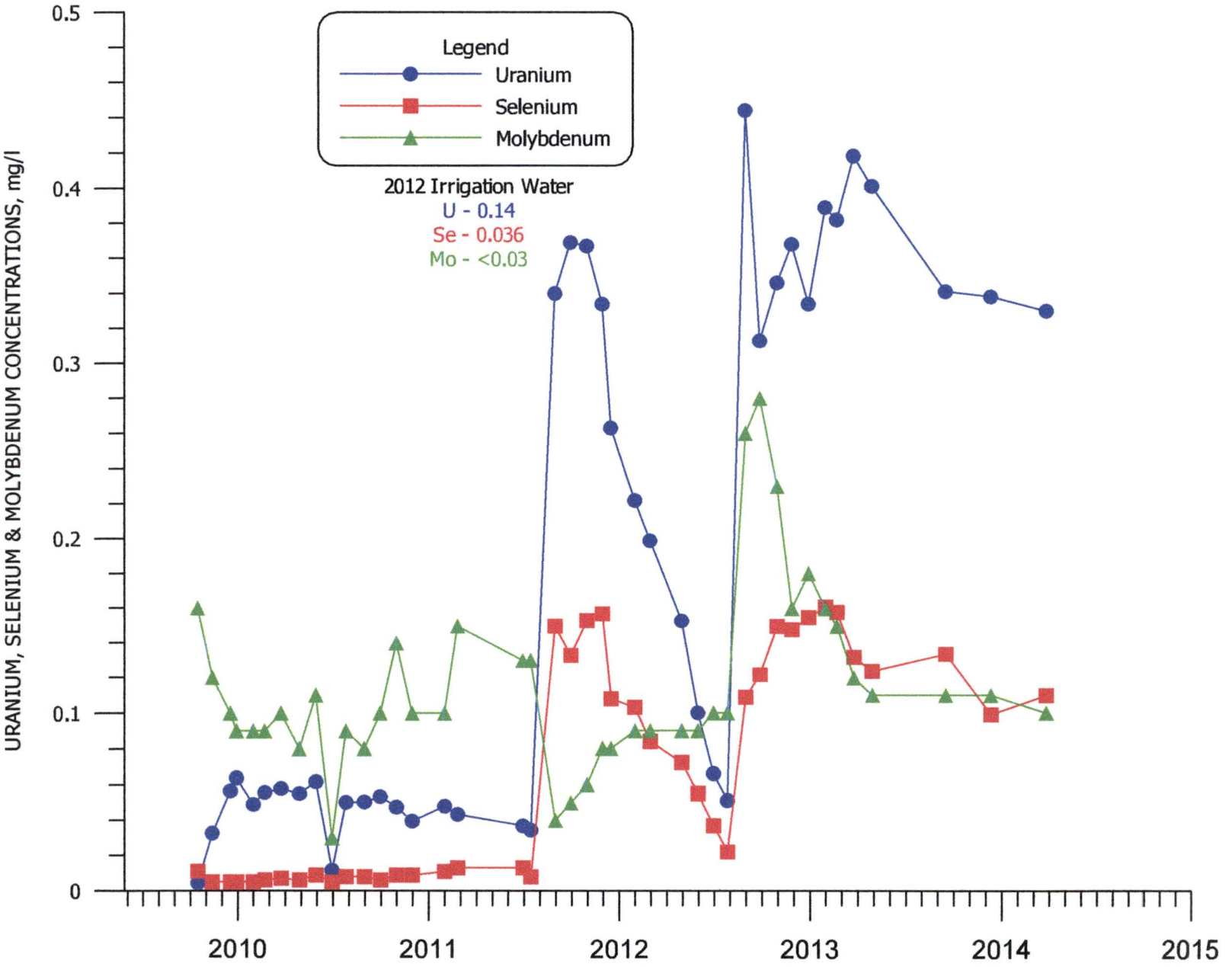



**FIGURE G-13. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-2M.**

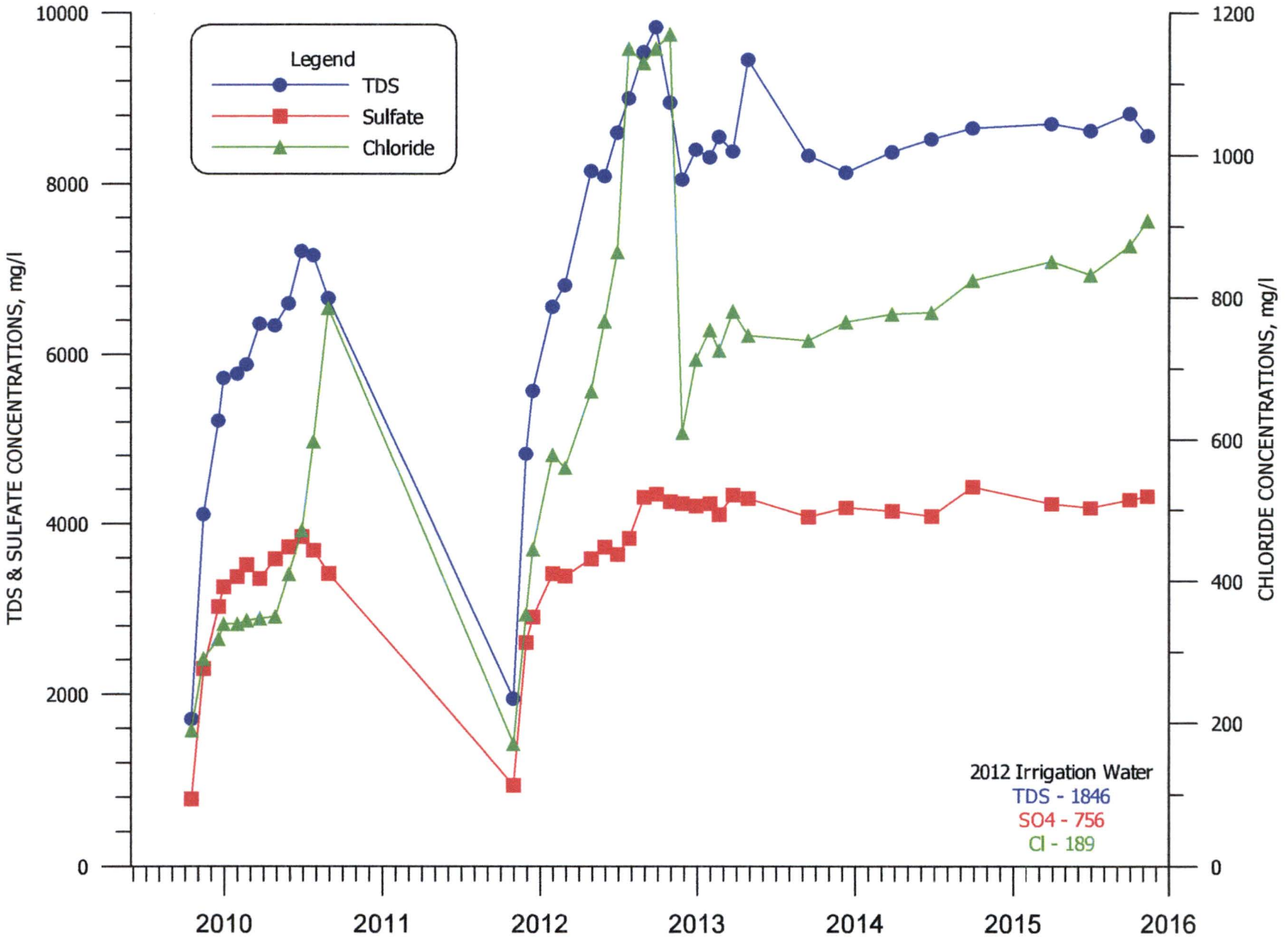



**FIGURE G-14. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-3.**

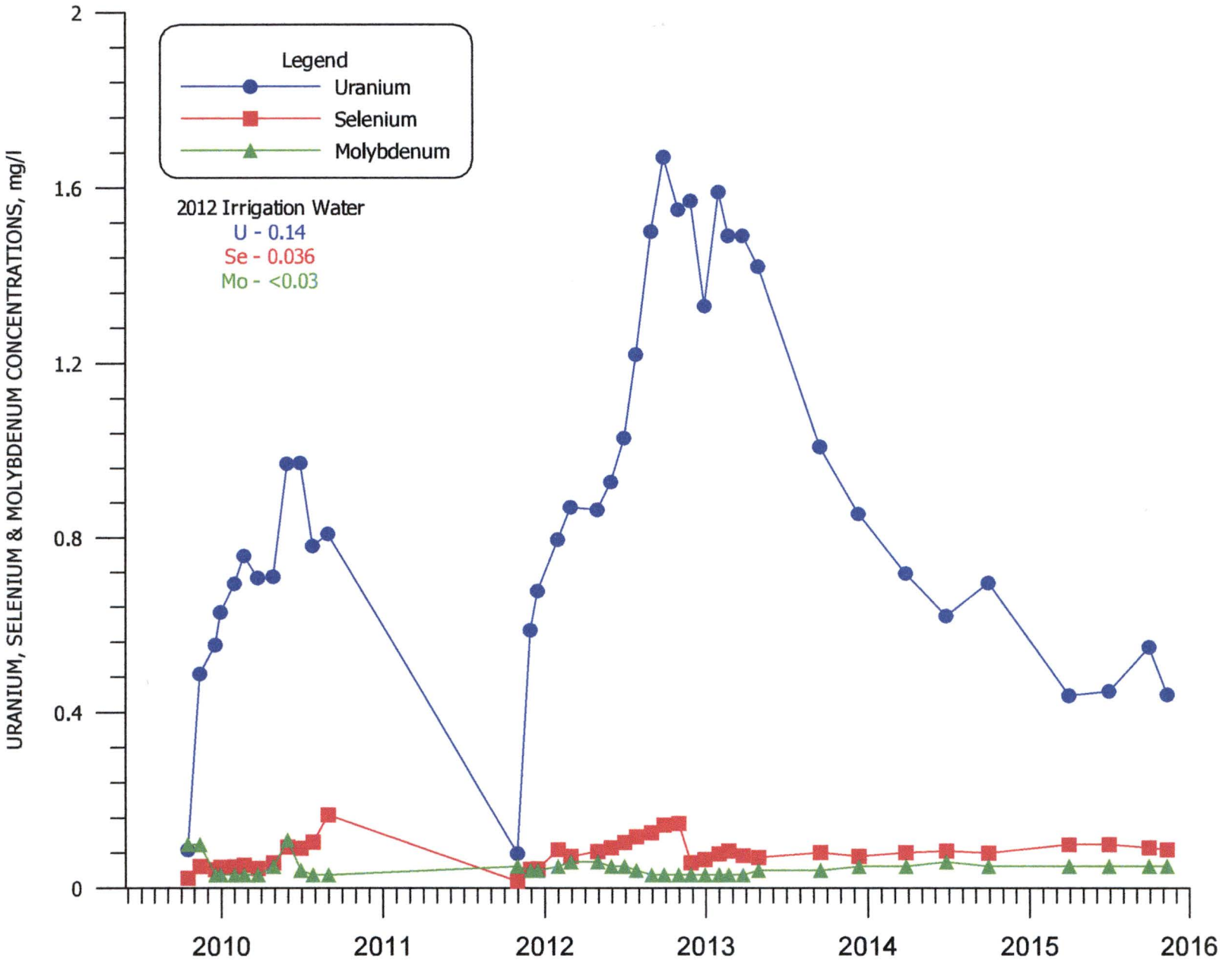



**FIGURE G-15. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-3.**

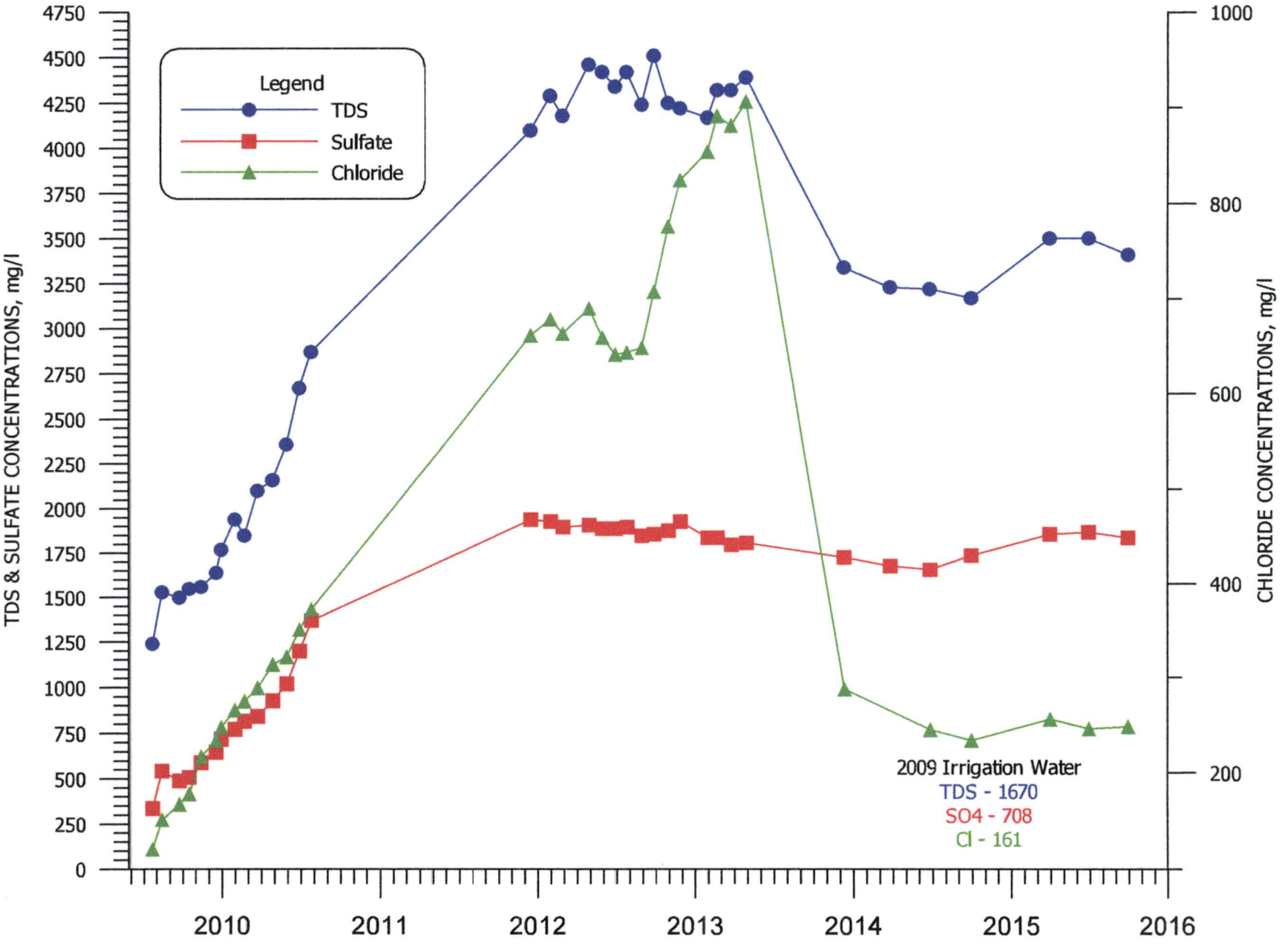



**FIGURE G-16. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY1.**

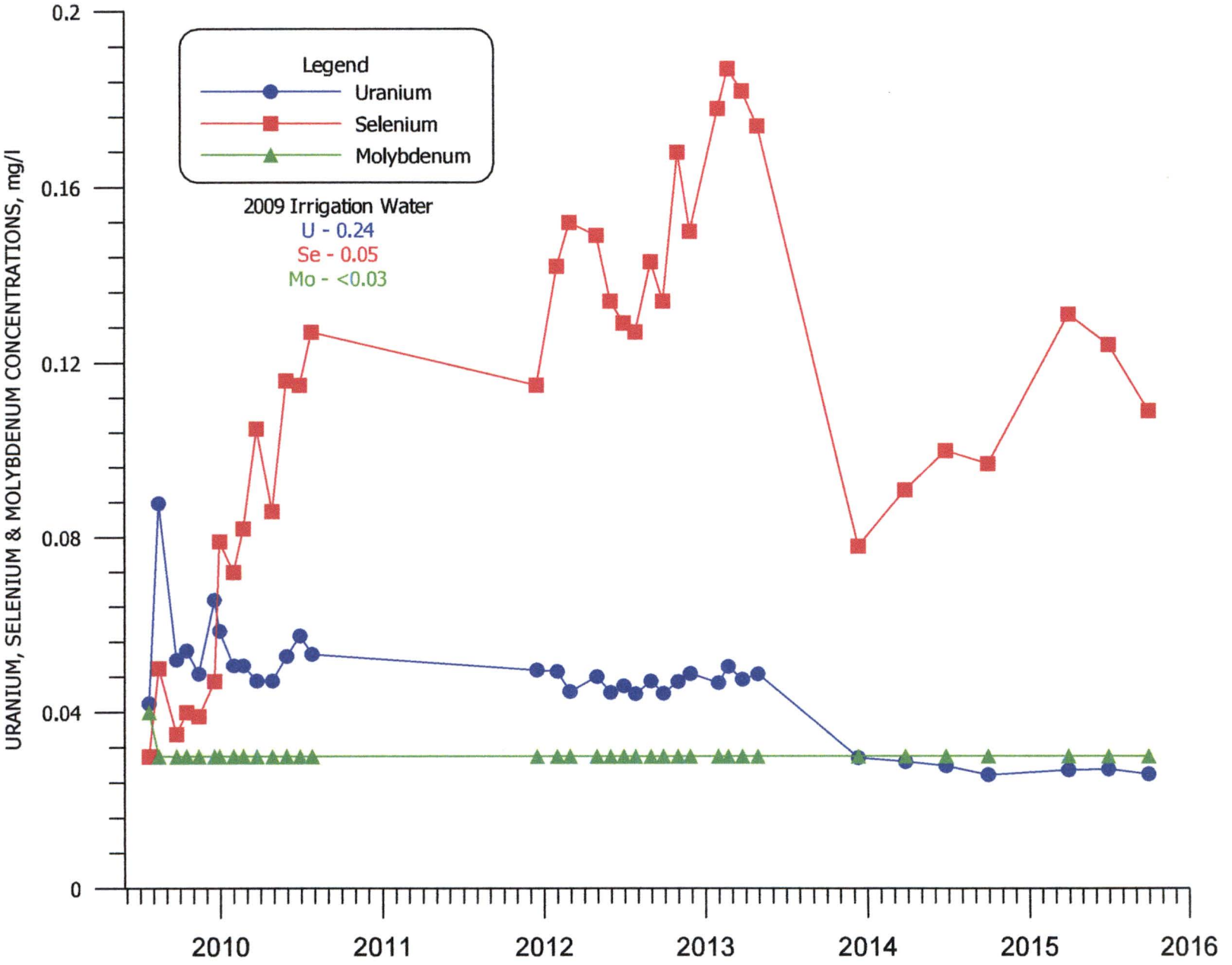



**FIGURE G-17. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY1.**

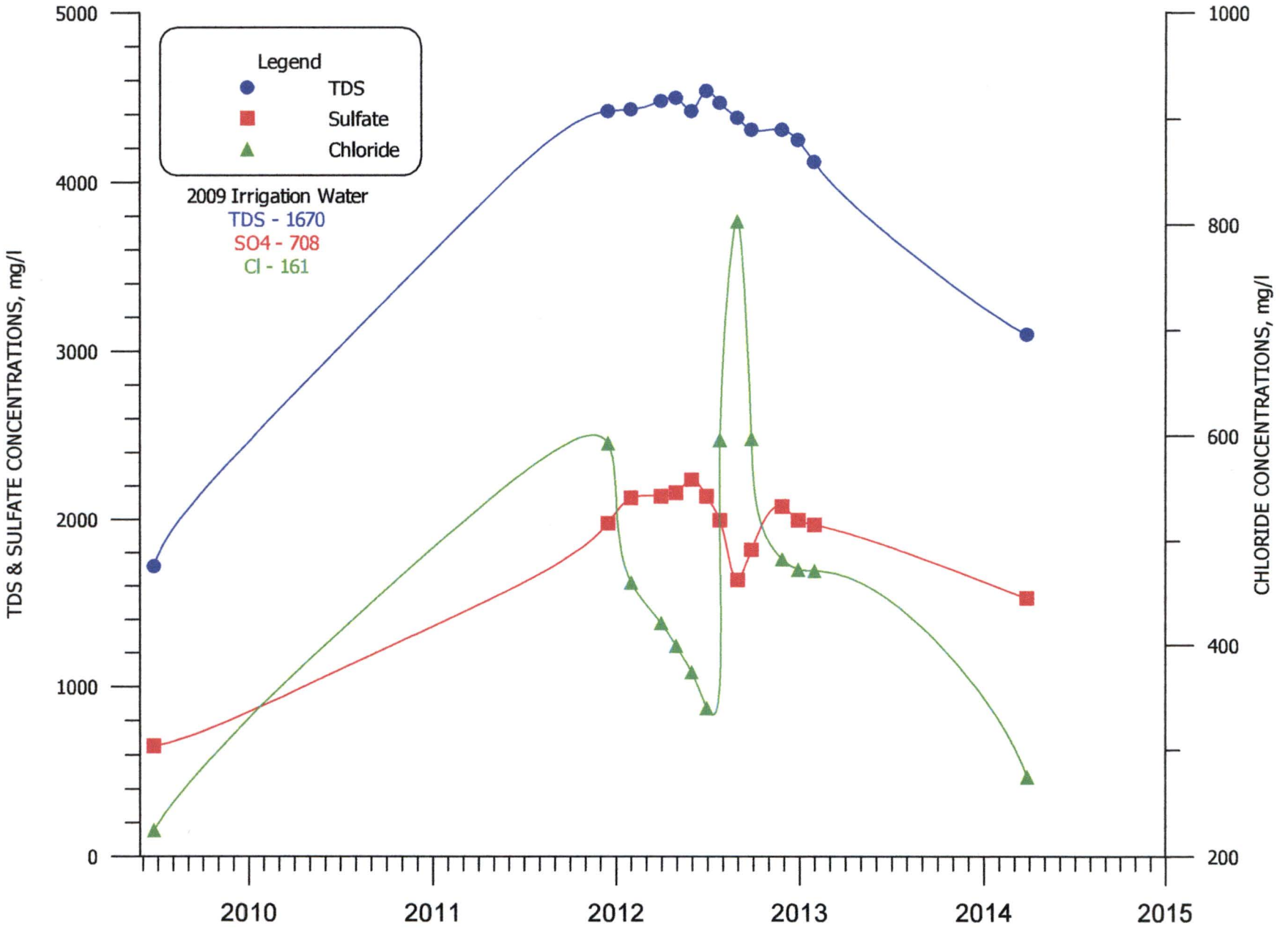



**FIGURE G-18. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY2.**

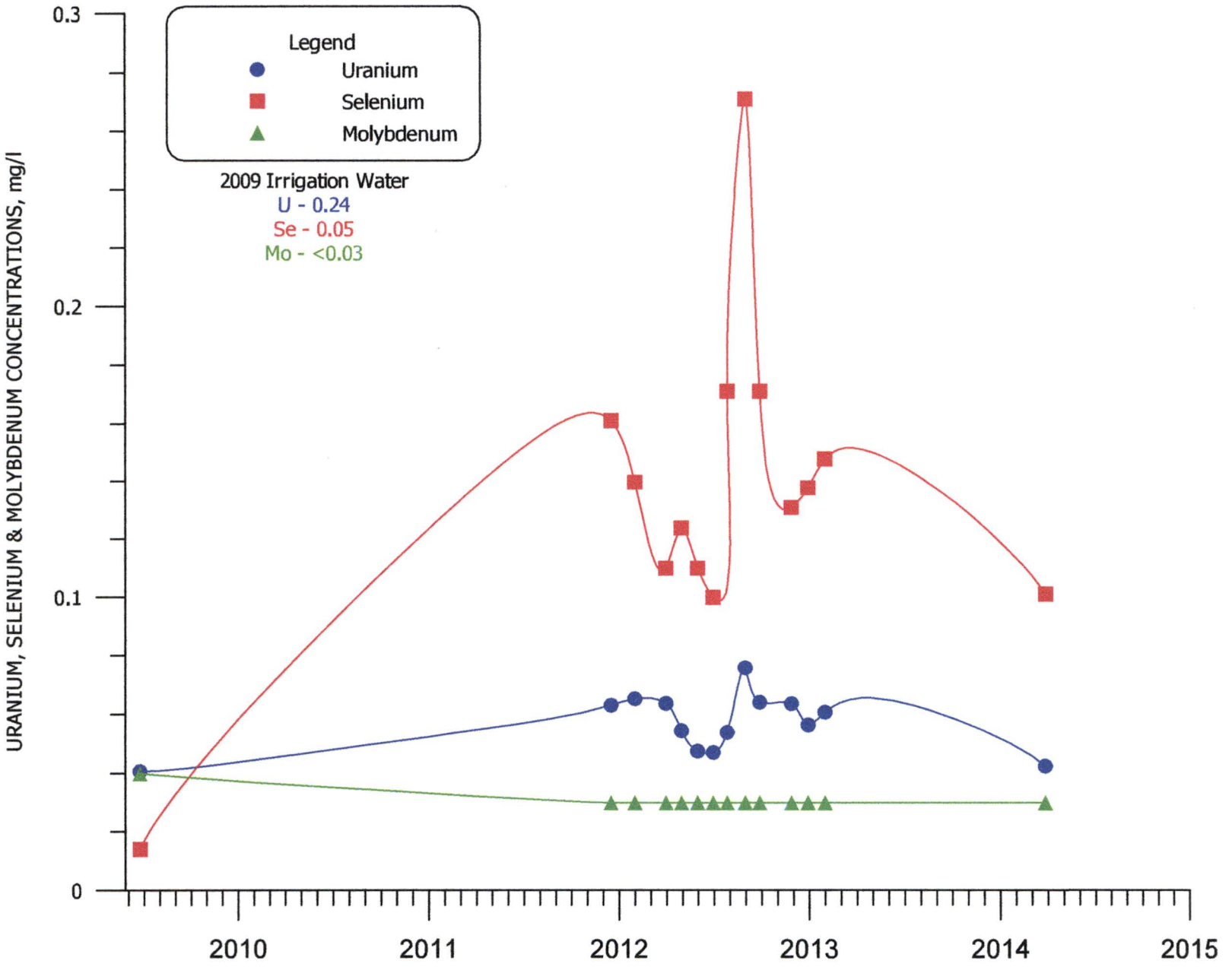



**FIGURE G-19. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY2.**

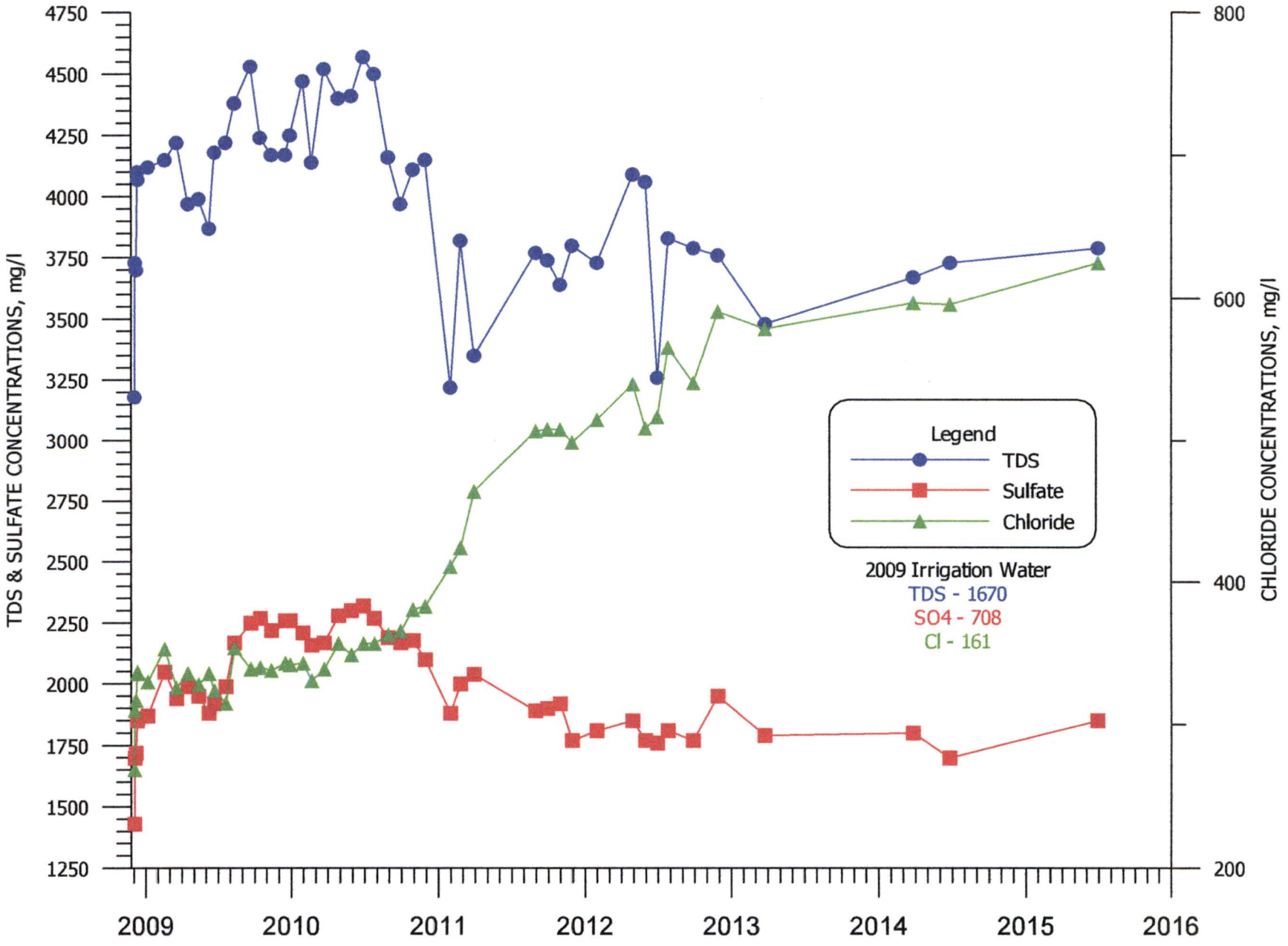



**FIGURE G-20. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY4.**

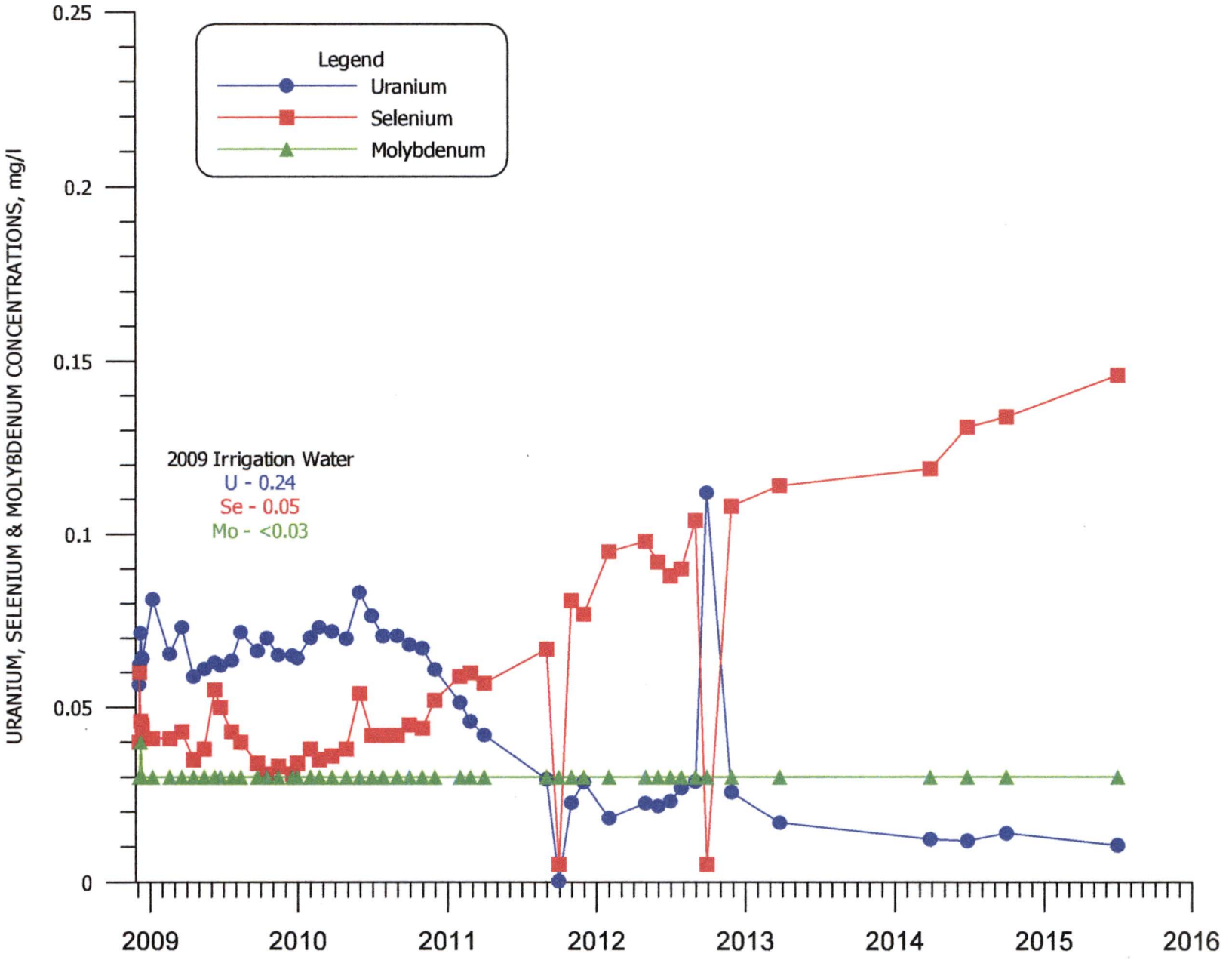



**FIGURE G-21. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY4.**

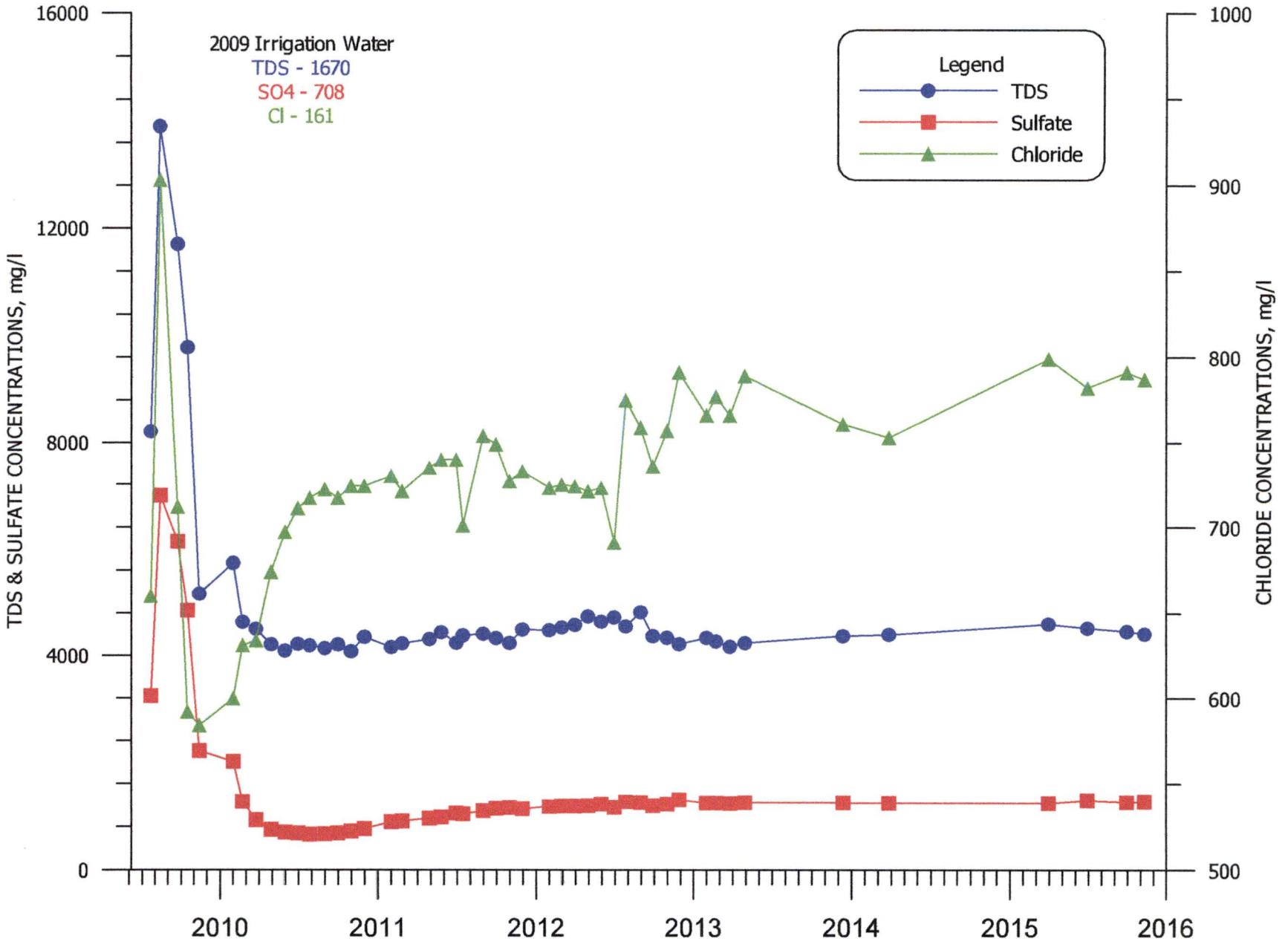



**FIGURE G-22. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY4MU.**

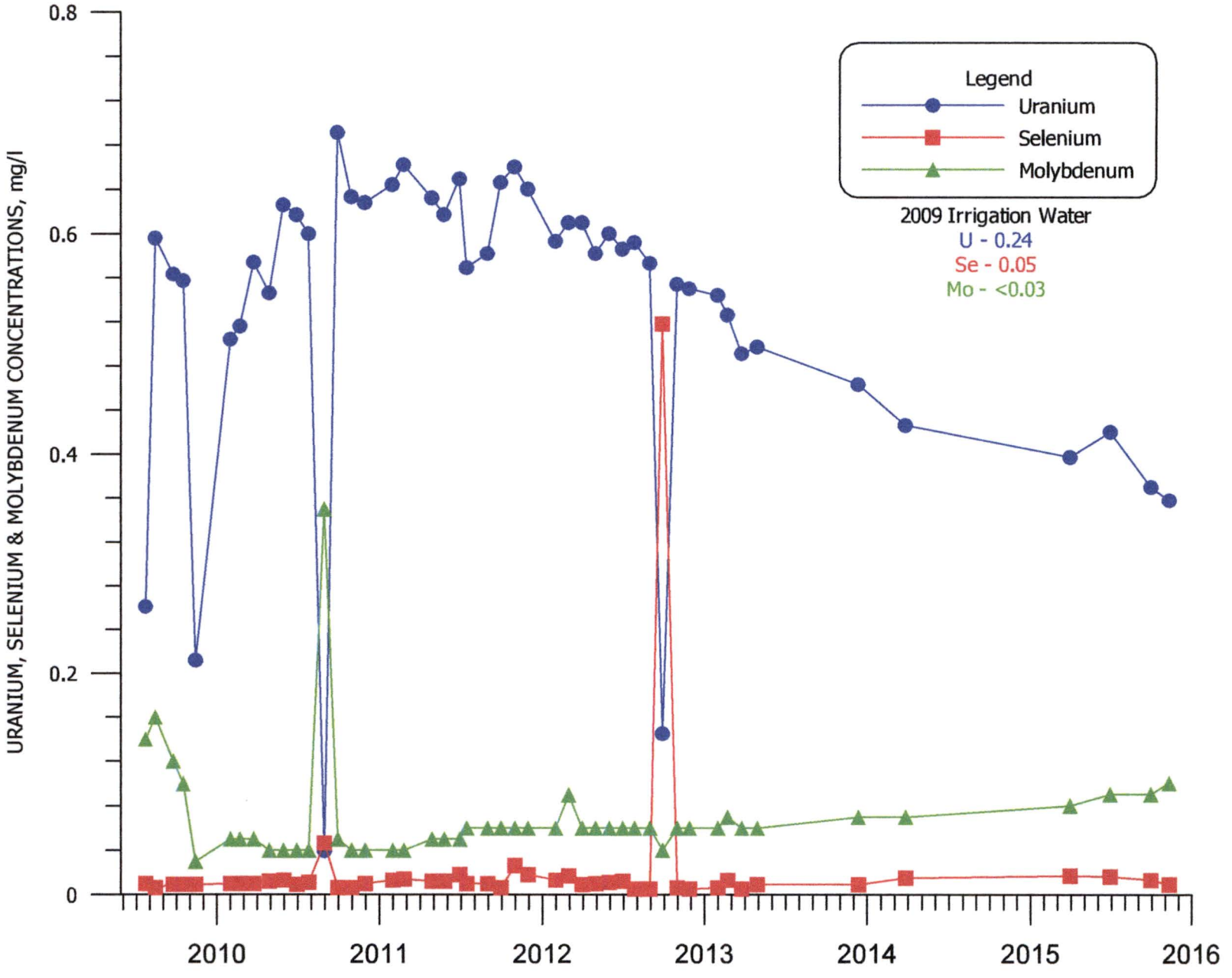



**FIGURE G-23. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY4MU.**

# APPENDIX H

# GRANTS RECLAMATION PROJECT
# METEOROLOGICAL DATA SUMMARY

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## GRANTS RECLAMATION PROJECT
## METEOROLOGICAL DATA

## APPENDIX H



## FIGURES



## TABLES

# Grants Reclamation Project

## Meteorological Data

***Annual Report No. 15 - CY2015***

### 1.0 Introduction

Homestake Mining Company of California (HMC) was issued discharge permit DP-200 in 2014. Specific permit condition 52 requires inclusion of available meteorological data in tabular format within the annual report. The following discussions, figures and tabulation present meteorological data for 2015.

### 2.0 Wind

The annual wind rose developed from data taken at HMC's meteorological station is presented in Figure H-1. The maximum, minimum and mean monthly wind speeds are presented in Table H-1.

### 3.0 Precipitation

The monthly precipitation depths are presented in Table H-1. The total measured precipitation depth at the Grant's was 14.0 inches in 2015.

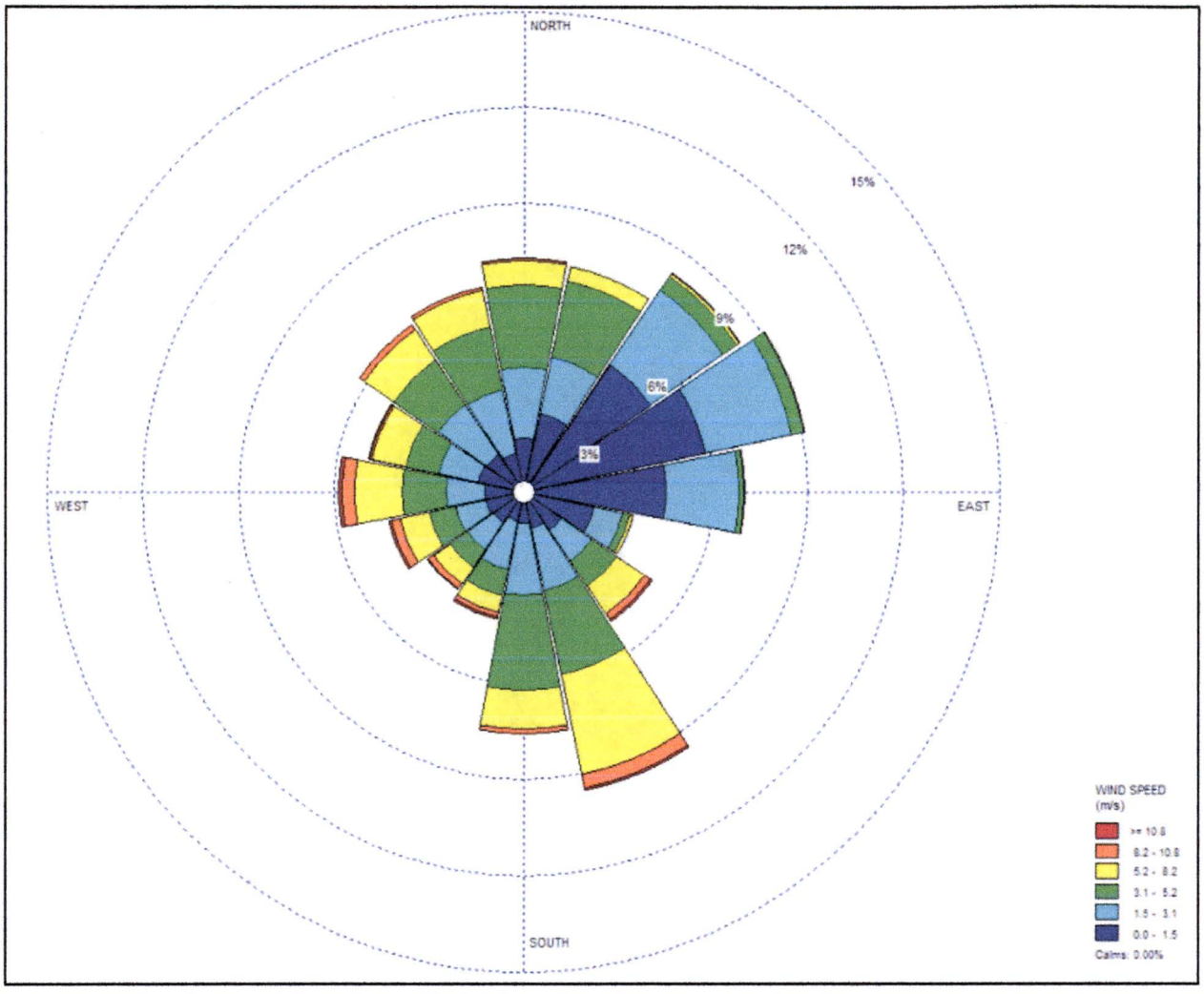
### 3.0 Temperature and Humidity

The maximum, minimum and mean monthly temperatures are presented in Table H-1. The maximum, minimum and mean monthly relative humidity for 2015 is presented in Table H-1.

### 4.0 Solar Radiation and Evaporation

The solar radiation measurements are presented in Table H-1. Table H-1 also presents an estimate of monthly potential evaporation based on available meteorological data.

**Figure H-1. Grants Site 2015 Annual Wind Rose**



## Table H-1. Monthly Meteorological Data Summary

| Month | Simple Stats | Wind Speed (m/s) | Air Temperature (c) | Relative Humidity (%) | Monthly Precipitation (in) | Net Solar Radiation ($W/m^2$) | Evaporation Potential (cc/month) |
|---|---|---|---|---|---|---|---|
| Jan-15 | *max* | 9.77 | 14.07 | 95.8 | 0.9 | 77.5 | 0.00 |
| | *min* | 0.433 | -14.41 | 19.61 | | | |
| | *mean* | 2.62 | 0.00 | 71.39 | | | |
| Feb-15 | *max* | 12.53 | 18.71 | 93.7 | 0.39 | 116.4 | 0.82 |
| | *min* | 0.699 | -9.82 | 8.89 | | | |
| | *mean* | 3.04 | 2.85 | 55.05 | | | |
| Mar-15 | *max* | 13.67 | 22.69 | 95.9 | 0.25 | 148.0 | 3.10 |
| | *min* | 0.747 | -9.32 | 6.075 | | | |
| | *mean* | 2.96 | 7.32 | 42.43 | | | |
| Apr-15 | *max* | 13.05 | 23.87 | 93.2 | 0.47 | 181.1 | 4.52 |
| | *min* | 0.365 | -6.62 | 6.194 | | | |
| | *mean* | 3.86 | 9.55 | 31.41 | | | |
| May-15 | *max* | 12.17 | 27.4 | 90.2 | 0.82 | 183.0 | 6.80 |
| | *min* | 0.18 | -0.323 | 7.261 | | | |
| | *mean* | 3.65 | 12.32 | 45.36 | | | |
| Jun-15 | *max* | 10.61 | 35.27 | 93.4 | 0.49 | 207.1 | 12.97 |
| | *min* | 0.341 | 6.15 | 5.894 | | | |
| | *mean* | 3.25 | 21.03 | 36.00 | | | |
| Jul-15 | *max* | 10.34 | 32.69 | 92.6 | 4.94 | 163.8 | 12.25 |
| | *min* | 0.103 | 10.8 | 13.45 | | | |
| | *mean* | 2.62 | 19.78 | 58.65 | | | |
| Aug-15 | *max* | 8.94 | 32.29 | 94.6 | 1.74 | 178.0 | 12.30 |
| | *min* | 0.248 | 9.24 | 8.88 | | | |
| | *mean* | 2.56 | 20.83 | 49.69 | | | |
| Sep-15 | *max* | 8.79 | 29.22 | 93.6 | 1.01 | 153.7 | 9.15 |
| | *min* | 0.197 | 4.459 | 7.25 | | | |
| | *mean* | 2.45 | 17.92 | 46.97 | | | |
| Oct-15 | *max* | 10.35 | 28.97 | 95.4 | 1.78 | 110.6 | 5.12 |
| | *min* | 0.254 | -2.009 | 8.04 | | | |
| | *mean* | 2.81 | 11.64 | 58.28 | | | |
| Nov-15 | *max* | 12.27 | 21.73 | 93.7 | 0.62 | 103.3 | 0.85 |
| | *min* | 0.2 | -11.07 | 7.335 | | | |
| | *mean* | 3.14 | 2.91 | 56.85 | | | |
| Dec-15 | *max* | 10.39 | 17.15 | 95.6 | 0.59 | 79.4 | 0.00 |
| | *min* | 0.157 | -14.42 | 8.16 | | | |
| | *mean* | 2.87 | -1.19 | 57.16 | | | |

## Table H-1. Monthly Meteorological Data Summary (cont.)

| **Net solar radiation** = $(1-\alpha) \times SR$ |
|---|
| $\alpha$ = albedo (Earth average around 0.35. Typical desert sands average 0.4 and grassses average 0.25. Going with a 0.33. |
| SR = solar radiation {From HMC met station data] |
| **Evaporation Potential (PET)** = $1.6 \times (L/12) \times (N/30) \times (10\ T_\alpha/I)^\alpha$ |
| $T_\alpha$ = Average daily temperature (degrees Celsius; if negative then value of 0) for month being calculated. |

L = Average day length (in hours) of month being calculated.

| N = number of days in month being calculated. | | | |
|---|---|---|---|
| $\alpha = (6.75E\text{-}7) \times I^3 - (7.71E\text{-}5) \times I^2 + (1.792E\text{-}2) \times I + 0.49239$ | | | |
| $\alpha =$ | (a) | (b) | = a × b |
| | 6.75E-07 | 92564.1 | 6.25E-02 |
| | 7.71E-05 | 2046.3 | 1.58E-01 |
| | 1.79E-02 | 45.2 | 8.11E-01 |
| | | | 0.49239 |
| | $\alpha =$ | | 1.21E+00 |
| $I = \Sigma$ *(for i = 1 to 12)* $(T_{\alpha i}/5)^{1.514}$ = Heat index which depends on the 12 monthly mean temperatures ($T_{\alpha i}$). | | | |
| | $I =$ | | 45.24 |