

WATER RESOURCES REPORT

for

RAPSON SUBDIVISION

EPC Parcel #: 5114000007

**February 2021
(revised June 2021)**

Prepared By:



RAPSON SUBDIVISION
EPC Parcel # 5114000007

WATER RESOURCES REPORT

February 2021
(revised June 2021)

Prepared for:

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Appendix B – Water Supply Information Summary – SEO Form

Appendix C – Determinations and Decrees

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The purpose of this report is to address the specific water needs of a proposed subdivision of Parcel # 5114000007 in El Paso County, CO.

EXECUTIVE SUMMARY: The water rights and augmentation plan in place for the existing parcel are adequate to meet the needs of two (2) lots proposed for the subdivision on a 300-year basis.

2.0 PROJECTED LAND USES

2.1 Projected Land Uses

This report pertains to the existing 19.6-acre parcel that is proposed to be divided into two (2) lots. Please refer to the *Land Use Exhibit* in **Appendix A** depicting the proposed subdivision.

3.0 WATER NEEDS AND PROJECTED DEMANDS

3.1 Water Demand Summary

It is anticipated that lot 1, consisting of 14.337 acres of land, will use approximately 1.50 AF/year of water while lot 2, consisting of 5.007 acres of land will use 1.50 AF/year of water, bringing the total amount of water used per year to 3.0 AF/year. This estimate is based information provided in Chapter 8 of the *El Paso County Land Development Code* as well as *Section 8* of the *Findings and Order* located in **Appendix C**. Water demands and wastewater loads are shown Table 3-1 below:

Table 3-1: Summary of Expected Water Demands & Wastewater Loads

Water						Wastewater
# of SFE's	Annual Indoor Use 0.2 (AF/YR/SFE)	Average Daily Indoor Use (GPD)	Irrigation 0.0566 (AF/1,000 SF)	Stock Watering 0.011 (AF/Horse/Year)	Total Indoor, Stock Water, & Irrigation (AF)	ADF (@ 90% Indoor Use) (GPD)
2	Note 1 0.400	357	Notes 2 2.362	Note 3 0.242	3.00	321

Note 1: *Per Section 10 of the Findings and Order for Replacement Plan No. : 3637-RP for Determination of Water Right No.:3637-BD as found in Appendix C*

Note 2: *Assuming 20,870 SF of irrigation for lot 1 and 20,870 SF of irrigation for Lot 2*

Note 3: *Per Findings of Fact, Section III, located in Appendix C (assuming 11 horses/SFE/Lot 1 and 11 horses/SFE/Lot 2*

3.2 Unit Water User Characteristics

Unit water user characteristics are counted on a *single family equivalent* (SFE) basis. All single-family homes are counted as one SFE, and user characteristics were based on information provided in the *El Paso County Land Development Code*, Chapter 8.

3.3 Demand versus Supply

An overall demand of 3.00 acre-feet for the proposed subdivision is less than the amount of supply listed in the decrees, determinations, and *Findings of Fact* (provided in **Appendix C**), and is further discussed in Section 4.0 of this report.

4.0 WATER RIGHTS AND SUPPLY

4.1 Water Rights

Water rights and determinations were done by the Colorado Office of the State Engineer and are included in **Appendix C**. Table 4-1 below summarizes the information from said water rights and determinations.

Table 4-1: Water Rights Summary

Land Formation/ Aquifer	Determination	Tributary Status	Area	Decreed Water 100-Year	Annual Allocation 100-Year	Annual Allocation 300-Year
			(Acres)	(AF)	(AF/Year)	(AF/Year)
Dawson	3637-BD	NNT	19.60	1,670	16.70	5.57
Denver	3636-BD	NT	19.60	1,180	11.80	3.93
Arapahoe	3635-BD	NT	19.60	866	8.66	2.89
Laramie-Fox Hills	3634-BD	NT	19.60	559	5.59	1.86
Total Legal Supply					42.75	14.25
					<i>100-Year</i>	<i>300-Year</i>

Beneficial Uses: *Domestic Indoor*
Lawn & Garden Irrigation
Water for Domestic Animals

Note that only the Dawson formation is to be used for the proposed lots in this subdivision. According to the *Findings of Fact* located in **Appendix C**, the following conditions are allowed for the subject property:

- Water in the Dawson may be withdrawn through the existing well, as well as one (1) additional well, allowing up to two (2) parcels to be developed on the subject property. Existing well permit 85011-F shall be utilized on existing Lot 1 as shown on the final plat contained in **Appendix A**.
- There shall be one (1) Dawson aquifer well per lot.

- Each well must provide water to a house on the same lot, ensuring that during pumping, return flows from septic systems alone will always equal or exceed stream depletions in the same year.
- It is not necessary to restrict the type of use to which the Dawson water pumped (pursuant to the augmentation plan) is put.
- The acre-feet of water each Dawson aquifer well is allowed to divert on an annual basis shall be calculated by dividing the number of lots into the number 3, but in no event shall exceed 1.5 acre-foot per well per year.

4.2 *Adequacy of Water Rights*

Current water rights are adequate for buildout demands of two (2) lots and meet 2040 and 2060 buildout projections on a 300-year basis.

According to the *Findings and Order* (Determination No.: 3637-BD and Replacement Plan No. 2: 3637-RP) located in **Appendix C**:

- There are 5.57 AF/year available on a 300-year supply basis out of the Dawson Formation, which is greater than the estimated annual demand of 3.0 AF-year for both Dawson wells.
- Assuming a 0.20 AF/yr domestic use per resident with 90% return flows through the septic system per resident, this results in a 0.18 AF/yr replacement flow back through the septic system per resident, resulting in a 0.18 AF/year replacement volume per year per resident (or 0.36 AF/year total).
- The estimated maximum depletion to the alluvial aquifer from 300-years of pumping from the Dawson formation at 3.0 AF/year results is 0.108 AF/year by year 300. The estimated annual return flows from each residence is in excess of the estimated depletions to the alluvium as shown in the Replacement Plan No. 2 included in **Appendix C**

Conclusion:

The current water rights and augmentation plan in place are adequate to meet the estimated overall demand and resulting alluvial depletions of 3.0 acre-feet for two (2) lots.

4.3 *Description of Current Water Rights*

The subject area's current water rights involve non-renewable supplies in the Denver Basin, further discussed below.

Non-Renewable Denver Basin Supply

The Denver Basin is a vast, deep-rock aquifer that stretches from southeast of Colorado Springs to Greeley, and from the base of the front range to the eastern end of Elbert County. Rights granted in the Denver basin are based on the ownership of the surface property – the larger the parcel, the larger the

allocation. This water is much deeper than typical residential wells, ranging up to 2,650 feet deep.

Denver Basin water is considered finite and therefore non-renewable. In the subject area, there are four main formations that make up the Denver Basin: Dawson, Denver, Arapahoe, and Laramie-Fox Hills (LFH), described from shallowest to deepest.

The subject property has numerous determinations under its existing boundaries, which total 14.25 annual acre-feet on a 300-year basis, and 42.75 annual acre-feet on a 100-year basis.

5.0 WATER SYSTEM FACILITIES AND PHYSICAL SUPPLY

5.1 Source of Supply

Supply for the existing residence on the subject property will continue to be met via the existing well (see well permit in **Appendix C**).

Supply for the one (1) additional lot will be met with a future well completed in the Dawson aquifer. These wells will be drilled, screened, test-pumped, and completed accordance with the Colorado Division of Water Resources rules and regulations.

5.2 Water Treatment

Water in the existing well was tested in January of 2021 for constituents required by El Paso County regulations for a confined aquifer. Any desired treatment of existing and future wells will rely on the individual homeowners as this is not considered a *Community System* by the Colorado Department of Public Health and Environment.

5.3 Water Storage

Water storage (other than potential individual cisterns) will not be constructed. Therefore, a central water system with treatment and fire-flow capabilities will not be provided. The residents of each subdivided lot will be made aware of this since it will be included on the subdivision plat.

5.4 Distribution, Pumping, and Transmission Lines

Since there is no central water system proposed for this subdivision, no distribution, pumping, or transmission lines will be constructed.

5.5 Water Quality

The water quality in the Dawson aquifer in this area has typically been suitable for residential potable use. Water samples were obtained from a newly constructed water tap in the lower level of the residence on the property (10675 Hardy Road). Water samples were obtained from this tap on January 4th, 2021, with water quality testing performed by Colorado Analytical Laboratories and ACZ Laboratories, per the El Paso County Land Development Code section 8.4.7(B). Final results from this water quality testing were received on January

25th, 2021, and can be found in **Appendix D**. The only results of concern were for total coliform.

The water sampled at this location was tested and found to have a presence of total coliform. The presence of total coliform may be due to the fact that the residence was still under construction at the time of sampling, and it is possible that not enough water has been through the system to properly flush it. In addition, the test for E. Coli was found to be negative (not present), which may support this theory. It is at the owner's discretion whether a resampling and additional testing for total coliform will be necessary, though the owner will need to notify any future buyers of this. Water quality results from the existing on-site well are included in **Appendix D**.

6.0 EL PASO COUNTY MASTER PLANNING ELEMENTS

6.1 County Water Master Plan 2040 and 2060 Projections

The subject property lies within the El Paso County Water Master Planning area, Region #2.

6.2 Buildout (Including 2040 and 2060 Buildout):

Expected buildout of the subject property is two (2) total lots, ranging from 5.007 acres to 14.337 acres in size. Demands for the entire subdivision are listed in Section 3.0 of this report.

6.3 Description of Long-Term Planning and Future Sources of Supply

Per El Paso County criteria, the 300-year supply of water for the subject property appears to be more than adequate for full buildout, which would include both the 2040 and 2060 scenarios. However, the proposed supply in the Dawson aquifer is based on non-renewable sources.

If needed beyond the 300-year supply, the subdivision has water rights in the Denver, Arapahoe, and Laramie-Fox Hills formations, although a portion of the LFH water right is dedicated to augmentation to offset post-pumping depletions. Please refer to the *Plan for Augmentation* in **Appendix C**.

6.4 Water System Interconnects

The closest source for a potential interconnect is the Town of Black Forest – approximately 1.4 miles to the southwest.

It is not anticipated (and Black Forest has not been contacted) that an interconnect is needed or warranted.

7.0 CONCLUSION

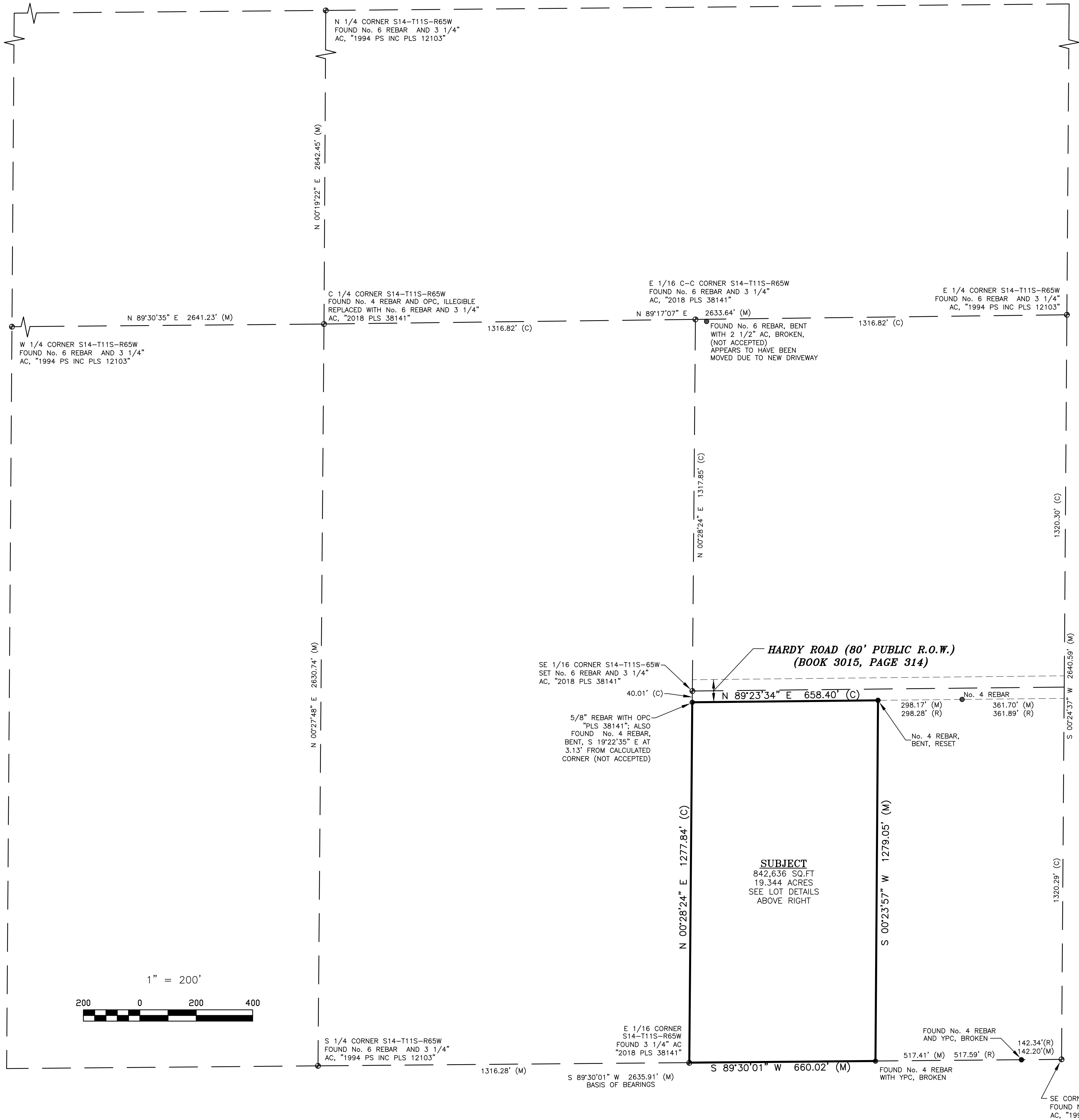
The subject property has adequate water supply to meet the needs of the proposed subdivision on a 300-year basis.

Appendix A

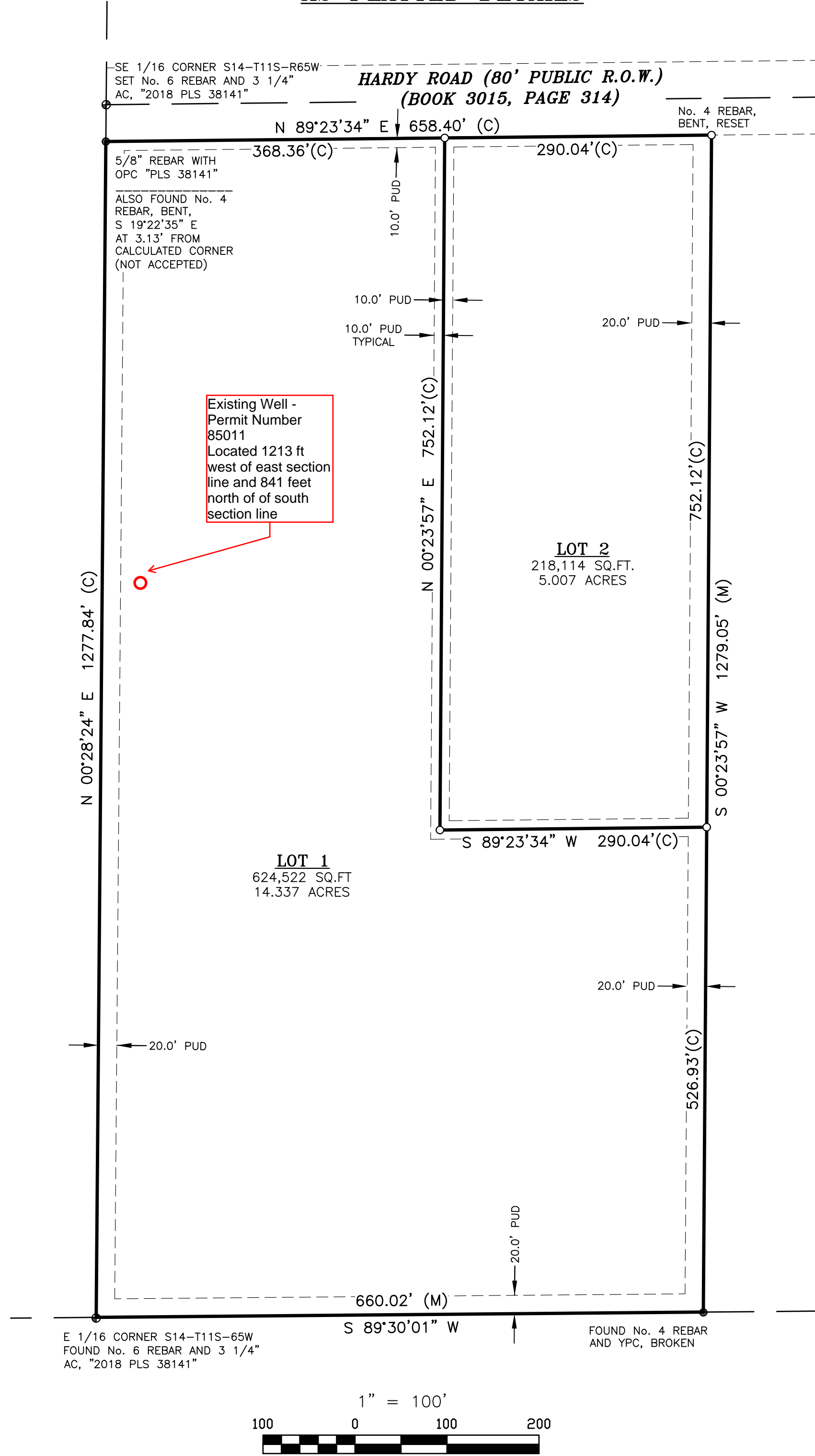
FINAL PLAT

RAPSON SUBDIVISION
A PORTION OF THE SOUTHEAST QUARTER OF
SECTION 14, TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO

SECTION BREAKDOWN



AS PLATTED DETAILS



LEGEND

- (R) RECORD DIMENSION
- (M) FIELD MEASURED DIMENSIONS
- (C) CALCULATED DIMENSIONS
- FOUND MONUMENT AS NOTED
- SET No. 5 REBAR AND ORANGE PLASTIC CAP, "PLS 38141"
- ⊙ SECTION MONUMENT AS NOTED
- OPC ORANGE PLASTIC CAP
- YPC YELLOW PLASTIC CAP
- AC ALUMINUM CAP
- PUD PUBLIC UTILITY AND DRAINAGE EASEMENT
- SUBJECT PARCEL LINES
- ADJACENT PARCEL LINES
- - - EASEMENT LINES

SHEET LEGEND:

SHEET 1: Notes, project information, and certification
SHEET 2: boundary and plat detailed information

DATE: 12/16/2020		REVISIONS	
No.	Remarks	Date	By

BARRON LAND

BOUNDARY Δ MAPPING Δ SURVEYING Δ CONSTRUCTION
2790 N. Academy Blvd, Suite 311 P: 719.360.6827
Colorado Springs, CO 80917 F: 719.466.6527
www.BARRONLAND.com

PROJECT No.: 18-017 SHEET 2 OF 2

Appendix B

WATER SUPPLY INFORMATION SUMMARY

Section 30-28-133,(d), C.R.S. requires that the applicant submit to the County, "Adequate evidence that a Water supply that is sufficient in terms of quantity, quality, and dependability will be available to ensure an adequate supply of water"

1. NAME OF DEVELOPMENT AS PROPOSED <u>Rapson Subdivision</u>			
2. LAND USE ACTION <u>Minor Subdivision</u>			
3. NAME OF EXISTING PARCEL AS RECORDED <u>Unnamed</u>			
SUBDIVISION <u>See Above</u>		FILING <u>N/A</u>	BLOCK <u>N/A</u> Lot <u>N/A</u>
4. TOTAL ACERAGE <u>19.6</u>	5. NUMBER OF LOTS PROPOSED <u>2</u>	PLAT MAPS ENCLOSED <input checked="" type="checkbox"/>	
6. PARCEL HISTORY - Please attach copies of deeds, plats, or other evidence or documentation. (In submittal package)			
A. Was parcel recorded with county prior to June 1, 1972? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
B. Has the parcel ever been part of a division of land action since June 1, 1972? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
If yes, describe the previous action <u>Platted but not recorded.</u>			
7. LOCATION OF PARCEL - Include a map delineating the project area and tie to a section corner. (In submittal)			
<u>SE 1/4</u> OF <u>SE 1/4</u> SECTION <u>14</u> TOWNSHIP <u>11</u> <input type="checkbox"/> N <input checked="" type="checkbox"/> S RANGE <u>65</u> <input type="checkbox"/> E <input checked="" type="checkbox"/> W			
PRINCIPAL MERIDIAN: <input checked="" type="checkbox"/> 6TH <input type="checkbox"/> N.M. <input type="checkbox"/> UTE <input type="checkbox"/> COSTILLA			
8. PLAT - Location of all wells on property must be plotted and permit numbers provided.			
Surveyors plat <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		If not, scaled hand -drawn sketch Y <input type="checkbox"/> NO	
9. ESTIMATED WATER REQUIREMENTS - Gallons per Day or Acre Foot per Year		10. WATER SUPPLY SOURCE	
HOUSEHOLD USE # * <u>2</u> of units <u>0.200</u> AF/SFE/YR <u>0.400</u> AF		<input checked="" type="checkbox"/> EXISTING <input checked="" type="checkbox"/> DEVELOPED <input checked="" type="checkbox"/> NEW WELLS	
COMMERCIAL USE # <u>0</u> SF <u>-</u> GPD <u>-</u> AF		WELLS SPRING WELL PERMIT NUMBERS	
IRRIGATION # ** <u>0.0566</u> AF/1000SF <u>2,107</u> GPD <u>2,360</u> AF		<u>85011</u>	
ANIMAL WATERING # *** <u>22</u> Horses <u>0.011</u> AF/Horse/Year <u>0.242</u> AF		<input type="checkbox"/> MUNICIPAL <input type="checkbox"/> ASSOCIATION <input type="checkbox"/> COMPANY <input type="checkbox"/> DISTRICT NAME: <u>N/A</u>	
TOTAL <u>2,680</u> GPD <u>3.00</u> AF *		WATER COURT DECREE CASE NUMBERS <u>Determination No.: 3637-BD</u> <u>Replacement Plan No. 2: 3637-RP</u>	
* Per Section 10 of Replacement Plan No. 2: 3637-RP		LETTER OF COMMITMENT FOR	
** Assuming 41,740 SF of irrigation land total, or 41.74 @ 1,000 SF		SERVICE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
*** Per Findings of Fact, Section III, Appendix C of Report (assuming 22 horses total)			
11. ENGINEER'S WATER SUPPLY REPORT <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If yes, please forward with this form. (This may be required before our review is completed)			
12. TYPE OF SEWAGE DISPOSAL SYSTEM			
<input checked="" type="checkbox"/> SEPTIC TANK/LEACH FIELD		<input type="checkbox"/> CENTRAL SYSTEM - DISTRICT NAME:	
<input type="checkbox"/> LAGOON		<input type="checkbox"/> VAULT - LOCATION SEWAGE HAULED TO:	
<input type="checkbox"/> ENGINEERED SYSTEM (Attach a copy of engineering design)		<input type="checkbox"/> OTHER:	

Appendix C

**COLORADO GROUND WATER COMMISSION
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN
THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN

DETERMINATION NO.: 3637-BD

AQUIFER: Dawson

APPLICANT: Carefree Properties, LLC

In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Carefree Properties, LLC (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Dawson Aquifer.

FINDINGS

1. The application was received by the Colorado Ground Water Commission on October 23, 2018.
2. The Applicant requests a determination of right to designated ground water in the Dawson Aquifer (hereinafter "Aquifer") underlying 19.6 acres, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., in El Paso County. According to a signed Ownership Statement dated October 22, 2018, attached hereto as Exhibit A, the Applicant owns the 19.6 acres of land, which are further described in said Ownership Statement (hereinafter "Overlying Land"), and claims control of the right to the ground water in the Aquifer underlying this land (hereinafter "Underlying Ground Water").
3. The Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Colorado Ground Water Commission (hereinafter "Commission") has jurisdiction over the ground water that is the subject of this Determination.
4. The Commission Staff has evaluated the application relying on the claims to control of the Underlying Ground Water in the Aquifer made by the Applicant.
5. The Applicant intends to apply the Underlying Ground Water to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The Applicant's proposed place of use of the Underlying Ground Water is the above described 19.6 acres of overlying land.
6. The application requests the maximum allowable annual amount of Underlying Ground Water from beneath the Overlying Land.
7. The quantity of water in the Aquifer underlying the 19.6 acres of Overlying Land claimed by the applicant is 1,670 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
 - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 20 percent.

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 425 feet.
8. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water identified above be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Overlying Land would be 16.7 acre-feet per year.
9. A review of the records in the Office of the State Engineer has disclosed that none of the Underlying Ground Water in the Aquifer beneath the Overlying Land has been previously allocated or permitted for withdrawal.
10. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
11. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
12. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the land claimed by the Applicant will, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is considered to be not-nontributary ground water. Withdrawal of water from the Aquifer underlying the claimed land area would impact the alluvial aquifer(s) of Kiowa Creek or its tributaries, which has been determined to be over-appropriated. Commission approval of a replacement plan pursuant to Section 37-90-107.5, C.R.S., and Rule 5.6 of the Designated Basin Rules, providing for the actual depletion of the alluvial aquifer and adequate to prevent any material injury to existing water rights, is required prior to approval of well permits for wells to be located on this land area to withdraw the Underlying Ground Water from the Aquifer.
13. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on December 20, 2018 and December 27, 2018. No objections to the application were received within the time limit set by statute.

ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Dawson Aquifer underlying 19.6 acres of land, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., further described in Exhibit A, is approved subject to the following conditions:

14. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 16.7 acre-feet.
15. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 1,670 acre-feet.
16. The Commission may adjust the total volume and the allowed average annual amount of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimate of the amount of Underlying Ground Water in the Aquifer was incorrect.
17. The allowed maximum annual amount of withdrawal may exceed the allowed average annual amount of withdrawal as long as the total volume of Underlying Ground Water withdrawn does not exceed the product of the number of years since the date of approval of this determination times the allowed average annual amount of withdrawal.
18. The Applicant may pump the allowed average annual amount of withdrawal and the allowed maximum annual amount of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
19. Commission approval of a replacement plan, providing for actual depletion of affected alluvial aquifers and adequate to prevent any material injury to existing water rights in such alluvial aquifers, is required prior to approval of well permits that allow the withdraw of the Underlying Ground Water.
20. The use of the allowed amount of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The place of use shall be limited to the above described 19.6 acres of Overlying Land. The ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.
21. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
22. Wells withdrawing the allowed amount of Underlying Ground Water allocated herein are subject to the following conditions:
 - a. The wells must be located on the above described 19.6 acres of Overlying Land.
 - b. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
 - c. The wells must be constructed to withdraw water from only the Dawson Aquifer.

- d. The entire depth of each well must be geophysically logged prior to installing the casing as forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
 - e. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual diversion records shall be collected and permanently maintained by the well owner and submitted to the Commission.
 - f. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
23. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Overlying Land is located so that a title examination of the above described 19.6 acres of Overlying Land area, or any part thereof, shall reveal the existence of this determination.
24. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 31st day of January, 2019.

By: 

Kevin G. Rein, P.E.
Executive Director
Colorado Ground Water Commission



Keith Vander Horst, P.E.
Chief of Water Supply, Basins

Prepared by: aat
F&O3637-BD.doc

**COLORADO GROUND WATER COMMISSION
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN
THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN

DETERMINATION NO.: 3636-BD

AQUIFER: Denver

APPLICANT: Carefree Properties, LLC

In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Carefree Properties, LLC (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Denver Aquifer.

FINDINGS

1. The application was received by the Colorado Ground Water Commission on October 23, 2018.
2. The Applicant requests a determination of right to designated ground water in the Denver Aquifer (hereinafter "Aquifer") underlying 19.6 acres, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., in El Paso County. According to a signed Ownership Statement dated October 22, 2018, attached hereto as Exhibit A, the Applicant owns the 19.6 acres of land, which are further described in said Ownership Statement (hereinafter "Overlying Land"), and claims control of the right to the ground water in the Aquifer underlying this land (hereinafter "Underlying Ground Water").
3. The Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Colorado Ground Water Commission (hereinafter "Commission") has jurisdiction over the ground water that is the subject of this Determination.
4. The Commission Staff has evaluated the application relying on the claims to control of the Underlying Ground Water in the Aquifer made by the Applicant.
5. The Applicant intends to apply the Underlying Ground Water to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The Applicant's proposed place of use of the Underlying Ground Water is the above described 19.6 acres of overlying land.
6. The application requests the maximum allowable annual amount of Underlying Ground Water from beneath the Overlying Land.
7. The quantity of water in the Aquifer underlying the 19.6 acres of Overlying Land claimed by the applicant is 1,180 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
 - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 17 percent.

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 355 feet.
8. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water identified above be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Overlying Land would be 11.8 acre-feet per year.
9. A review of the records in the Office of the State Engineer has disclosed that none of the Underlying Ground Water in the Aquifer beneath the Overlying Land has been previously allocated or permitted for withdrawal.
10. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
11. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
12. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the land claimed by the Applicant will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. Pursuant to the Rules, no more than 98% of the amount of the Underlying Ground Water withdrawn annually shall be consumed.
13. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on December 20, 2018 and December 27, 2018. No objections to the application were received within the time limit set by statute.

ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Denver Aquifer underlying 19.6 acres of land, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., further described in Exhibit A, is approved subject to the following conditions:


14. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 11.8 acre-feet.
15. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 1,180 acre-feet.

16. The Commission may adjust the total volume and the allowed average annual amount of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimate of the amount of Underlying Ground Water in the Aquifer was incorrect.
17. The allowed maximum annual amount of withdrawal may exceed the allowed average annual amount of withdrawal as long as the total volume of Underlying Ground Water withdrawn does not exceed the product of the number of years since the date of approval of this determination times the allowed average annual amount of withdrawal.
18. The Applicant may pump the allowed average annual amount of withdrawal and the allowed maximum annual amount of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
19. No more than 98% of the allowed amount of Underlying Ground Water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the underlying ground water withdrawn is being consumed.
20. The use of the allowed amount of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The place of use shall be limited to the above described 19.6 acres of Overlying Land. The ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.
21. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
22. Wells withdrawing the allowed amount of Underlying Ground Water allocated herein are subject to the following conditions:
 - a. The wells must be located on the above described 19.6 acres of Overlying Land.
 - b. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
 - c. The wells must be constructed to withdraw water from only the Denver Aquifer.
 - d. The entire depth of each well must be geophysically logged prior to installing the casing as forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
 - e. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual

- diversion records shall be collected and permanently maintained by the well owner and submitted to the Commission.
- f. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
23. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Overlying Land is located so that a title examination of the above described 19.6 acres of Overlying Land area, or any part thereof, shall reveal the existence of this determination.
24. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 31st day of January, 2019.

By: _____


Kevin G. Rein, P.E.
Executive Director
Colorado Ground Water Commission



Keith Vander Horst, P.E.
Chief of Water Supply, Basins

Prepared by: aat
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**COLORADO GROUND WATER COMMISSION
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN
THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN

DETERMINATION NO.: 3635-BD

AQUIFER: Arapahoe

APPLICANT: Carefree Properties, LLC

In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Carefree Properties, LLC (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Arapahoe Aquifer.

FINDINGS

1. The application was received by the Colorado Ground Water Commission on October 23, 2018.
2. The Applicant requests a determination of right to designated ground water in the Arapahoe Aquifer (hereinafter "Aquifer") underlying 19.6 acres, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., in El Paso County. According to a signed Ownership Statement dated October 22, 2018, attached hereto as Exhibit A, the Applicant owns the 19.6 acres of land, which are further described in said Ownership Statement (hereinafter "Overlying Land"), and claims control of the right to the ground water in the Aquifer underlying this land (hereinafter "Underlying Ground Water").
3. The Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Colorado Ground Water Commission (hereinafter "Commission") has jurisdiction over the ground water that is the subject of this Determination.
4. The Commission Staff has evaluated the application relying on the claims to control of the Underlying Ground Water in the Aquifer made by the Applicant.
5. The Applicant intends to apply the Underlying Ground Water to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The Applicant's proposed place of use of the Underlying Ground Water is the above described 19.6 acres of overlying land.
6. The application requests the maximum allowable annual amount of Underlying Ground Water from beneath the Overlying Land.
7. The quantity of water in the Aquifer underlying the 19.6 acres of Overlying Land claimed by the applicant is 866 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
 - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 17 percent.

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 260 feet.
8. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water identified above be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Overlying Land would be 8.66 acre-feet per year.
9. A review of the records in the Office of the State Engineer has disclosed that none of the Underlying Ground Water in the Aquifer beneath the Overlying Land has been previously allocated or permitted for withdrawal.
10. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
11. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
12. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the land claimed by the Applicant will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. Pursuant to the Rules, no more than 98% of the amount of the Underlying Ground Water withdrawn annually shall be consumed.
13. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on December 20, 2018 and December 27, 2018. No objections to the application were received within the time limit set by statute.

ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Arapahoe Aquifer underlying 19.6 acres of land, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., further described in Exhibit A, is approved subject to the following conditions:

14. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 8.66 acre-feet.
15. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 866 acre-feet.

16. The Commission may adjust the total volume and the allowed average annual amount of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimate of the amount of Underlying Ground Water in the Aquifer was incorrect.
17. The allowed maximum annual amount of withdrawal may exceed the allowed average annual amount of withdrawal as long as the total volume of Underlying Ground Water withdrawn does not exceed the product of the number of years since the date of approval of this determination times the allowed average annual amount of withdrawal.
18. The Applicant may pump the allowed average annual amount of withdrawal and the allowed maximum annual amount of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
19. No more than 98% of the allowed amount of Underlying Ground Water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the underlying ground water withdrawn is being consumed.
20. The use of the allowed amount of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The place of use shall be limited to the above described 19.6 acres of Overlying Land. The ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.
21. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
22. Wells withdrawing the allowed amount of Underlying Ground Water allocated herein are subject to the following conditions:
 - a. The wells must be located on the above described 19.6 acres of Overlying Land.
 - b. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
 - c. The wells must be constructed to withdraw water from only the Arapahoe Aquifer.
 - d. The entire depth of each well must be geophysically logged prior to installing the casing as forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
 - e. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual

- diversion records shall be collected and permanently maintained by the well owner and submitted to the Commission.
- f. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
23. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Overlying Land is located so that a title examination of the above described 19.6 acres of Overlying Land area, or any part thereof, shall reveal the existence of this determination.
24. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 31st day of January, 2019.

By: 
Kevin G. Rein, P.E.
Executive Director
Colorado Ground Water Commission


Keith Vander Horst, P.E.
Chief of Water Supply, Basins

Prepared by: aat
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**COLORADO GROUND WATER COMMISSION
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN
THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN

DETERMINATION NO.: 3634-BD

AQUIFER: Laramie-Fox Hills

APPLICANT: Carefree Properties, LLC

In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Carefree Properties, LLC (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Laramie-Fox Hills Aquifer.

FINDINGS

1. The application was received by the Colorado Ground Water Commission on October 23, 2018.
2. The Applicant requests a determination of right to designated ground water in the Laramie-Fox Hills Aquifer (hereinafter "Aquifer") underlying 19.6 acres, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., in El Paso County. According to a signed Ownership Statement dated October 22, 2018, attached hereto as Exhibit A, the Applicant owns the 19.6 acres of land, which are further described in said Ownership Statement (hereinafter "Overlying Land"), and claims control of the right to the ground water in the Aquifer underlying this land (hereinafter "Underlying Ground Water").
3. The Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Colorado Ground Water Commission (hereinafter "Commission") has jurisdiction over the ground water that is the subject of this Determination.
4. The Commission Staff has evaluated the application relying on the claims to control of the Underlying Ground Water in the Aquifer made by the Applicant.
5. The Applicant intends to apply the Underlying Ground Water to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The Applicant's proposed place of use of the Underlying Ground Water is the above described 19.6 acres of overlying land.
6. The application requests the maximum allowable annual amount of Underlying Ground Water from beneath the Overlying Land.
7. The quantity of water in the Aquifer underlying the 19.6 acres of Overlying Land claimed by the applicant is 559 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
 - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 15 percent.

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 190 feet.
8. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water identified above be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Overlying Land would be 5.59 acre-feet per year.
9. A review of the records in the Office of the State Engineer has disclosed that none of the Underlying Ground Water in the Aquifer beneath the Overlying Land has been previously allocated or permitted for withdrawal.
10. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
11. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
12. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the land claimed by the Applicant will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. Pursuant to the Rules, no more than 98% of the amount of the Underlying Ground Water withdrawn annually shall be consumed.
13. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on December 20, 2018 and December 27, 2018. No objections to the application were received within the time limit set by statute.

ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Laramie-Fox Hills Aquifer underlying 19.6 acres of land, generally described as part of the W 1/2 of the SE 1/4 of the SE 1/4, Section 14, Township 11 South, Range 65 West, Sixth P.M., further described in Exhibit A, is approved subject to the following conditions:


14. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 5.59 acre-feet.
15. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 559 acre-feet.

16. The Commission may adjust the total volume and the allowed average annual amount of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimate of the amount of Underlying Ground Water in the Aquifer was incorrect.
17. The allowed maximum annual amount of withdrawal may exceed the allowed average annual amount of withdrawal as long as the total volume of Underlying Ground Water withdrawn does not exceed the product of the number of years since the date of approval of this determination times the allowed average annual amount of withdrawal.
18. The Applicant may pump the allowed average annual amount of withdrawal and the allowed maximum annual amount of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
19. No more than 98% of the allowed amount of Underlying Ground Water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the underlying ground water withdrawn is being consumed.
20. The use of the allowed amount of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock and replacement. The place of use shall be limited to the above described 19.6 acres of Overlying Land. The ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.
21. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
22. Wells withdrawing the allowed amount of Underlying Ground Water allocated herein are subject to the following conditions:
 - a. The wells must be located on the above described 19.6 acres of Overlying Land.
 - b. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
 - c. The wells must be constructed to withdraw water from only the Laramie-Fox Hills Aquifer.
 - d. The entire depth of each well must be geophysically logged prior to installing the casing as forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
 - e. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual

- diversion records shall be collected and permanently maintained by the well owner and submitted to the Commission.
- f. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
23. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Overlying Land is located so that a title examination of the above described 19.6 acres of Overlying Land area, or any part thereof, shall reveal the existence of this determination.
24. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 31st day of January, 2019.

By: 
Kevin G. Rein, P.E.
Executive Director
Colorado Ground Water Commission


Keith Vander Horst, P.E.
Chief of Water Supply, Basins

Prepared by: aat
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BARGAIN AND SALE DEED

In connection with the purchase and sale of the West half of the Southeast quarter of the Southeast quarter of Section 14, Township 11 South, Range 65 West of the 6th P.M.; excepting a perpetual easement for roadway, utilities, ingress and egress purposes over and across the North 40 feet, El Paso County, Colorado, also known as 10675 Hardy Road, Colorado Springs, CO 80920,, Colorado Springs, CO 80908, El Paso County, Colorado ("Property"), Carefree Properties, LLC, a Colorado Limited Liability Company ("Grantor") of the County of El Paso and State of Colorado, for ten dollars and other good and valuable consideration in hand paid, hereby sells and conveys to Andrea Rapson and William Rapson, as joint tenants ("Grantee"), whose address is 10870 Elizabeth Way, Colorado Springs, CO 80908 of the County of El Paso, and State of Colorado, the following water rights, to wit:

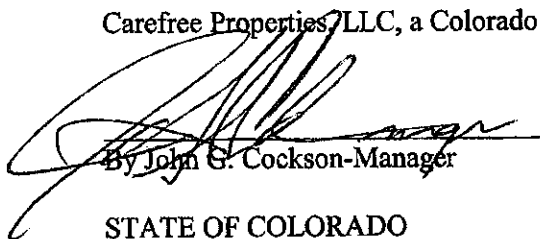
Those rights set forth in the Colorado Ground Water Commission Findings and Determination in Case Nos. 3637-BD (Dawson Aquifer and Replacement Plan), 3636-BD (Denver Aquifer), 3635-BD (Arapahoe Aquifer) and 3634-BD (Laramie-Fox Hills Aquifer).

TO HAVE AND TO HOLD together with any and all appurtenances and privileges, and all the estate, right, title, interest and claim whatsoever, of the Grantor, either in law or equity, to the proper use and benefit of the Grantee, his heirs, successors and assigns.

IN WITNESS WHEREOF, the Grantor has executed this deed on this 30th day of December, 2019.

GRANTOR

Carefree Properties, LLC, a Colorado Limited Liability Company

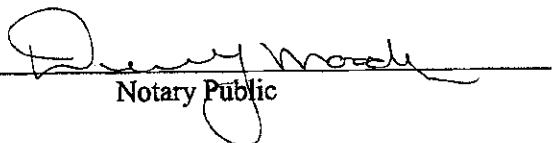

By John G. Cockson-Manager

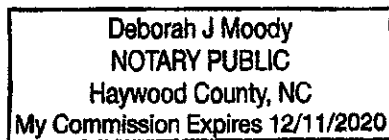
STATE OF COLORADO


COUNTY OF EL PASO

ss: The foregoing document was acknowledged before me this 30th day of December, 2020 by John G. Cockson as Manager of Carefree Properties, LLC.

My commission expires 12-11-2020.


Notary Public




Unified
THE COMPANY 694447C

**COLORADO GROUND WATER COMMISSION
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR REPLACEMENT PLAN TO ALLOW THE WITHDRAWAL OF GROUNDWATER FROM THE DAWSON AQUIFER IN THE KIOWA-BIJOU DESIGNATED GROUNDWATER BASIN.

REPLACEMENT PLAN NO. 2: 3637-RP

FOR DETERMINATION OF WATER RIGHT NO. 3637-BD

AQUIFER: DAWSON

APPLICANT: WILLIAM RAPSON

In compliance with section 37-90-107.5, C.R.S. and the Designated Basin Rules, 2 CCR 410-1 (Rules or Rule), William Rapson (Applicant) submitted an application to replace the previously approved Carefree Properties, LLC replacement plan that allowed the withdrawal of groundwater from the Dawson Aquifer that has been allocated by Determination of Water Right No. 3637-BD.

FINDINGS

1. Pursuant to section 37-90-107.5, in a Findings and Order dated January 31, 2019, the Ground Water Commission (Commission) approved a Replacement Plan that allowed the withdrawal of 3.0 acre-feet per year of Dawson aquifer (Aquifer) groundwater allocated by Determination of Water Right No. 3637-BD. This replacement plan application submitted by the Applicant seeks to replace in its entirety the previously approved replacement plan.
2. Pursuant to section 37-90-107(7), C.R.S., in a Findings and Order dated January 31, 2019, the Commission approved a Determination of a Right to an Allocation of Groundwater, No. 3637-BD, from the Dawson Aquifer, summarized as follows.
 - a. The determination quantified an amount of water from beneath 19.6 acres of overlying land generally described as a portion of the W 1/2 of the SE 1/4 of the SE 1/4 of Section 14, Township 11 South, Range 65 West of the 6th P.M., in El Paso County (Overlying Land).
 - b. The amount of water in the aquifer that was allocated was 1,670 acre-feet, and the allowed average annual amount of groundwater to be withdrawn from the aquifer was limited to 16.7 acre-feet per year (subject to adjustment by the Commission to conform to actual local aquifer characteristics).
 - c. The use of groundwater is limited to the following beneficial uses: domestic, including in-house, landscape/irrigation of lawn and gardens, watering of domestic animals and stock, and replacement.
 - d. Withdrawal of the subject groundwater will, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal, the groundwater is considered to be not-nontributary, and Commission approval of a replacement plan providing for actual depletion of affected alluvial aquifers and adequate to prevent any material injury to existing water rights in such alluvial aquifers is required prior to approval of well permits for wells to withdraw the subject groundwater.

3. The subject water is Designated Groundwater located within the boundaries of the Kiowa-Bijou Designated Groundwater Basin. The Commission has jurisdiction over the withdrawal of the water by large capacity wells that are permitted pursuant to section 37-90-107(7).
4. Withdrawal of the subject groundwater would deplete the alluvial aquifer of the Kiowa-Bijou Designated Groundwater Basin, the alluvial aquifer of the Upper Big Sandy Designated Groundwater Basin and the alluvial aquifer of the Upper Black Squirrel Creek Designated Groundwater Basin, all of which, according to Rules 5.2.4.2, 5.2.7.2 and 5.2.6.2, respectively, have been determined to be over appropriated. Such depletion would unreasonably impair existing large capacity alluvial rights withdrawing water from those alluvial aquifers.
5. Pursuant to Rule 5.6.1.A this plan must be adequate to prevent any material injury to water rights of other appropriators, which for purposes of this plan means large capacity wells withdrawing water from the alluvial aquifer of the Kiowa-Bijou Designated Groundwater Basin, the alluvial aquifer of the Upper Big Sandy Designated Groundwater Basin and the alluvial aquifer of the Upper Black Squirrel Creek Designated Groundwater Basin.
6. Pursuant to Rule 5.3.6.2(C) the amount of replacement water shall provide for the depletion of alluvial water for the first 100 years due to all previous pumping and if pumping continues beyond 100 years, shall replace actual impact until pumping ceases.
7. The application for the replacement plan was received by the Commission on July 16, 2020.
8. The Applicant proposes to divert 3.0 acre-feet annually from the Dawson Aquifer for a period of 300 years. The Dawson aquifer water will be withdrawn through two wells to be located on two residential lots. The Dawson aquifer water will be used to serve at least one single-family dwelling, irrigation of landscape/lawn and garden, replacement, and watering of domestic animals and livestock. The land on which the wells will be located is the 19.6 acres of Overlying Land described above.
9. At a continuous withdrawal of 3.0 acre-feet annually for 300 years, depletions to the alluvial aquifer systems of the Kiowa-Bijou Designated Groundwater Basin, Upper Big Sandy Designated Groundwater Basin and Upper Black Squirrel Creek Designated Groundwater Basin would steadily increase to 0.104 acre-feet per year in the 300th year, which is equal to 3.46% of pumping, as shown in Exhibit A.
10. The Applicant proposes to provide 0.18 acre-feet per year of replacement water to the alluvial aquifer system of the Kiowa-Bijou Designated Groundwater Basin. The proposed source of replacement water is septic return flows from the in-house use in one single-family dwelling of the groundwater to be pumped under the plan. The Applicant estimates that return flows will consist of 90% of the water used for in-house purposes. Assuming in-house use in one single-family dwelling requires of 0.20 acre-feet annually, the return flow would be 0.18 acre-feet annually.
11. The subject property is located within the drainage of Kiowa Creek, and the return flows will flow to the alluvial aquifer of the Kiowa-Bijou Designated Groundwater Basin. The Applicant proposes to aggregate all replacements to the drainage in which the well or wells will operate, in accordance with Guideline 2007-1.
12. Pursuant to Rule 5.6.1.B this plan must be adequate to prevent unreasonable impairment of water quality. Pursuant to Rule 5.6.1.B.1.b, if the replacement source water is from an onsite wastewater treatment system permitted by a local health agency and the applicant

demonstrates the source is in compliance with that permit there shall be a rebuttable presumption of no unreasonable impairment of water quality.

13. Pursuant to Rule 5.6.1.C this plan, including the proposed uses of the water withdrawn pursuant to the plan, must not be speculative, and must be technically and financially feasible and within the Applicant's ability to complete. The plan, including the proposed uses of the water withdrawn pursuant to the plan, is not speculative. The plan appears technically and financially feasible and within the Applicant's ability to complete.
14. Pursuant to Rule 5.6.1.D this plan must be able to be operated and administered on an ongoing and reliable basis. The plan appears to be able to be operated and administered on an ongoing and reliable basis.
15. Pursuant to Rule 5.6.1.F replacement source water must be physically and legally available in time, place and amount to prevent material injury. As determined in Determination of Water Right No. 3637-BD water is currently available in the amounts and for the number of years proposed to be diverted.
16. Pursuant to Rule 5.6.1.G the replacement source water must be legally available for use. Records in this office indicate that the Applicant controls the water right to be used as the source of replacement water, consisting of Determination of Water Right No. 3637-BD, and such water is legally available for use pursuant to this plan.
17. In accordance with sections 37-90-107.5 and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on November 19, 2020 and November 26, 2020. No objections to the application were received within the time limit set by statute.
18. According to Rule 5.6.1:
 - a. The Applicant has the burden of proving the adequacy of the plan in all respects.
 - b. If the applicant meets its burden of proof, the Commission shall grant approval of the plan which shall include any terms and conditions established the Commission.
19. The Commission Staff has evaluated the application pursuant to section 37-90-107.5, and the requirements of Rule 5.3.6.2(C) and Rule 5.6, finds that the requirements have been meet, and the plan may be approved to allow diversions from the Dawson Aquifer if operated subject to the conditions given below.

ORDER

In accordance with section 37-90-107.5, and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for a replacement plan to allow the withdrawal of groundwater from the Dawson Aquifer underlying 19.6 acres that are the subject of Determination of Water Right no. 3637-BD is approved subject to the following conditions:

20. Approval of this replacement plan hereby cancels the Carefree Properties, LLC replacement plan approved by the Commission in a Findings and Order dated January 31, 2019.
21. Well permit no. 84274-F, which was approved pursuant to Determination of Water Right no. 3637-BD and the Carefree Properties, LLC replacement plan approved by the Commission in a Findings and Order dated January 31, 2019, must be re-permitted to operate in accordance

with Determination of Water Right no. 3637-BD and this replacement plan.

22. The Dawson Aquifer water will be withdrawn through two wells to be located on two residential lots. The allowed use of groundwater for each well under this plan is in-house use, irrigation of landscape/lawn and garden, replacement, and watering of domestic animals and livestock. The land on which the wells will be located is the 19.6 acres of Overlying Land described above.
23. The allowed annual amount of groundwater to be withdrawn from the Aquifer by all wells operating under this plan shall not exceed 3.0 acre-feet.
24. A totalizing flow meter shall be installed on each well. The well owner shall maintain the meter in good working order.
25. Permanent records of all withdrawals of groundwater from each well shall be recorded at least annually by the well owners, permanently maintained, and provided to the Commission.
26. Pumping under this plan is limited to a period of 300 years. The year of first use of this replacement plan shall be the calendar year of construction of a well permitted pursuant to this plan or permitting of an existing well pursuant to the plan.
27. Return flows from in-house use of groundwater shall occur through individual on-lot non-evaporative septic systems located within the 19.6 acres of Overlying Land that are the subject of Determination of Water Right No. 3637-BD. The septic systems must be constructed and operated in compliance with a permit issued by a local health agency.
28. Replacement of depletions must be provided annually in the acre-feet amounts shown in Exhibit A. Annual replacement requirements may be computed by pro-rating between the values given on Exhibit A, or for simplicity may be taken as the amount shown in the next succeeding 5 year increment.
29. The Applicant or their successor(s) are responsible for ensuring that replacement water is provided to the alluvial aquifer as required by this plan. The annual replacement requirement and the annual amount of replacement water provided shall be calculated and reported on a form acceptable to the Commission. The annual amount of replacement water provided must be no less than the annual replacement requirement on a yearly basis. No credit shall be claimed by the Applicant for an oversupply of replacement water provided to the alluvium during previous years.
30. The Applicant must provide the required annual amount of replacement water for the first 100 years, or for as long as a well is operated pursuant to this plan, whichever is longer.
31. To assure adequate return flows, at least one well must be serving an occupied single-family dwelling that is generating return flows via a non-evaporative septic system before any irrigation or animal watering is allowed to be served by any of the wells.
32. So long as at least one well continues to pump and supply an occupied dwelling, the plan's required replacement obligations, shown in Exhibit A, will be met. Should all wells cease pumping for in-house use within the first 100 years an amended or alternate replacement plan must be obtained that will replace actual depletions to the alluvial aquifer so as to prevent any material injury to water rights of other appropriators.

33. The Applicant (and their successors) must gather and maintain permanent records of all information pertaining to operation of this plan, which shall include, but is not be limited to, those items identified below. The Applicant must submit records to the Commission on forms acceptable to the Commission, on an annual basis for the previous calendar year, by February 15th of the following year.
- a. Identification of all well permits issued and wells constructed under this plan.
 - b. The amount of water diverted by each well and all wells in total, both annually and cumulatively since operation of the plan began.
 - c. The number of occupied dwellings served by each well.
 - d. The number of square feet irrigated by each well.
 - e. The number of large domestic animals served by each well.
 - f. The return flows occurring from use of all wells operating under the plan, assuming 0.18 acre-feet per year per occupied single family dwelling (90% of the water used for in-house purposes) enters the alluvial aquifer as replacement water.
 - g. Any other information the Commission deems relevant and necessary to operation, monitoring, accounting, or administration of the plan.
34. The Applicant (and their successors) are fully responsible for the operation, monitoring, and accounting of the replacement plan. In the event a lot with a well permitted or operating pursuant to this plan is sold, identification of the well that was sold and evidence that the new owner has been notified of their responsibilities under the replacement plan shall accompany that year's accounting.
35. Any covenants adopted for this subdivision should contain a description of the replacement plan, including the limitations on diversions and use of water for each well and lot, the requirement to meter and record all well pumping, and information on how records are to be reported and the plan is to be administered.
36. In the event the permitted well or wells are not operated in accordance with the conditions of this replacement plan, they shall be subject to administration, including orders to cease diverting groundwater.
37. All terms and conditions of Determination of Water Right No. 3637-BD must be meet.
38. Pursuant to Rule 5.6.1.E, a copy of this Findings and Order shall be recorded by the Applicant in the clerk and recorder's records of El Paso County, so that a title examination of the land on which the structures involved in this plan are located reveals the existence of this plan.

Dated this 29th day of December, 2020.

Replacement Plan No. 2, Determination No. 3637-BD
Aquifer: Dawson
Applicant: William Rapson

Page 6



Kevin G. Rein, P.E.
Executive Director
Colorado Ground Water Commission

By: _____



Joanna Williams, P.E.
Water Resource Engineer

F&O3637-RP.docx
Prepared by: wad

Exhibit A
Replacement Plan No. 2 - Determination No.: 3637-BD
Page 1 of 1

Designated Basin Summary Table for William Rapson Pumping Rate of 3 acre-feet per year for 300 Years from the Dawson aquifer Section(s): Section 14, T11S, R65W, 6th P.M.							
Year	Pumping (Q) (AF/YR)	Annual Depletion (q) (AF/YR)	Depletion as a % of Pumping (q/Q)	Year	Pumping (Q) (AF/YR)	Annual Depletion (q) (AF/YR)	Depletion as a % of Pumping (q/Q)
5	3.0	0.000	0.00	155	3.0	0.046	1.55
10	3.0	0.000	0.01	160	3.0	0.049	1.62
15	3.0	0.000	0.02	165	3.0	0.051	1.68
20	3.0	0.001	0.03	170	3.0	0.053	1.75
25	3.0	0.002	0.05	175	3.0	0.055	1.82
30	3.0	0.002	0.08	180	3.0	0.057	1.89
35	3.0	0.003	0.11	185	3.0	0.059	1.96
40	3.0	0.004	0.15	190	3.0	0.061	2.02
45	3.0	0.006	0.19	195	3.0	0.063	2.09
50	3.0	0.007	0.23	200	3.0	0.065	2.16
55	3.0	0.008	0.28	205	3.0	0.067	2.23
60	3.0	0.010	0.33	210	3.0	0.069	2.29
65	3.0	0.012	0.39	215	3.0	0.071	2.36
70	3.0	0.013	0.44	220	3.0	0.073	2.43
75	3.0	0.015	0.50	225	3.0	0.075	2.49
80	3.0	0.017	0.56	230	3.0	0.077	2.56
85	3.0	0.019	0.62	235	3.0	0.079	2.63
90	3.0	0.021	0.69	240	3.0	0.081	2.69
95	3.0	0.022	0.75	245	3.0	0.083	2.76
100	3.0	0.024	0.81	250	3.0	0.085	2.82
105	3.0	0.026	0.88	255	3.0	0.087	2.89
110	3.0	0.028	0.94	260	3.0	0.089	2.95
115	3.0	0.030	1.01	265	3.0	0.091	3.02
120	3.0	0.032	1.08	270	3.0	0.092	3.08
125	3.0	0.034	1.14	275	3.0	0.094	3.15
130	3.0	0.036	1.21	280	3.0	0.096	3.21
135	3.0	0.038	1.28	285	3.0	0.098	3.27
140	3.0	0.040	1.35	290	3.0	0.100	3.34
145	3.0	0.042	1.41	295	3.0	0.102	3.40
150	3.0	0.044	1.48	300	3.0	0.104	3.46

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Values for 'Depletion as a % of Pumping' (q/Q) are not calculated when the pumping rate (Q) is changed to anything but zero

Summary Table 1				Summary Table 2			
				Model Period (years)	300		
Applicant Name	William Rapson			Applicant Name	William Rapson		
Receipt No.	3637-BD			Receipt No.	3637-BD		
Number of Years of Pumping	300			Number of Years of Pumping	300		
Pumping Rate (ac-ft/yr)	3.00			Pumping Rate (ac-ft/yr)	3.00		
Total Volume (ac-ft)	900			Total Volume (ac-ft)	900		
Legal for All Sections	Section 14, T11S, R65W, 6th P.M.			Legal for All Sections	Section 14, T11S, R65W, 6th P.M.		
Model	DA02			Model	DA02		
Aquifer	Dawson			Aquifer	Dawson		
100th Year Stream Depletion			Maximum Stream Depletion				
Streams	100th Year Depletion (ac-ft/yr)	q/Q (%)	Streams	Max. Depletion during model period (ac-ft/yr)	Year during model period	Max. Depletion during pumping period (ac-ft/yr)	Year during pumping period
MONUMENT	0.009	0.299	MONUMENT	0.057	300	0.057	300
EAST PLUM-W&E BRANCH	0.000	0.009	EAST PLUM-W&E BRANCH	0.011	300	0.011	300
RUNNING CREEK	0.000	0.009	RUNNING CREEK	0.005	300	0.005	300
WEST CHERRY	0.023	0.755	WEST CHERRY	0.092	300	0.092	300
EAST CHERRY	0.075	2.499	EAST CHERRY	0.164	300	0.164	300
CHERRY	0.002	0.082	CHERRY	0.028	300	0.028	300
KIOWA	0.024	0.801	KIOWA	0.098	300	0.098	300
KETTLE	0.004	0.146	KETTLE	0.022	300	0.022	300
SAND-DIV2	0.004	0.144	SAND-DIV2	0.042	300	0.042	300
BIG SANDY	0.000	0.000	BIG SANDY	0.000	300	0.000	300
BLACK SQUIRREL-UBSCDB	0.000	0.011	BLACK SQUIRREL-UBSCDB	0.006	300	0.006	300
Total	0.143	4.757	Total	0.525	300	0.525	300
South Platte(No Designated Basin Streams)	0.101	3.355	South Platte Basin(No Designated Basin Streams)	0.299	300	0.299	300
Arkansas(No Designated Basin Streams)	0.018	0.589	Arkansas Basin(No Designated Basin Streams)	0.121	300	0.121	300
Designated Basin	0.024	0.813	Designated Basin	0.104	300	0.104	300

Created by wad on August 27, 2020

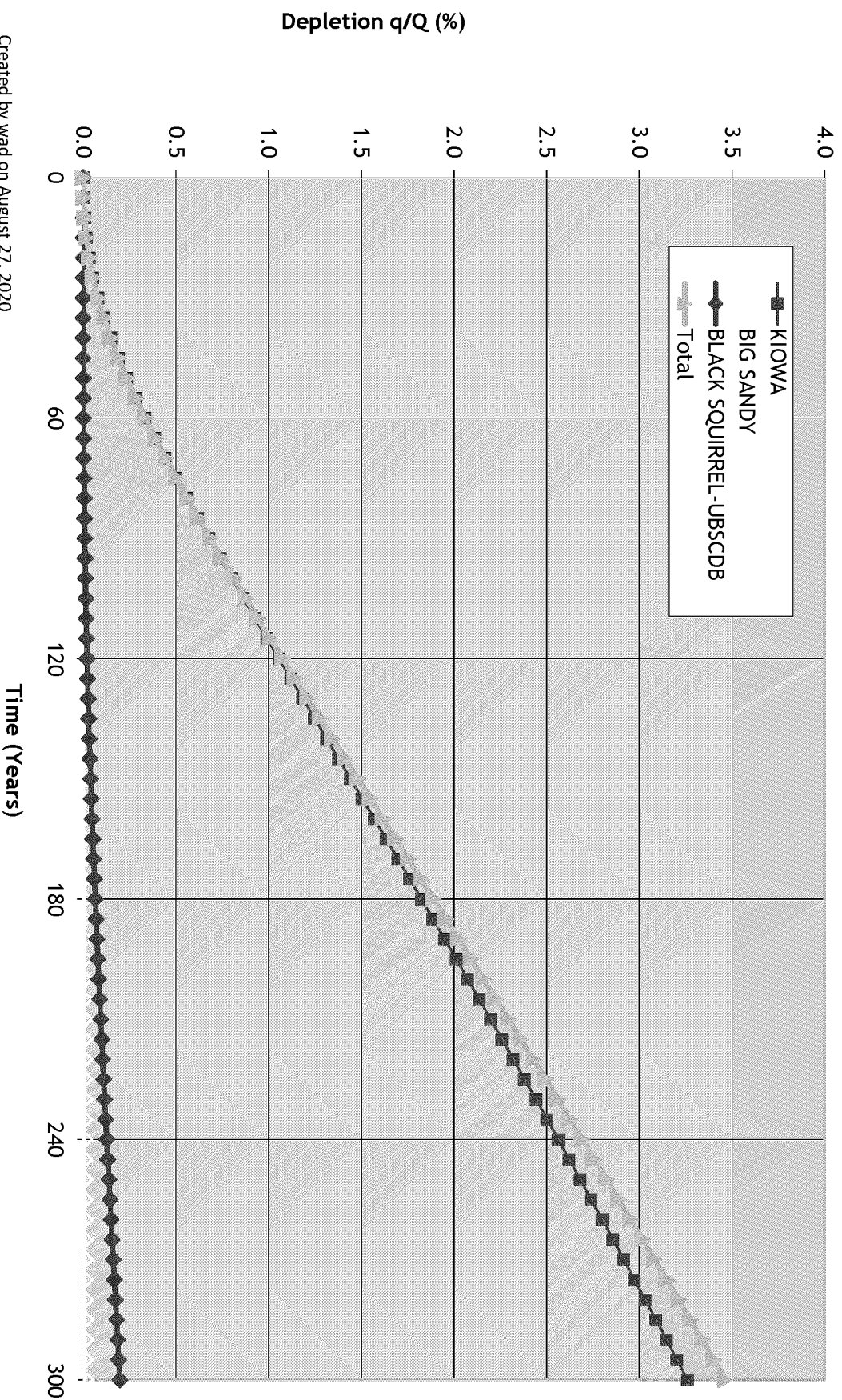
Values for 'Depletion as a % of Pumping' (q/Q) are not calculated when the pumping rate (Q) is changed to anything but zero

Stream Depletion for William Rapson								
Pumping Rate of 3 acre-feet per year for 300 Years from the Dawson aquifer								
	Kiowa Bijou Designated		Upper Big Sandy Designated		Upper Black Squirrel		TOTAL	
	KIOWA		BIG SANDY		BLACK SQUIRREL-UBSCDB			
Time	q/Q	vol. /yr	q/Q	vol. /yr	q/Q	vol. /yr	q/Q	vol. /yr
(yr)	(%)	(af/yr)	(%)	(af/yr)	(%)	(af/yr)	(%)	(af/yr)
0	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.000
5	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.000
10	0.01	0.000	0.00	0.000	0.00	0.000	0.01	0.000
15	0.02	0.000	0.00	0.000	0.00	0.000	0.02	0.000
20	0.03	0.001	0.00	0.000	0.00	0.000	0.03	0.001
25	0.05	0.002	0.00	0.000	0.00	0.000	0.05	0.002
30	0.08	0.002	0.00	0.000	0.00	0.000	0.08	0.002
35	0.11	0.003	0.00	0.000	0.00	0.000	0.11	0.003
40	0.15	0.004	0.00	0.000	0.00	0.000	0.15	0.004
45	0.19	0.006	0.00	0.000	0.00	0.000	0.19	0.006
50	0.23	0.007	0.00	0.000	0.00	0.000	0.23	0.007
55	0.28	0.008	0.00	0.000	0.00	0.000	0.28	0.008
60	0.33	0.010	0.00	0.000	0.00	0.000	0.33	0.010
65	0.39	0.012	0.00	0.000	0.00	0.000	0.39	0.012
70	0.44	0.013	0.00	0.000	0.00	0.000	0.44	0.013
75	0.50	0.015	0.00	0.000	0.00	0.000	0.50	0.015
80	0.56	0.017	0.00	0.000	0.01	0.000	0.56	0.017
85	0.62	0.018	0.00	0.000	0.01	0.000	0.62	0.019
90	0.68	0.020	0.00	0.000	0.01	0.000	0.69	0.021
95	0.74	0.022	0.00	0.000	0.01	0.000	0.75	0.022
100	0.80	0.024	0.00	0.000	0.01	0.000	0.81	0.024
105	0.86	0.026	0.00	0.000	0.01	0.000	0.88	0.026
110	0.93	0.028	0.00	0.000	0.02	0.000	0.94	0.028
115	0.99	0.030	0.00	0.000	0.02	0.001	1.01	0.030
120	1.06	0.032	0.00	0.000	0.02	0.001	1.08	0.032
125	1.12	0.034	0.00	0.000	0.02	0.001	1.14	0.034
130	1.18	0.036	0.00	0.000	0.03	0.001	1.21	0.036
135	1.25	0.037	0.00	0.000	0.03	0.001	1.28	0.038
140	1.31	0.039	0.00	0.000	0.03	0.001	1.35	0.040
145	1.38	0.041	0.00	0.000	0.04	0.001	1.41	0.042
150	1.44	0.043	0.00	0.000	0.04	0.001	1.48	0.044
155	1.51	0.045	0.00	0.000	0.04	0.001	1.55	0.046
160	1.57	0.047	0.00	0.000	0.05	0.001	1.62	0.049
165	1.63	0.049	0.00	0.000	0.05	0.002	1.68	0.051
170	1.70	0.051	0.00	0.000	0.06	0.002	1.75	0.053
175	1.76	0.053	0.00	0.000	0.06	0.002	1.82	0.055
180	1.82	0.055	0.00	0.000	0.06	0.002	1.89	0.057
185	1.89	0.057	0.00	0.000	0.07	0.002	1.96	0.059
190	1.95	0.058	0.00	0.000	0.07	0.002	2.02	0.061
195	2.01	0.060	0.00	0.000	0.08	0.002	2.09	0.063
200	2.07	0.062	0.00	0.000	0.08	0.003	2.16	0.065
205	2.14	0.064	0.00	0.000	0.09	0.003	2.23	0.067
210	2.20	0.066	0.00	0.000	0.09	0.003	2.29	0.069
215	2.26	0.068	0.00	0.000	0.10	0.003	2.36	0.071
220	2.32	0.070	0.00	0.000	0.10	0.003	2.43	0.073
225	2.38	0.071	0.00	0.000	0.11	0.003	2.49	0.075
230	2.44	0.073	0.00	0.000	0.12	0.003	2.56	0.077
235	2.50	0.075	0.00	0.000	0.12	0.004	2.63	0.079
240	2.56	0.077	0.00	0.000	0.13	0.004	2.69	0.081
245	2.62	0.079	0.00	0.000	0.13	0.004	2.76	0.083
250	2.68	0.080	0.00	0.000	0.14	0.004	2.82	0.085
255	2.74	0.082	0.00	0.000	0.14	0.004	2.89	0.087
260	2.80	0.084	0.00	0.000	0.15	0.004	2.95	0.089
265	2.86	0.086	0.00	0.000	0.16	0.005	3.02	0.091
270	2.91	0.087	0.01	0.000	0.16	0.005	3.08	0.092
275	2.97	0.089	0.01	0.000	0.17	0.005	3.15	0.094
280	3.03	0.091	0.01	0.000	0.17	0.005	3.21	0.096
285	3.09	0.093	0.01	0.000	0.18	0.005	3.27	0.098
290	3.15	0.094	0.01	0.000	0.19	0.006	3.34	0.100
295	3.20	0.096	0.01	0.000	0.19	0.006	3.40	0.102
300	3.26	0.098	0.01	0.000	0.20	0.006	3.46	0.104

Created by wad on August 27, 2020

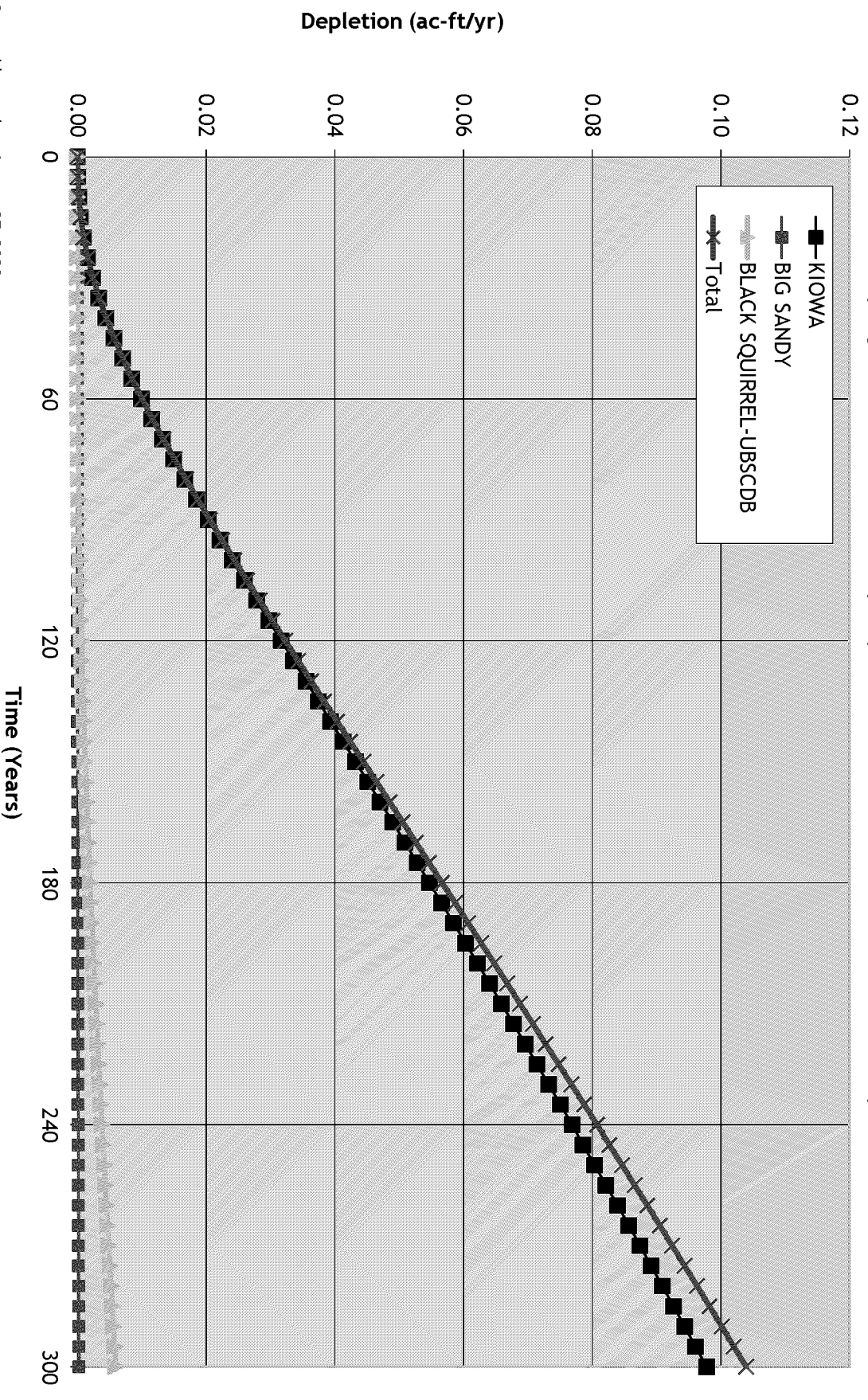
Values for q/Q are not calculated when the pumping rate (Q) is changed to anything but zero.

Stream Depletion for William Rapson Pumping Rate of 3 acre-feet per year for 300 Years from the Dawson aquifer



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If the pumping rate (Q) is changed to anything but zero q/Q is not calculated

Stream Depletion for William Rapson
Pumping Rate of 3 acre-feet per year for 300 Years from the Dawson aquifer



Appendix D

***El Paso County Land Development Code
Water Quality Requirements and Results
Dawson Confined Aquifer
for Andrea Rapson Addition
Sampled January 4, 2021***

Compound	Units	MCL/SMCL	Result
Antimony	mg/l	0.006	<0.001
Arsenic	mg/l	0.01	<0.001
Barium	mg/l	2	0.082
Beryllium	mg/l	0.004	<0.001
Cadmium	mg/l	0.005	<0.001
Chromium	mg/l	0.1	0.001
Cyanide (Total)	mg/l	0	<0.005
Fluoride	mg/l	4	0.12
Mercury	mg/l	0.002	<0.001
Nitrate as N	mg/l	10	0.38
Nitrite as N	mg/l	1	<0.03
Selenium	mg/l	0.05	0.001
Thallium	mg/l	0.002	<0.001
Aluminum	mg/l	0.05	0.03
Chloride	mg/l	250	3.8
Langelier Index			-2.11
Iron	mg/l	0.3	0.023
Manganese	mg/l	0.05	0.0043
pH		6.5 - 8.5	6.6
Silver	mg/l	0.1	<0.0005
Sulfate	mg/l	250	6.7
TDS	mg/l	500	122
Zinc	mg/l	5	0.049
Gross Alpha/Beta	pCi/l	15	8
Combined Radium 226+228	pCi/l	5	2.79
Total Coliform	#/100 ml	Absent	Present

Green = Result below MCL - Acceptable Water Quality

Analytical Results

TASK NO: 210105037

Report To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Bill To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Task No.: 210105037

Client PO:

Client Project: Andrea Rapson Addition

Date Received: 1/5/21

Date Reported: 1/15/21

Matrix: Water - Drinking

Customer Sample ID Andrea Rapson Addition 1-4

Sample Date/Time: 1/4/21 12:37 PM

Lab Number: 210105037-01

Test	Result	Method	ML	Date Analyzed	Analyzed By
Bicarbonate	53.7 mg/L as CaCO ₃	SM 2320-B	4	1/6/21	ECM
Calcium as CaCO ₃	29.2 mg/L	EPA 200.7	0.1	1/6/21	MBN
Carbonate	< 4 mg/L as CaCO ₃	SM 2320-B	4	1/6/21	ECM
Hydroxide	< 4 mg/L as CaCO ₃	SM 2320-B	4	1/6/21	ECM
Langelier Index	-2.11 units	SM 2330-B		1/13/21	SAN
pH	6.60 units	SM 4500-H-B	0.01	1/4/21	Sampler
Temperature	14 °C	SM 4500-H-B	1	1/4/21	Sampler
Total Alkalinity	53.7 mg/L as CaCO ₃	SM 2320-B	4	1/6/21	ECM
Total Dissolved Solids	122 mg/L	SM 2540-C	5	1/6/21	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

10411 Heinz Way / Commerce City, CO 80640 / 303-659-2313

Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507

Drinking Water Chain of Custody



LABORATORIES, INC.

Report To Information		Bill To Information (If different from report to)		Project Information	
Company Name: <u>JD5-Hydro Consultants</u>		Company Name:		PWSID:	
Contact Name: <u>Shelby Gattlin</u>		Contact Name:		System Name:	
Address:		Address:		Compliance Samples: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<u>5540 Tech Center Dr. Ste. 100</u>		<u>City: Colo Spgs State: CO Zip: 80919</u>		Send Results to CDPHE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Phone: <u>719-227-0072</u>		City: State: Zip:		Task Number (Lab Use Only)	
Email: <u>SGattlin@jds-hydro.com</u>		Phone:		CAL Task	
Sample Collector: <u>Shelby Gattlin</u>		Email:		210105037	
Sample Collector Phone: <u>719-551-8233</u>		PO Number:		JML	

Commerce City Lab
10411 Heinz Way
Commerce City CO 80640

Lakewood Service Center
12860 W. Cedar Dr, Suite 100A
Lakewood CO 80228

Phone: 303-659-2313

www.coloradolab.com

PHASE I, II, V Drinking Water Analyses (check requested analyses)				Subcontract Analyses																											
Date	Time	Client Sample ID / Sample Pt ID	No. of Containers	Residual Chlorine (mg/L)	P/A Samples Only	Total Coliform P/A	504.1 EDB/DBP	505 Pests/PCBs	515.4 Herbicides	524.2 VOCs	525.2 SOCs-Pest	531.1 Carbamates	547 Glyphosate	548.1 Endothal	549.2 Diquat	524.2 TTHMs	552.2 HAA5s	Lead/Copper	Nitrate	Nitrite	Fluoride	Inorganics	Alk./Lang. Index (Circle)	TOC, DOC (Circle)	SUA, UV 254 (Circle)	Radon	Radium 226/228	Gross Alpha/Beta	Chloride	Chlorite	
1-4	12:21		1																												
	12:24		2																												
	12:25		3																												
	12:37		4																												
			5																												

Instructions: Please sample compounds listed on enclosed Word document

Field Temp: 15.6°C
Field pH: 7.14.5

Delivered Via: FedEx C/S Charge ☒
Temp: 3 °C / Ice Y

Seals Present Yes ☐ No ☐ Headspace Yes ☐ No ☐
Sample Pres. Yes ☒ No ☐
Date/Time: 1/5/20

Relinquished By: Shelby Gattlin Date/Time: 01/04/21 12:15 pm
Received By: GA Date/Time: 1/5/20

JML

PC Confined Aquifer Sampling Requirements

Field Measurements

pH

Temp

Inorganics

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cyanide (Total)

Fluoride

Mercury

Nitrate

Nitrite

Selenium

Thallium

Secondary MCLs

Aluminum

Chloride

Corrosivity

Iron

Manganese

Silver

Sulfate

Zinc

TDS

Bacteriological:

Total Coliform

Analytical Results

TASK NO: 210105037

Report To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Bill To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Task No.: 210105037
Client PO:
Client Project: Andrea Rapson Addition

Date Received: 1/5/21
Date Reported: 1/15/21
Matrix: Water - Drinking

Customer Sample ID Andrea Rapson Addition 1-4

Sample Date/Time: 1/4/21 12:37 PM

Lab Number: 210105037-01

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
Chloride	3.8 mg/L	EPA 300.0	0.1 mg/L	1/5/21	MAT	
Fluoride	0.12 mg/L	EPA 300.0	0.09 mg/L	1/5/21	MAT	4
Nitrate Nitrogen	0.38 mg/L	EPA 300.0	0.05 mg/L	1/5/21	MAT	10
Nitrite Nitrogen	< 0.03 mg/L	EPA 300.0	0.03 mg/L	1/5/21	MAT	1
Sulfate	6.7 mg/L	EPA 300.0	0.1 mg/L	1/5/21	MAT	
Cyanide-Total	< 0.005 mg/L	EPA 335.4	0.005 mg/L	1/8/21	CES	0.02
Total						
Iron	0.023 mg/L	EPA 200.7	0.005 mg/L	1/6/21	MBN	0.3
Sodium	7.5 mg/L	EPA 200.7	0.1 mg/L	1/6/21	MBN	N/A
Aluminum	0.030 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.05
Antimony	< 0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.006
Arsenic	< 0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.01
Barium	0.082 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	2
Beryllium	< 0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.004
Cadmium	< 0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.005
Chromium	0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.1
Manganese	0.0043 mg/L	EPA 200.8	0.0008 mg/L	1/5/21	IPC	0.05
Mercury	< 0.0001 mg/L	EPA 200.8	0.0001 mg/L	1/5/21	IPC	0.002
Nickel	< 0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	N/A

Abbreviations/ References:

ML = Minimum Level = LRL = RL

MCL = Maximum Contaminant Level per The EPA

mg/L = Milligrams Per Liter or PPM

ug/L = Micrograms Per Liter or PPB

mpn/100 mls = Most Probable Number Index/ 100 mls

Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

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Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507

Analytical Results

TASK NO: 210105037

Report To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Bill To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Task No.: 210105037

Client PO:

Client Project: Andrea Rapson Addition

Date Received: 1/5/21

Date Reported: 1/15/21

Matrix: Water - Drinking

Customer Sample ID Andrea Rapson Addition 1-4

Sample Date/Time: 1/4/21 12:37 PM

Lab Number: 210105037-01

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
<i>Total</i>						
Selenium	0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.05
Silver	< 0.0005 mg/L	EPA 200.8	0.0005 mg/L	1/5/21	IPC	
Thallium	< 0.001 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	0.002
Zinc	0.049 mg/L	EPA 200.8	0.001 mg/L	1/5/21	IPC	5

Abbreviations/ References:

ML = Minimum Level = LRL = RL

MCL = Maximum Contaminant Level per The EPA

mg/L = Milligrams Per Liter or PPM

ug/L = Micrograms Per Liter or PPB

mpn/100 mls = Most Probable Number Index/ 100 mls

Date Analyzed = Date Test Completed



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Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507

Drinking Water Chain of Custody



LABORATORIES, INC.

Report To Information		Bill To Information (If different from report to)		Project Information	
Company Name: <u>JD5-Hydro Consultants</u>		Company Name:		PWSID:	
Contact Name: <u>Shelby Gattlin</u>		Contact Name:		System Name:	
Address:		Address:		Compliance Samples: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<u>5540 Tech Center Dr. Ste. 100</u>		<u>City: Colo Spgs State: CO Zip: 80919</u>		Send Results to CDPHE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Phone: <u>719-227-0072</u>		City: State: Zip:		Task Number (Lab Use Only)	
Email: <u>SGattlin@jds hydro.com</u>		Phone:		CAL Task	
Sample Collector: <u>Shelby Gattlin</u>		Email:		210105037	
Sample Collector Phone: <u>719-551-8233</u>		PO Number:		JML	

Commerce City Lab
10411 Heinz Way
Commerce City CO 80640

Lakewood Service Center
12860 W. Cedar Dr, Suite 100A
Lakewood CO 80228

Phone: 303-659-2313

www.coloradolab.com

PHASE I, II, V Drinking Water Analyses (check requested analyses)				Subcontract Analyses																												
Date	Time	Client Sample ID / Sample Pt ID	No. of Containers	Residual Chlorine (mg/L)	P/A Samples Only	Total Coliform P/A	504.1 EDB/DBCP	505 Pests/PCBs	515.4 Herbicides	524.2 VOCs	525.2 SOCs-Pest	531.1 Carbamates	547 Glyphosate	548.1 Endothal	549.2 Diquat	524.2 TTHMs	552.2 HAA5s	Lead/Copper	Nitrate	Nitrite	Fluoride	Inorganics	Alk./Lang. Index (Circle)	TOC, DOC (Circle)	SUA, UV 254 (Circle)	Radon	Uranium	Chlorite				
1-4	12:21		1																													
	12:24		2																													
	12:25		3																													
	12:37		4																													
			5																													
Instructions: Please sample compounds listed on enclosed Word document			Field Temp: 66.6°F Field pH: 7.14.5			C/S Info:			Seals Present Yes <input type="checkbox"/> No <input type="checkbox"/> Headspace Yes <input type="checkbox"/> No <input type="checkbox"/>																							
Relinquished By: <u>Shelby Gattlin</u>			Date/Time: <u>01/04/21 12:15 pm</u>			Received By: <u>SGattlin</u>			Date/Time: <u>1/5/22</u>			Relinquished By: <u>Fedex</u>			Date/Time: <u>1/5/22</u>			Delivered Via: <u>Fedex</u>			C/S Charge: <u>K</u>			Temp: <u>3</u> °C / Ice <u>Y</u>			Sample Pres. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			Date/Time: <u>1/5/22</u>		

JML

PC Confined Aquifer Sampling Requirements

Field Measurements

pH

Temp

Inorganics

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cyanide (Total)

Fluoride

Mercury

Nitrate

Nitrite

Selenium

Thallium

Secondary MCLs

Aluminum

Chloride

Corrosivity

Iron

Manganese

Silver

Sulfate

Zinc

TDS

Bacteriological:

Total Coliform

Analytical Results

TASK NO: 210105039

Report To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Bill To: Shelby Gatlin

Company: JDS Hydro Consultants
5540 Tech Center Dr.
Suite 100
Colorado Springs CO 80919

Task No.: 210105039

Client PO:

Client Project: Andrea Rapson Addition

Date Received: 1/5/21

Date Reported: 1/6/21

Matrix: Water - Drinking

Lab Number	Customer Sample ID	Sample Date/Time	Test	Result	Method	Date Analyzed
210105039-01	Andrea Rapson Addition	1/4/21 12:37 PM	Total Coliform	Present	SM 9223	1/6/21
			E-Coli	Absent	SM 9223	1/6/21

Abbreviations/ References:

Absent = Coliform Not Detected

Present = Coliform Detected - Chlorination Recommended

Date Analyzed = Date Test Completed

SM = "Standard Methods for the Examination of Water and Wastewater"; APHA; 19th Edition; 1995



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Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507

Drinking Water Chain of Custody



LABORATORIES, INC.

Report To Information		Bill To Information (if different from report to)		Project Information	
Company Name: <u>JDS-Hydro Consultants</u>		Company Name: _____		PWSID: _____	
Contact Name: <u>Shelby Gattlin</u>		Contact Name: _____		System Name: _____	
Address: _____		Address: _____		Compliance Samples: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
5540 Tech Center Dr. Ste. 100		City: _____ State: _____ Zip: _____		Send Results to CDPHE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
City: <u>Cole Springs</u> State: <u>GA</u> Zip: <u>30519</u>		Phone: _____		Task Number (Lab Use Only)	
Phone: <u>770-227-0516</u>		Email: _____		CAL Task	
Email: <u>SGattlin@jds-hydro.com</u>		PO Number: _____		210105039	
Sample Collector: <u>Shelby Gattlin</u>				JML	
Sample Collector Phone: <u>770-227-0516</u>					

PHASE I, II, V Drinking Water Analyses (check requested analysis)				Subcontract Analyses																									
Date	Time	Client Sample ID / Sample Pt ID	No. of Containers	Residual Chlorine (mg/L)	Total Coliform P/A	504.1 EDB/DBCP	505 Pests/PCBs	515.4 Herbicides	524.2 VOCs	525.2 SOCs-Pest	53.1 Carbamates	547 Glyphosate	548.1 Endothal	549.2 Diquat	524.2 TTHMs	552.2 HAA5s	Nitrate	Nitrite	Fluoride	Inorganics	Alk./Lang. Index (Circle)	TOC, DOC (Circle)	SVA, UV 254 (Circle)	Gross Alpha/Beta	Radium 226/228	Radon	Uranium	Chlorite	
1-4	12:21	1	1																										
	12:24	2	1																										
	12:25	3	2																										
	12:37	4	1																										
						</																							

JML

PC Confined Aquifer Sampling Requirements

Field Measurements

pH

Temp

Inorganics

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cyanide (Total)

Fluoride

Mercury

Nitrate

Nitrite

Selenium

Thallium

Secondary MCLs

Aluminum

Chloride

Corrosivity

Iron

Manganese

Silver

Sulfate

Zinc

TDS

Bacteriological:

Total Coliform

January 25, 2021

Report to:

Shelby Gatlin

JDS Hydro Consultants, Inc.

5540 Tech Center Drive

Colorado Springs, CO 80919

cc: Ryan Mangino

Bill to:

Shelby Gatlin

JDS Hydro Consultants, Inc.

5540 Tech Center Drive

Suite 100

Colorado Springs, CO 80919

Project ID:

ACZ Project ID: L63594

Shelby Gatlin:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on January 05, 2021. This project has been assigned to ACZ's project number, L63594. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L63594. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 24, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.



Sue Webber has reviewed and approved this report.



JDS Hydro Consultants, Inc.

Project ID:

Sample ID: 1 2

Locator:

ACZ Sample ID: **L63594-01**

Date Sampled: 01/04/21 12:31

Date Received: 01/05/21

Sample Matrix: *Drinking Water*

Gross Alpha & Beta, total

Prep Method:

M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	01/22/21 0:10		3	1.6	1.2	pCi/L		cer
Gross Beta	01/22/21 0:10		5	2	1.7	pCi/L		cer

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	01/19/21 0:27		0.89	0.13	0.06	pCi/L		djc

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	01/21/21 13:38		1.9	0.5	0.44	pCi/L	*	cer

Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Error(+/-)</i>	Calculated sample specific uncertainty
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>LCL</i>	Lower Control Limit, in % (except for LCSS, mg/Kg)
<i>LLD</i>	Calculated sample specific Lower Limit of Detection
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RER</i>	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>UCL</i>	Upper Control Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>DUP</i>	Sample Duplicate	<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBS</i>	Prep Blank - Soil
<i>LCSW</i>	Laboratory Control Sample - Water	<i>PBW</i>	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

H	Analysis exceeded method hold time.
---	-------------------------------------

Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

Comments

- (1) Solid matrices are reported on a dry weight basis.
- (2) Preparation method: "Method" indicates preparation defined in analytical method.
- (3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click:

<https://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

JDS Hydro Consultants, Inc.

ACZ Project ID: L63594

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alpha

M900.0

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512839																
WG512839PBW	PBW	01/22/21						-37	0.54	0.96			1.92			
WG512839LCSWA	LCSW	01/22/21	PCN62436	66.67				60	5.4	1	90	67	144			
L63558-01DUP	DUP-RPD	01/22/21			1.8	1.3	1.2	1.6	1.1	0.97				12	20	
L63594-01MSA	MS	01/22/21	PCN62436	66.67	3	1.6	1.2	72	6.4	1.1	104	67	144			
L63635-07DUP	DUP-RPD	01/22/21			0.82	1.7	6.7	1.5	2.1	13				59	20	RG
L63635-07DUP	DUP-RER	01/22/21			0.82	1.7	6.7	1.5	2.1	13				0.25	2	

Beta

M900.0

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512839																
WG512839PBW	PBW	01/22/21						.9	1.8	1.8			3.6			
WG512839LCSWB	LCSW	01/22/21	RC200602-10	66.6				69	4.2	1.6	104	82	122			
L63558-01DUP	DUP-RPD	01/22/21			4.7	1.9	1.7	5	2	1.9				6	20	
L63635-06MSB	MS	01/22/21	RC200602-10	99.9	3.4	2.5	6.8	100	6.4	5.1	97	82	122			
L63635-07DUP	DUP-RER	01/22/21			6	3	9.1	3.7	2.8	12				0.56	2	
L63635-07DUP	DUP-RPD	01/22/21			6	3	9.1	3.7	2.8	12				47	20	RG

Radium 226, total

M903.1

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512653																
WG512653PBW	PBW	01/19/21						.14	0.11	0.1			0.2			
WG512653LCSW	LCSW	01/19/21	PCN61539	20				21	0.64	0.13	105	43	148			
L63454-01DUP	DUP-RPD	01/19/21			0.06	0.08	0.12	0	0.07	0.13				200	20	RG
L63454-01DUP	DUP-RER	01/19/21			0.06	0.08	0.12	0	0.07	0.13				0.56	2	
L63594-01DUP	DUP-RPD	01/19/21			0.89	0.13	0.06	.96	0.14	0.08				8	20	
L63569-02MS	MS	01/19/21	PCN61539	20	0.13	0.11	0.19	18	0.51	0.13	89	43	148			

JDS Hydro Consultants, Inc.

ACZ Project ID: L63594

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Radium 228, total

M904.0

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512564																
L63609-02DUP	DUP-RER	01/21/21			0.47	0.81	1.9	.23	0.77	1.7				0.21	2	
WG512564LCSW	LCSW	01/21/21	PCN61541	9.29				11	1.2	0.81	118	47	123			
WG512564PBW	PBW	01/21/21						.32	0.3	0.3			0.6			
L63609-02DUP	DUP-RPD	01/21/21			0.47	0.81	1.9	.23	0.77	1.7				69	20	RG
L63626-01DUP	DUP-RPD	01/21/21			0.13	0.7	1.8	-.25	0.89	2.2				633	20	RG
L63625-01MS	MS	01/21/21	PCN61541	9.29	1.3	1.3	3.2	9.5	1.3	2.3	88	47	123			
L63626-01DUP	DUP-RER	01/21/21			0.13	0.7	1.8	-.25	0.89	2.2				0.34	2	

JDS Hydro Consultants, Inc.

ACZ Project ID: **L63594**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L63594-01	WG512564	Radium 228, total	M904.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.

JDS Hydro Consultants, Inc.

ACZ Project ID: **L63594**

No certification qualifiers associated with this analysis

JDS Hydro Consultants, Inc.

ACZ Project ID: L63594

Date Received: 01/05/2021 13:07

Received By:

Date Printed: 1/6/2021

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2) Is the Chain of Custody form or other directive shipping papers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Does this project require special handling procedures such as CLP protocol?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4) Are any samples NRC licensable material?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5) If samples are received past hold time, proceed with requested short hold time analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Is the Chain of Custody form complete and accurate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? ¹	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
6232	4.3	NA	15	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

JDS Hydro Consultants, Inc.

ACZ Project ID: L63594

Date Received: 01/05/2021 13:07

Received By:

Date Printed: 1/6/2021

¹ The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

