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FEB 12 2021
DEPARTMENT OF
WATER RESOURCES

MEMORANDUM

DATE: February 12, 2021
TO: Ashley Ritter, Idaho Department of Water Resources
FROM: Sean Albertson, Terry Scanlan, SPF Water Engineering
CC: Landon Northey, Dry Creek Water Company
RE: Permit 63-32423 - Dry Creek Mitigation Planning, 2021

This memo serves as the third mitigation plan submitted to the Idaho Department of Water Resources (IDWR) pursuant to the conditions of water permit 63-32423 (Attachment A). This document provides the proposed mitigation plan for the 2021 calendar year as well as the total recorded diversion volumes for 2020.

Background

Water permit 63-32423 was originally issued to JMM Dry Creek (JMM) in March 2010, and subsequently assigned to BHH Investors 1414 LLC on August 31, 2016. BHH Investors 1414 LLC then assigned the permit to Dry Creek Water Company, LLC on January 30, 2018. SPF Water Engineering (SPF) has prepared this mitigation plan on behalf of Dry Creek Water Company, LLC (Dry Creek).

Permit 63-32423 allows the diversion of up to 5 cfs of groundwater for municipal use within the Dry Creek Ranch community currently under development by Boise Hunter Homes (BHH) in northern Ada County, Idaho. Water is diverted under this permit from a pair of municipal production wells. Both of the wells used as diversion points under 63-32423 are equipped with flow meters and totalizers. Flow records are maintained by Dry Creek and all data up to January 2, 2020 was provided to SPF for this report.

The permit application was protested by the Dry Creek Rural Neighborhood Association (DCRNA) and several conditions were added to the permit in order to resolve the protest. Condition 14 requires the submission of an annual mitigation plan to IDWR by February 15 of each calendar year in which water is diverted under the permit. The mitigation plan must demonstrate a reduction in the irrigated area under water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 correlating to the anticipated municipal use for the upcoming year. Specifically, Condition 14 requires the following steps be taken in preparing the annual mitigation plan:

1. Identify and estimate a diversion rate and volume for all uses under the right that will exceed the individual domestic use limits as defined by Idaho Code § 42-111(1)(a) and (b) during the year. Uses under this right that exceed the individual use limits of Idaho Code § 42-111(1)(a) and (b) are considered to be 100% consumptive. Such uses shall be mitigated through reduction of one acre of irrigation use under water

rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 for each 2.7 acre-feet of water diverted under this right.

2. Identify all uses under the right that will meet the individual domestic use limits as defined by Idaho Code § 42-111(1)(a) and (b) during the year and estimate an annual diversion volume for these uses. Such uses shall be mitigated through reduction of one acre of irrigation use under water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 for each 4.5 acre-feet of water diverted under this right.
3. Reduce the number of acres to be irrigated under Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 sufficiently to provide the required mitigation for items "a" and "b" above.
4. Report to the Department the volume of water to be used for municipal purposes in connection with this permit during the year.
5. Report the number of acres required to mitigate for the municipal use, along with the water right numbers, diversion rates, and annual diversion volumes associated with those acres.
6. Report the location of the lands that will be irrigated during the forthcoming irrigation season with water diverted under Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266. The location shall be reported in map, GIS shapefile, and PLS tabular forms.

2020 Estimated vs Measured Diversion Volumes

The 2020 Dry Creek Mitigation Report was the second annual report and provided estimates for domestic, municipal, and combined water usage based on anticipated home occupancy and common area acreage within the subdivision. Dry Creek provided water usage records for January 1 through December 31, 2020 in early January 2021, and a comparison of the measured and estimated volumes by month for 2020 is provided in Table 1. The results demonstrate that the estimated diversion volumes were typically well above the actual water usage in any given month. The total diversion volume measured at the flow meters in 2020 was 231.36 acre-feet which is slightly over half of the 419.70 acre-feet estimated volume. The only months in which the measured diversion volume exceeded the estimated volume were November and December. According to Dry Creek, a larger volume than usual was diverted during these two months for a grading project within the subdivision.

The difference between the estimated and measured volumes may be due to a combination of the following factors:

- lower than anticipated occupancy for March through November, likely due in part to the COVID-19 pandemic,

- lower than anticipated municipal use per capita,
- lower than anticipated per-acre landscape irrigation volumes, and
- early cessation of irrigation on agricultural lands served from the municipal system.

Regardless of the reason, the diversion volume estimates provided for the 2020 Dry Creek Mitigation Plan were proven to be conservative and significantly exceeded the actual diversion volumes. This resulted in more acreage being dedicated to mitigation than necessary under the conditions of permit 63-32423.

Table 1. 2020 Estimated vs Actual Monthly Diversion Volumes

Month	Estimated	Measured	Difference
January	1.87	0.41	1.47
February	1.92	0.59	1.34
March	2.19	1.38	0.82
April	28.41	15.01	13.40
May	62.97	17.69	45.28
June	70.97	24.12	46.84
July	86.30	49.09	37.21
August	79.12	66.21	12.92
September	52.85	35.12	17.72
October	26.06	10.47	15.60
November	3.39	3.90	-0.51
December	3.64	7.38	-3.74
TOTAL	419.70	231.36	188.34

Estimated Annual Diversion Volume for Domestic Municipal Uses in 2021

“Domestic municipal use” is defined as water use from the municipal water system that meets the individual domestic use limits as defined by Idaho Code § 42-111(1)(a) and (b). Information provided by BHH indicates that 165 homes in Dry Creek Ranch were occupied as of the end of November 2020, and an additional 9 homes are expected to be occupied each month through 2021. The anticipated number of occupied homes in January 2021 is then 183 with that number increasing to 282 by December 2021.

The domestic use of water for these homes is estimated by considering the year-round in-house potable use as well as lawn and landscape irrigation during the summer months. In-house potable use is assumed to be 150 gallons per day per home considering new plumbing and modern water-efficient fixtures. This number has been decreased from the 200 gallon-per-day estimate used in the 2020 mitigation plan due to consistent overestimation of domestic water use.

Lawn and landscape irrigation is based on the typical lot size in the subdivision and time of year. Using the Ada County Assessor’s online interactive mapping tool, average lot size for this development is roughly 0.3 acres (13,100 ft²) with approximately 4,600 ft² occupied

by the house, deck, porch, garage and driveway. The remaining portion of the lot is therefore estimated to be on average 8,500 ft² and is assumed open for irrigation. Assuming a total of approximately 4.25 acre-feet per acre of lawn and landscape irrigation from April to October, daily irrigation rates varied by month based on precipitation deficit data from the University of Idaho's ETIdaho database.

The water usage per home is estimated to be 150 gpd per home in the non-irrigation season (January to mid-April and mid-October to December) and variable by month during the irrigation season (mid-April through mid-October). Total in-home use for the subdivision is expected to increase throughout the year as more houses are occupied. The estimated and projected annual diversion volume for domestic municipal use in 2021 is 339.89 acre-feet as summarized in Table 2.

Table 2. Estimated Domestic Water Use by Month in 2021

Month	# Occupied Homes	Est. Vol. (gal)	Est. Domestic Vol. (af)
January	183	850,950	2.61
February	192	806,400	2.47
March	201	934,650	2.87
April	210	9,298,800	28.54
May	219	13,917,450	42.71
June	228	18,481,680	56.72
July	237	21,695,691	66.59
August	246	19,255,650	59.10
September	255	13,930,650	42.75
October	264	9,035,136	27.73
November	273	1,228,500	3.77
December	282	1,311,300	4.02
SUM:		109,089,507	339.89

The estimated diversion volumes for the 2021 mitigation plan will be compared with the actual diversions at the end of the year. If the estimates are significantly different from the actual diversions, the per day domestic usage will be reevaluated for the 2022 mitigation plan.

Estimated Annual Diversion Volume for Non-Domestic Municipal Use

"Non-domestic municipal use" is defined as water use from the municipal water system that exceeds the individual domestic use limits as defined by Idaho Code § 42-111(1)(a) and (b). The estimated non-domestic municipal use volumes are calculated based on the 2020 water use records provided by Dry Creek and anticipated irrigation demands for 2021. A base value of 0.50 acre-feet was used in the 2020 mitigation report for monthly non-domestic municipal water use, and will be used again for the 2021 edition. January through March and November through December were assumed to only use this base value since no irrigation would be occurring. Higher diversion volumes are anticipated for April through

October to provide irrigation for approximately 18 acres of open space in the subdivision and 50 acres of crop fields south and west of the subdivision. These fields were disconnected from the existing irrigation well and distribution lines in 2019 to accommodate construction of the subdivision, and are now irrigated using the subdivision's municipal wells. The fields irrigated using the municipal wells will not be used as mitigation acres. Each acre of open space and crop land is expected to receive approximately 4 acre-feet of water over the course of the irrigation season for a total diversion of roughly 272 acre-feet. Estimated non-domestic municipal use for 2021 is then 277.90 acre-feet. Non-domestic municipal use estimates by month are provided in Table 3.

Table 3. Summary of Estimated Non-Domestic Municipal Use – 2021

Month	Est. Municipal Vol. (af)
January	0.500
February	0.500
March	0.500
April	16.865
May	47.992
June	50.150
July	60.299
August	54.781
September	33.980
October	11.330
November	0.500
December	0.500
SUM:	277.90

The non-domestic municipal diversion estimates are higher than what would typically be expected for a subdivision of this size due to the municipal production wells also being used to supply 50 acres of surrounding cropland with irrigation water. Once this crop land is no longer in production and converted to residential areas, non-domestic municipal diversion estimates will likely be reduced significantly. For instance, if the crop land were removed from the municipal diversion volume for 2021, the total for non-domestic municipal use would be roughly 78 acre-feet. While 78 acre-feet is much more reasonable for non-domestic municipal diversions within a subdivision of this size, the estimated 278 acre-foot volume will be counted as 2021 municipal use to ensure that adequate mitigation is accomplished.

Estimated Combined Annual Diversion Volume for 2021

Based on the analysis presented above, total use from the municipal water system during 2021 is projected to be 618 acre-feet with 340 acre-feet attributed to domestic water uses and 278 acre-feet for non-domestic uses.

Figure 1 shows the projected monthly volume of water usage split between domestic and non-domestic municipal uses.

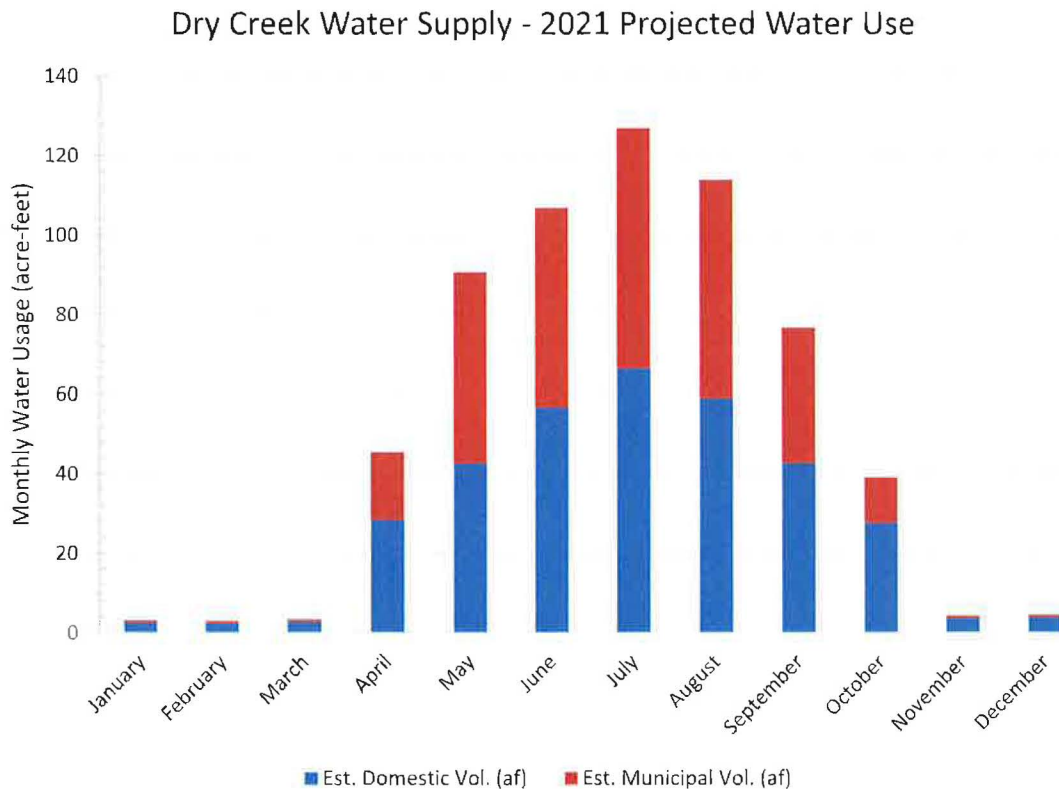


Figure 1. Monthly Volume by Use for 2021

Mitigation Area

The permit conditions for 63-32423 require that the number of acres irrigated under Dry Creek’s irrigation water rights (63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266) be reduced for a given year based on the estimated domestic and non-domestic municipal water usage under 63-32423. The irrigated area for the listed rights must be reduced by one acre for every 2.7 acre-feet of estimated non-domestic municipal use and by one acre for every 4.5 acre-feet of estimated domestic municipal use. To mitigate for the 2021 estimated non-domestic municipal diversion volume of 278 acre-feet, the irrigated area must be reduced by 102.92 acres. An additional 75.53 acres must be removed from

the irrigated area to mitigate for the estimated domestic municipal diversion volume of 340 acre-feet. This brings the total mitigation acreage to 178.46 acres (Table 4).

Table 4. 2021 Mitigation Summary

Water Use	Diversion Estimate	Reduction Unit	Mitigation Acres
Municipal	277.90	2.7	102.92
Domestic	339.89	4.5	75.53
SUM:			178.46

Dry Creek’s irrigation rights currently authorize irrigation on a combined total of 404 acres in a single irrigation season within a 739-acre permissible place of use, as tabulated in Table 5. After accounting for 178.46 acres of mitigation, the allowable irrigation area for 2021 is 225.54 acres. Based on information provided by Dry Creek, the actual irrigated area is approximately 83.5 acres, as tabulated in Table 6. This is far below the allowable area of 275.5 acres, so the mitigation requirements are currently being met. Table 7 tabulates the 178.5 acres proposed to be used for mitigation in 2021. Attachment B depicts the licensed place of use under Dry Creek’s irrigation rights, the area being irrigated under the decreed irrigation rights in 2021, the fields being irrigated using the subdivision’s municipal wells in 2021, and the acres proposed to be used for mitigation in 2021. An aerial image from 2020 is used as the background for the figure.

Table 5. Place of Use for Irrigation on Dry Creek

TWP	RGE	SEC	NE				NW				SW				SE				Total
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5N	1E	25									14.4	0.4	9	35.7		10.9	29.7	32.8	132.9
		35	40.3	37	39.2	40.3					27.9			1.9	36.4	25.7	0.4	15.8	264.9
		36	40.5	40.5	34.9	20.2	40.5	40.5	38.9	37.9	13				1.2	8.9			317
5N	2E	30											24.2						24.2
																		739	

Table 6. Acres Irrigated with Decreed Irrigation Rights, 2021

TWP	RGE	SEC	NE				NW				SW				SE				Total	
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE		
5N	1E	25																	29.7	29.7
		35																	0	0
		36	31.7																31.7	31.7
5N	2E	30											22.1						22.1	22.1
																		83.5		

Table 7. Acres Used for Mitigation, 2021

TWP	RGE	SEC	NE				NW				SW				SE				Total
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5N	1E	25											2.7	21.1			5.9		29.7
		35	34.6	14.9															49.5
		36		12.9			40.3	40	3.2	2.9									99.3
5N	2E	30																0	
																		178.5	

Water Right Mitigation

The combined diversion volume for domestic and non-domestic municipal uses of water under permit 63-32423 in 2021 is projected to be 617.8 acre-feet. This volume of water is mitigated by the required reduction of 178.5 irrigated acres from combined water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266. Substantially more than 178.5 acres have already been removed from the irrigation system, and additional acreage will be removed from irrigation in future years as water use in the subdivision continues to increase.

The combined diversion rate for Dry Creek's irrigation rights is listed as 7.48 cfs with a combined annual volume limit of 1,764 acre-feet on a maximum of 404 irrigated acres. Under these limits, the combined diversion rate per irrigated acre is 0.019 cfs and the combined diversion volume per irrigated acre is 4.37 acre-feet. The 178.5 acres taken out of the combined irrigation water rights for mitigation then offers a reduction in diversion rate of 3.39 cfs and a volume reduction of 780 acre-feet. Therefore, the allowable diversion rate and volume from combined water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 in 2021 will be 4.09 cfs and 984 acre-feet for irrigation of 225.5 acres.

Summary

1. Municipal diversion volume for 2021 is projected to be 618 acre-feet with 340 acre-feet attributed to domestic water uses and 278 acre-feet for non-domestic uses.
2. To mitigate for the 2021 estimated municipal diversion volume of 618 acre-feet, the irrigated area from combined water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 must be reduced by 178.5 acres. Substantially more than 178.5 acres have already been removed from irrigation, so the mitigation requirement is being met.
3. Due to the 178.5-acre mitigation reduction, the allowable diversion rate and volume from in 2021 combined irrigation water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 will be 4.09 cfs and 984 acre-feet for irrigation of 225.5 acres. Use of irrigation water rights in 2021 are anticipated to be less than 50 percent of this allowable amount.

Attachment A
Water Permit 63-32423

State of Idaho
Department of Water Resources
Permit to Appropriate Water

NO. 63-32423

Priority: August 22, 2006

Maximum Diversion Rate: 5.00 CFS
Maximum Diversion Volume: 1,764.0 AF

This is to certify, that JMM DRY CREEK LLC
C/O LAND BARON INVESTMENTS
5275 S DURANGO DR
LAS VEGAS NV 89113

has applied for a permit to appropriate water from:

Source: GROUND WATER

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

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>RATE OF DIVERSION</u>	<u>ANNUAL VOLUME</u>
MUNICIPAL	01/01 to 12/31	5.00 CFS	1,764.0 AF

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER NE¼NE¼ Sec. 36, Twp 05N, Rge 01E, B.M. ADA County
GROUND WATER NE¼NE¼ Sec. 36, Twp 05N, Rge 01E, B.M. ADA County

CONDITIONS OF APPROVAL

1. Proof of application of water to beneficial use shall be submitted on or before **March 01, 2015**.
2. Subject to all prior water rights.
3. Project construction shall commence within one year from the date of permit issuance and shall proceed diligently to completion unless it can be shown to the satisfaction of the Director of the Department of Water Resources that delays were due to circumstances over which the permit holder had no control.
4. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code and applicable Well Construction Rules of the Department.
5. Place of use is within the area served by the public water supply system of JMM Dry Creek LLC. The place of use is generally located within Sections 1 and 2, Township 4 North, Range 1 East; Sections 25, 35, and 36, Township 5 North, Range 1 East; and Section 30, Township 5 North, Range 2 East; B.M.
6. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
7. Water bearing zone to be appropriated is 100 ft. to 300 ft. below ground surface.
8. The right holder shall maintain a totalizing measuring device of a type approved by the Department as a part of the diverting works.
9. After specific notification by the Department, the right holder shall report to the Department the amount of water diverted annually in connection with this right.
10. Diversion and use of water with a temperature greater than 85 degrees Fahrenheit is not authorized under this right.
11. Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, 63-32266, and 63-32423 when combined shall not exceed a total diversion rate of 7.84 cfs and a total annual maximum diversion volume of 1764.0 af at the field headgate.
12. The right holder shall carry out the "Dry Creek Ranch Aquifer Monitoring Plan: April 2008." See Exhibit E of the January 14, 2009, Water Rights Agreement between Dry Creek Rural Neighborhood Association and JMM Dry Creek LLC.

Permit to Appropriate Water

NO. 63-32423

CONDITIONS OF APPROVAL CONTINUED

13. To prevent injury to senior water right holders:
 - a. Diversion under this right shall be initially limited to 1,234.8 af (70% of 1764.0 af) for a minimum period of three years and until such time that the right holder can demonstrate to the Director that the aquifer can sustain greater diversions under the right. Demonstration shall require (1) a minimum of two years with recorded annual diversions under the right in excess of 1,000 afa, (2) water levels at a well in the NENE, Sec. 36, T05N, R01E, B.M., also known as the Jeker Big Pump well and as USGS well no. 05N01E36AAB1, (or an acceptable replacement well) that recover on an annual basis to at least 60 feet below ground surface, and (3) water-level monitoring for other wells monitored by the right holder in accordance with condition no. 12 does not show water level declines that would injure senior water rights owners.
 - b. Upon successful demonstration to the Director of sustainable aquifer capacity to support diversions under this right in excess of 1,234.8 afa, the right holder may increase the annual volume diverted under the right up to a maximum of 1764 afa.
 - c. The Director shall have the authority to reduce the annual diversion volume limits under this right at any time upon (1) a showing that diversions under the right are injuring senior water rights and (2) failure of the right holder to adequately mitigate injury to senior water rights to the satisfaction of the Director.
 - d. The diversion volume limits under right 63-32423 shall not be reduced or limited due to water-level declines or injury to senior rights resulting from diversions under water rights with priority dates junior to right 63-32423.
 - e. This condition is not intended to establish a reasonable pumping level pursuant to Idaho Code § 42-226.
14. For this condition, the term "use" shall be defined as the water delivered to and used on a single parcel of land identified in the county records and served water under this right. No later than February 15 of each calendar year during the authorized development period for this permit, the right holder shall:
 - a. Identify and estimate a diversion rate and volume for all uses under the right that will exceed the individual domestic use limits as defined by Idaho Code § 42-111(1)(a) and (b) during the year. Uses under this right that exceed the individual use limits of Idaho Code § 42-111(1)(a) and (b) are to be considered 100% consumptive. Such uses shall be mitigated through reduction of one acre of irrigation use under water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 for each 2.7 acre feet of water diverted under this right.
 - b. Identify all uses under the right that will meet the individual domestic use limits as defined by Idaho Code § 42-111(1)(a) and (b) during the year and estimate an annual diversion volume for these uses. Such uses shall be mitigated through reduction of one acre of irrigation use under water rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 for each 4.5 acre feet of water diverted under this right.
 - c. Reduce the number of acres to be irrigated under Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266, sufficiently to provide the required mitigation for items "a" and "b" above.
 - d. Report to the Department the volume of water to be used for municipal purposes in connection with this permit during the year.
 - e. Report the number of acres required to mitigate for the municipal use, along with the water right numbers, diversion rates, and annual diversion volumes associated with those acres.
 - f. Report the location of the lands that will be irrigated during the forthcoming irrigation season with water diverted under Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266. The location shall be reported in map, GIS shapefile, and PLS tabular forms.

State of Idaho
Department of Water Resources

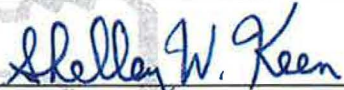
Permit to Appropriate Water

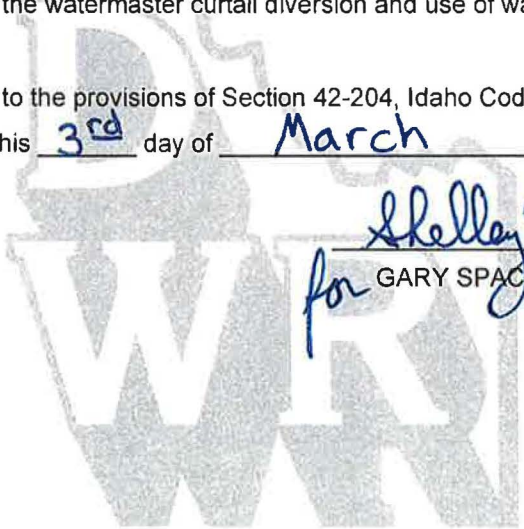
NO. 63-32423

CONDITIONS OF APPROVAL CONTINUED

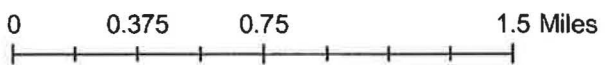
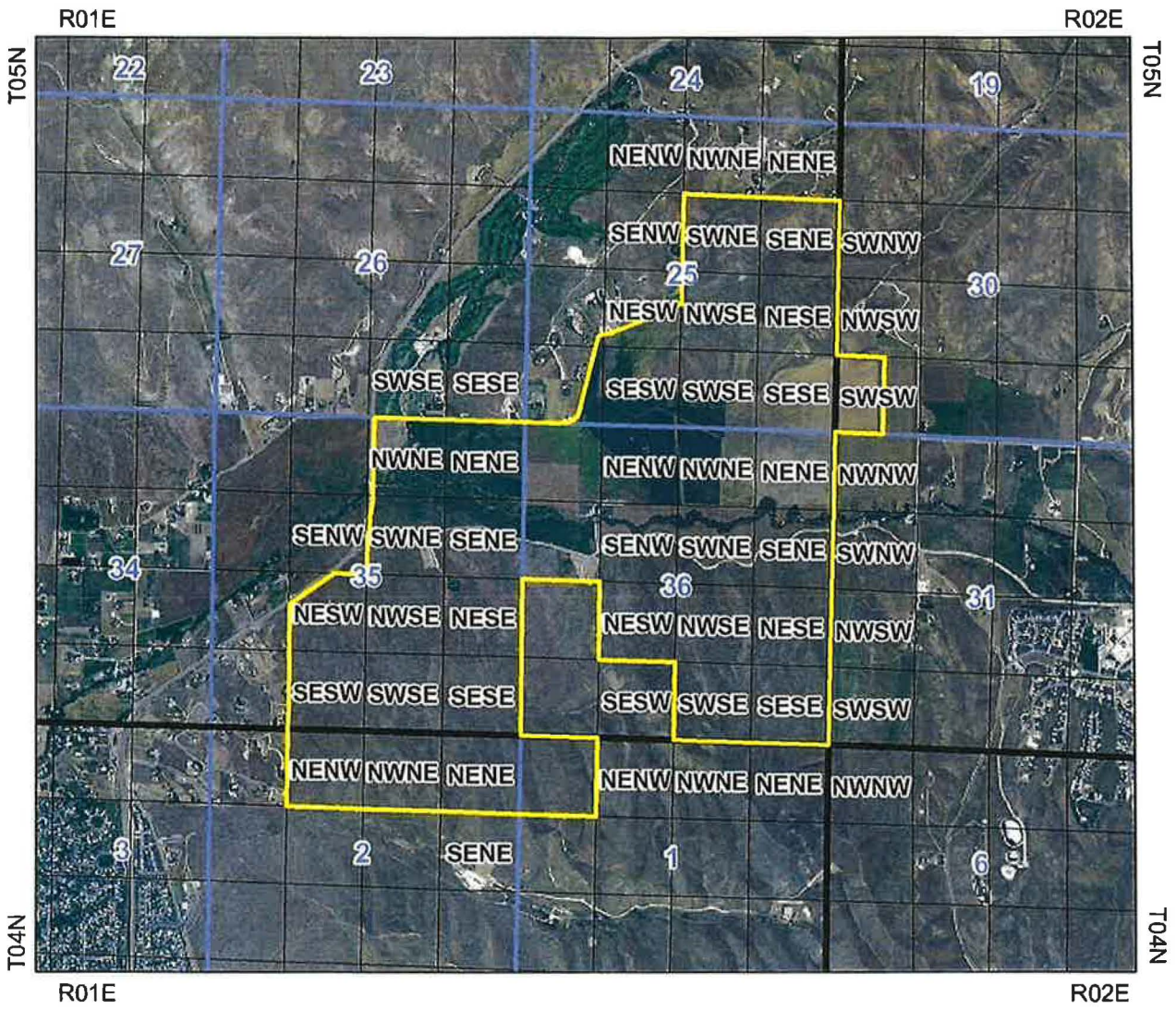
15. Once designated in an annual report as mitigation for the use of water for municipal purposes under this right, irrigation of designated lands under Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 shall not be resumed unless this right is reduced through the appropriate administrative or legal process, as determined by the Department.
16. Upon receiving the right holder's annual report, the Department will change the official records for Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266 to show where diversion and use of water is not authorized because the rights, or portions thereof, are being dedicated to mitigation purposes.
17. The owner of Right 63-32423 shall maintain ownership of the mitigation portions of Rights 63-2535, 63-4023B, 63-4086B, 63-7123, 63-17454, and 63-32266.
18. The diversion and use of water described in Right 63-32423 may be subject to additional limitations agreed to by the protestant(s) and the right holder under separate agreement to which the Department is not a party and which may be enforceable by a court of law.
19. Noncompliance with any condition of this right, including the requirement for mitigation, is cause for the director to issue a notice of violation, cancel or revoke the right, or, if the right is included in a water district, request that the watermaster curtail diversion and use of water.

This permit is issued pursuant to the provisions of Section 42-204, Idaho Code. Witness the signature of the Director, affixed at Boise, this 3rd day of March, 2010.






for GARY SPACKMAN, Interim Director



State of Idaho
Department of Water Resources
Permit to Appropriate Water
63-32423
Water Service Area Boundary for Jmm Dry Creek Llc



Legend

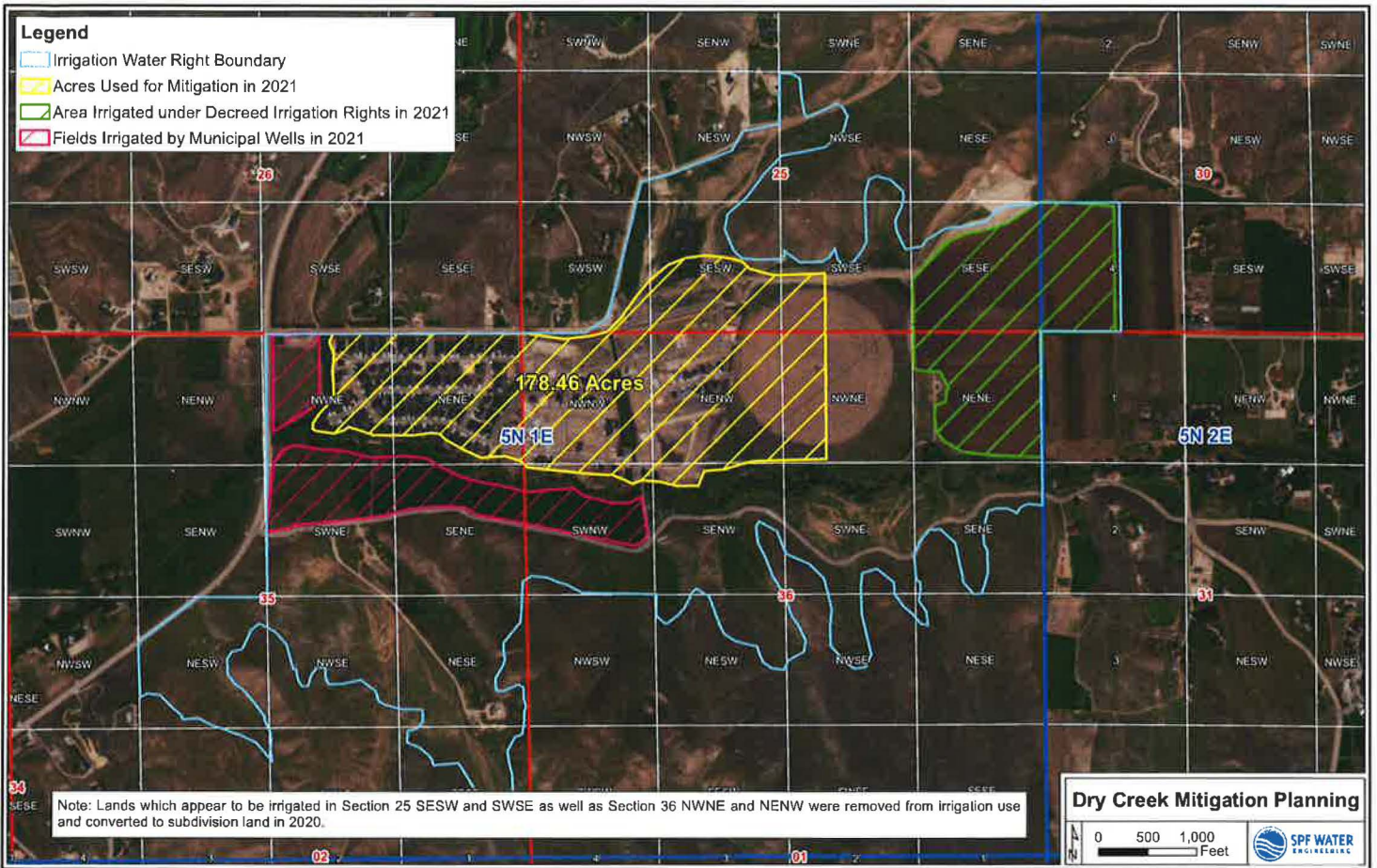
-  Water Service Area Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters



Attachment B
2021 Mitigation Planning Map

Legend

- Irrigation Water Right Boundary
- Acres Used for Mitigation in 2021
- Area Irrigated under Decreed Irrigation Rights in 2021
- Fields Irrigated by Municipal Wells in 2021



Note: Lands which appear to be irrigated in Section 25 SESW and SWSE as well as Section 36 NWNE and NENW were removed from irrigation use and converted to subdivision land in 2020.

Dry Creek Mitigation Planning

0 500 1,000 Feet