

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-22968
Exam Date: 09/15/2020

1. Current Owner:

GLORIA CAMILLE MC CRAY 1965 TRUST
C/O WHITTIER TRUST CO
520 PIKE ST STE 1415
SEATTLE WA 98101-4040

2. Accompanied by: Gloria McCray via telephone
Phone No: 208-720-1483
Address: Same as above
Relationship to permit Holder: Permit holder

3. **SOURCE:**
GROUND WATER

Method of Determination: Located well and noted that piping, meter, and valve were in line to pond.

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None

Water Right No.	Source	Purpose of Use	Basis

Comments: Separate well was present on property, apparently supplying domestic use for the home, but does not supply water to the ponds.

2. Other water rights with the same point-of-diversion: None

Water Right No.	Source	Purpose of Use	Basis

Comments: _____

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER L6 (NE¼ SW¼), Sec. 31, Twp 02N, Rge 19E, B.M. BLAINE County

Method of Determination: Site visit and ArcMap aerial imagery.

PLACE OF USE: WILDLIFE STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
02N	19E	31									X L6								

PLACE OF USE: AESTHETIC STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
02N	19E	31									X L6								

Method of Determination: Site visit and ArcMap aerial imagery.

3.

☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

☒ Aerial Photo Attached (required for irrigation of 10+ acres).

☒ Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0070677					

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: No measurement made as permitted flow rate is below that requiring a measurement in the Beneficial Use Examination Rules.

E. FLOW CALCULATIONS

Additional Computation Sheets Attached
Measured Method: No measurement made; permitted flow rate will roll over onto water right license.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: NA

$$V_{I,R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{D,R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{I,R} \text{ and } V_{D,R} =$$

2. Volume Calculations for Other Uses: The volume of the reservoirs appears to be fairly close to the permitted volume of 0.3 AF; the approximate average depth of 2.0' to 2.5' x 0.13 acre surface area = 2.25' x 0.13 acre = 0.295 AF. The calculated seepage loss of 9.5 AF and the calculated evaporation loss of 0.2 AF are added to the 0.3 AF for a total volume of 10.0 AF (see Seepage Loss Calculations sheet and Evaporation Loss Calculations sheet attached to this report.). This calculated (theoretical) volume closely reflects the actual use volumes obtained from the IDWR Water Management Information System for the years 2018 and 2019 of 11.5 AF and 10.6 AF respectively (see WMIS Data Summary Sheet attached to this report). This data represents actual water use obtained by the Water District from the installed flow meter located on the water line from the well to the reservoirs. Licensed volume will be the higher value of 11.5 AF.

G. NARRATIVE/REMARKS/COMMENTS

The field exam for permit 37-22968 was conducted on September 15, 2020. As a result of lower flows in Seamans Creek east of Bellevue, four downstream Seamans Creek senior water right holders in the Muldoon Ranch Subdivision were unable to have their water rights delivered to their properties due to excessive seepage in the valley above the subdivision. So, in 2015, they filed a transfer to have their Seamans Creek rights converted to Ground Water Recharge in an existing pond approximately one mile upstream. In conjunction with the transfers, they filed permits to divert ground water on their Muldoon Ranch Subdivision properties, using the Ground Water Recharge rights as mitigation for the new permits. In the case of permit 37-22968, the McCray property had a 0.3 AF Seamans Creek right (Wildlife Storage, Aesthetic Storage) which was converted to Ground Water Recharge, and she then filed this permit for the same amount from a proposed well on her property. The original Seamans Creek right was on-stream storage and because of that, had no diversion to storage, but this permit is from ground water, so it has a diversion to Storage component.

Water is diverted from the well and flows through a flow meter, then in an underground pipeline to the bottom of the upstream (northeast) reservoir. This reservoir has a gravel-lined spillway that dumps into the downstream reservoir. On the day of the exam, only a small amount of water was in the bottom of the upstream reservoir, and none was in the downstream reservoir. The surface area of the reservoirs is estimated from ArcMap imagery at 0.13 acres, with an average depth of 2.0 to 2.5 feet, resulting in an approximate storage volume of 0.3 AF.

Seepage and evaporative losses from the reservoirs has been calculated with the IDWR Pond Loss Calculation Spreadsheet. The annual seepage losses in the streambed gravel where the reservoirs are located comes to 9.5 AF/year and the evaporative losses are 0.2 AF/year for a total of 9.7 AF/year. Seepage losses are essentially nonconsumptive to the source, as they likely return to the same aquifer from which they came. Adding the storage volume of the reservoirs of 0.3 AF yields a total calculated volume of 10.0 AF. The water use from the IDWR Water Management Information System (based on actual flow meter readings obtained by the Water District) shows 10.57 AF used in 2019 and 11.47 AF used in 2018 which fairly closely reflects the calculated values. Because the permitted flow rate is only 0.03 cfs, no measurement was made per Beneficial Use Examination Rules. Recommended licensing amounts are 0.03 cfs for Diversion to Storage, 11.5 AF for Wildlife Storage, 11.5 AF for Aesthetic Storage, with a combine volume of 11.5 AF, based on actual use during the development period.

A flow meter is in place and the valve that controls flow to the pond could be locked, satisfying that condition.

Permitted vs Licensed Volume

In licensing this permit, a conflict existed between the permitted volume (tempered by permit Condition of Approval #220) and the actual use at the reservoirs (a product of facility volume plus seepage loss plus evaporation loss). The permit was issued with an annual volume of 0.3 acre-feet already assigned. This permit, however, contains as a

Condition of Approval, Condition #220, which reads: "***The reservoir established by the storage of water under this right shall not exceed a total capacity of 0.3 acre-feet. This right allows for the additional volume necessary to replace evaporative and seepage losses in the reservoir and will be quantified at the time of licensing.***" Actual use in the reservoirs from IDWR Water Management Information System records (which are based on installed flow meter readings obtained by Water District 37) show an annual volume many times higher than the permitted 0.3 AF. Additionally, the right that this permit was based on, 37-1201B, before it was converted in a transfer to a mitigation right for this permit, was decreed with a storage capacity of 0.3 AF for Wildlife Storage and Aesthetic Storage, but the decree itself stated "The reservoir may be refilled multiple times in a single year." Because the reservoirs are situated on alluvial deposits in a former streambed, seepage losses would be expected to be high, though they are likely non-consumptive as they would end up back in the aquifer.

So, in discussions with the IDWR administration, it was concluded that the guidance of Condition #220 would more closely reflect the intent of the permit. Under the direction of permit Condition of Approval #220, IDWR would license the permit with the storage capacity limitation of 0.3 AF plus evaporative losses and seepage losses. Because this number (10.0 AF- see the Beneficial Use Field Report, Volume Calculations) is close to the actual use shown in IDWR's Water Management Information System (which is based on flow meter readings obtained by the Water Master of Water District 37) data for this permit, IDWR will license the permit using the highest volume recorded in the two years of data available during the development period of the permit, which is 11.5 AF. This number reflects the volume actually being used at the reservoirs during the development period.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
WILDLIFE STORAGE	01/01 to 12/31		11.5 AF
AESTHETIC STORAGE	01/01 to 12/31		11.5 AF
DIVERSION TO STORAGE	04/15 to 10/31	0.03 CFS	

Totals: 0.03 CFS 11.5 AF

2. Recommended Amendments

 Change P.D. as reflected above Add P.D. as reflected above X None

 Change P.U. as reflected above Add P.U. as reflected above X None

I. AUTHENTICATION

Field Examiner's Name Jim Bitzenburg Date 9-28-2020

Jim Bitzenburg - Senior Water Resource Agent

Reviewer _____ Date _____



Point of Diversion - well

Flow meter





Place of Use – two connected reservoirs



37-22968 Gloria Camille McCray 1965 Trust



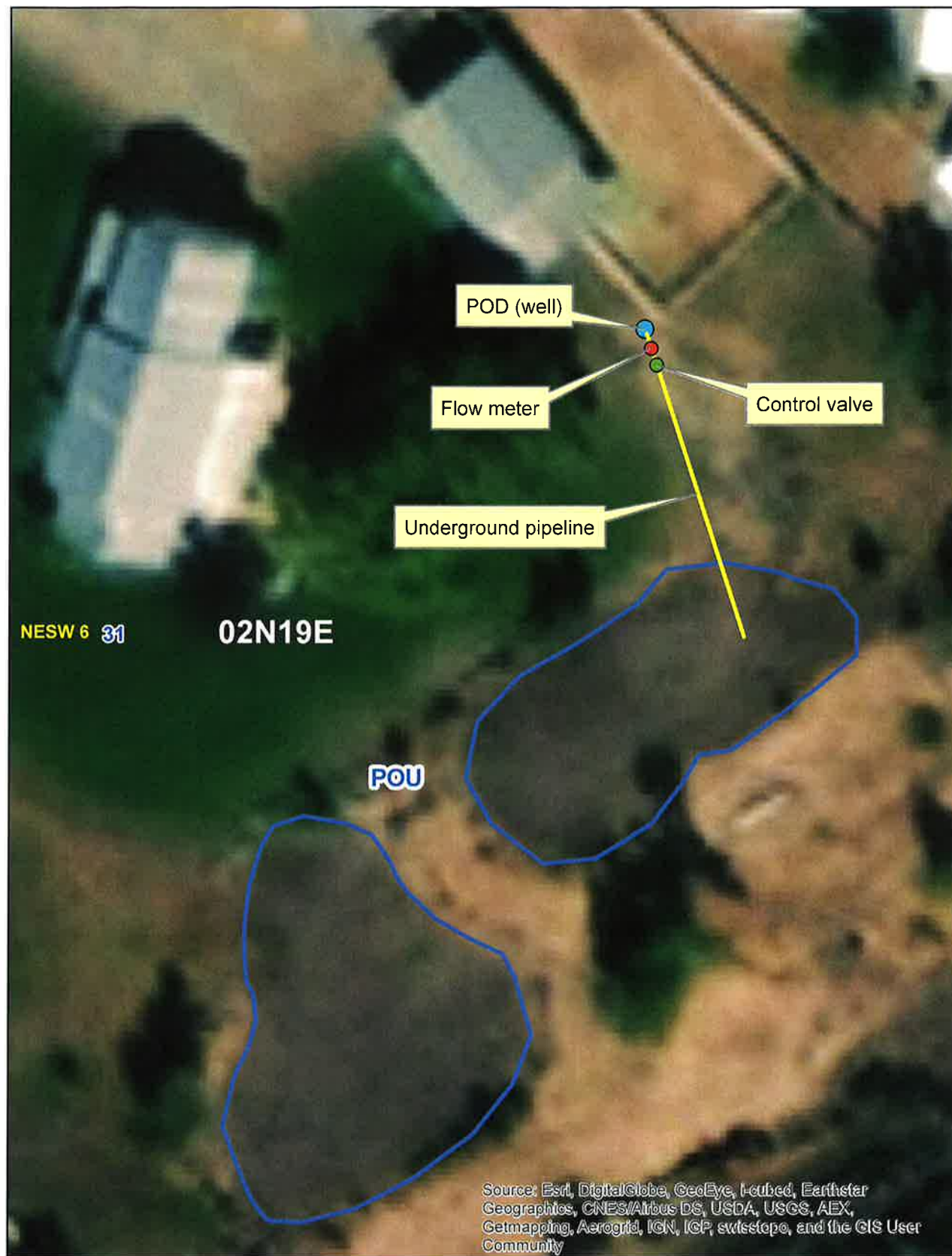
POU for Ground Water Recharge for mitigation right (37-1201B) for this permit

Measuring device at inlet of recharge pond



37-22968 Gloria Camille McCray 1965 Trust

37-22968 Gloria Camille McCray 1965 Trust POD, POU Map & System Diagram



Legend

- Township/Range
- Sections
- QQ

0 0.00325 0.0065 0.013 Miles



Seepage Loss Calculations

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total annual seepage losses from a pond.

FILE NUMBER	37-22968 McCray
REVIEWER	Jim Bitzenburg
DATE	9/18/2020

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.13	AC.
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Pond Surface Area (SQ. FT.)	5663	SQ. FT.
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I used the following method to obtain my Soil Classification information:	NRCS Web Soil Survey	
My Soil Classification is	GC	
Suggested Seepage Rate (FT./DAY)	0.2000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss		
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Convert to GPD	8472	GPD
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Total Seepage Loss (AFA)	9.5	AFA
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Though sand and gravel seepage rates may actually be higher, the maximum allowable rate is 0.2 ft/day, pursuant to Administrative Memo "Seepage Loss Standards for Ponds and Reservoirs."

Suggested Seepage Rates for Different Soil Types:	
GW, GP, GM, GC, SW, SP and SM (silty sand, sand silt mixtures and gravel mixtures)	= 0.2 ft per day
OL and ML (inorganic silts - very fine sands, silty, or clayey fine sands)	= 0.02 ft per day
SC (clayey sands, sand clay mixtures)	= 0.007 ft per day
CL (Low to medium plasticity clays)	= 0.003 ft per day
MH, OH, PT and CH (high plasticity clays)	= 0.0003 ft per day
LINED PONDS (liners can be chemical, fabric, or bentonite)	= 0 ft per day
Ponds Intercepting Groundwater (excavated ponds filled by ground water)	= 0 ft per day

PLEASE NOTE: The initial basis for the Suggested Seepage Rates in the table above is found on Page 16 of Seepage from Fish Ponds, Bulletin 599, August 1989 Alabama Agricultural experiment Station, Auburn University, Auburn University Alabama. If you don't know the soil type, please refer to the map provided at the NRCS Web Soil Survey (Tab #1), an ArcMap Soil Classification Map (Tab #1.1), or published NRCS Soil Survey (Tab #1.2). Use "0" if the pond fill relies on the water table.

Evaporation Loss Calculations

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

FILE NUMBER	37-22968 McCr
REVIEWER	Jim Bitzenburg
DATE	9/18/2020

User Input
Calculated value
Formula Explanations

The acronyms used on the Kimberly Research Center website are defined below:
P = Precipitation
ET= Evapotranspiration
P _d = Precipitation deficit
P _d =ET-P

USING THIS SPREADSHEET

Use the link below to access the Kimberly Research Center website. This website provides the Precipitation Deficit for a station most representative of the pond under examination. The Precipitation Deficit is the total amount of free water surface evaporation minus the precipitation for a given area, which gives the total amount of evaporative losses incurred by the pond. There are several weather sites that are used throughout the state. IDWR staff can find the nearest site using Arc Map. The shape file containing the sites can be found at X:/Spatial/Climate/ETIdahostations.shp.

Instructions:

1. Use the link below to navigate to ET Idaho 2012.
2. Select the station which is most representative to your pond location.
3. Click Submit Query.
4. Under "Land Covers with Evapotranspiration Estimates," select "Open Water - Shallow Systems (ponds, streams)" or "Open Water - small stock ponds" depending on the pond size.
5. Click the link to "Precipitation Deficit."
6. Reference and copy (ctrl + C) the first subheading "Mean" values.
7. Click the "Paste Values from ET Idaho" button. The table will automatically enter a zero (0) for any negative precipitation deficit values.

Found at: <http://data.kimberly.uidaho.edu/ETIdaho/>

Precipitation Deficit

Station: Twin Falls 2 NNE (NWS -- 109294)

Month	mm/day ¹	Days per month	mm/Month
Jan	-1.42	31	0.00
Feb	-0.75	28	0.00
March	-0.01	31	0.00
April	1.26	30	37.80
May	2.15	31	66.65
June	2.87	30	86.10
July	4.01	31	124.31
August	3.35	31	103.85
September	2.04	30	61.20
October	0.78	31	24.18
November	-0.78	30	0.00
December	-1.68	31	0.00

PLEASE NOTE: The seasonal average for precipitation deficit should not be used for calculations because precipitation often exceeds evaporation during wetter months of the year. If the pond is kept full, excess precipitation during wetter months does not serve to refill the pond during drier months.

For example, see Sandpoint KSPT (NWS -- 108137), the annual precipitation deficit is -106 mm. However, April through September have positive precipitation deficit values. To properly estimate the annual volume of water necessary to refill a pond due to evaporation losses, the table will automatically enter a zero (0) for each month that the precipitation value is reported as a negative value.

As described above, precipitation offsets evaporation in winter months, so the net effect is that wintertime precipitation deficit is usually zero.

Total mm/year = 504.09

$$[(504.09 \text{ mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$$

$$(504.09 \div 304.8) \times 0.13 = 0.2 \text{ AFA}$$

Idaho Department of Water Resources

WMIS
Water Management Information System

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WMIS Number

WMIS Number

1002937

Search

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Data Summary

You are viewing 1002937

Report Year	Alternate	FM	PCC	Time Clock
2019		10.57		
2018		11.47		

RECEIVED

SEP 01 2020

WATER DISTRICT 37

CANAL NAME		SEAMANS CREEK RECHARGE						DEPT OF WATER RESOURCES SOUTHERN REGION 2017	
OWNER		VARIOUS							
DATE	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	DATE	
1		3.89	4.25	3.40	1.75	0.80	0.80	1	
2		3.89	4.25	3.40	1.75	0.80	0.80	2	
3		3.89	4.25	3.40	1.75	0.80	0.80	3	
4		3.89	4.25	3.40	1.75	0.80	0.80	4	
5		3.89	4.25	3.40	1.75	0.80	0.80	5	
6		3.89	4.25	3.40	1.75	0.80	0.80	6	
7		3.89	4.25	3.40	1.75	0.80	0.80	7	
8		3.89	4.25	3.40	1.75	0.80	0.80	8	
9		3.89	4.25	3.40	1.75	0.80	0.80	9	
10		3.89	4.25	2.59	1.75	0.80	0.80	10	
11		3.89	4.25	2.59	1.75	0.80	0.80	11	
12		3.89	4.25	2.59	1.75	0.80	0.80	12	
13		3.89	4.80	2.59	1.75	0.80	0.80	13	
14		3.89	4.80	2.59	1.75	0.80	0.80	14	
15	4.10	3.89	4.80	2.59	1.12	0.80	0.80	15	
16	4.10	4.25	4.80	2.59	1.12	0.80		16	
17	4.10	4.25	4.80	2.59	1.12	0.80		17	
18	4.10	4.25	4.80	2.59	1.12	0.80		18	
19	4.10	4.25	4.80	2.59	1.12	0.80		19	
20	4.10	4.25	4.80	2.59	1.12	0.80		20	
21	4.10	4.25	4.80	2.59	1.12	0.80		21	
22	4.10	4.25	4.80	2.59	1.12	0.80		22	
23	4.10	4.25	4.80	2.59	1.12	0.80		23	
24	4.10	4.25	4.10	2.59	1.12	0.80		24	
25	4.10	4.25	4.10	2.59	1.12	0.80		25	
26	4.10	4.25	4.10	2.59	1.12	0.80		26	
27	4.10	4.25	4.10	2.59	1.12	0.80		27	
28	4.10	4.25	4.10	1.75	1.12	0.80		28	
29	4.10	4.25	4.10	1.75	1.12	0.80		29	
30	4.10	4.25	4.10	1.75	1.12	0.80		30	
31		4.25		1.75	1.12			31	
TOTAL	65.60	126.35	132.50	84.22	43.54	24.00	12.00		

YEARLY C F S 488
 YEARLY ACRE FEET 967
 TOTAL NO OF DAYS 184
 YEARLY MEAN 3

37-22968

GLORIA CAMILLE MC CRAY1965 TRUST

WATER DISTRICT 37

CANAL NAME		SEAMANS CREEK RECHARGE						2018
OWNER		VARIOUS						
DATE	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	DATE
1		3.00	3.50	2.50	1.20	0.80	0.60	1
2		3.00	3.50	2.50	1.20	0.80	0.60	2
3		3.00	3.50	1.80	1.20	0.80	0.60	3
4		3.00	3.50	1.80	1.20	0.80	0.60	4
5		3.00	3.50	1.80	1.20	0.80	0.60	5
6		3.00	3.50	1.80	0.80	0.60	0.60	6
7		3.00	3.50	1.80	0.80	0.60	0.60	7
8		3.00	3.50	1.80	0.80	0.60	0.60	8
9		3.00	3.50	1.80	0.80	0.60	0.60	9
10		3.00	3.50	1.80	0.80	0.60	0.60	10
11		3.00	3.50	1.80	0.80	0.60	0.60	11
12		3.00	2.50	1.80	0.80	0.60	0.60	12
13		3.00	2.50	1.20	0.80	0.60	0.60	13
14		3.00	2.50	1.20	0.80	0.60	0.60	14
15	3.00	3.00	2.50	1.20	0.80	0.60	0.60	15
16	3.00	3.00	2.50	1.20	0.80	0.60		16
17	3.00	3.00	2.50	1.20	0.80	0.60		17
18	3.00	3.00	2.50	1.20	0.80	0.60		18
19	3.00	3.00	2.50	1.20	0.80	0.60		19
20	3.00	3.00	2.50	1.20	0.80	0.60		20
21	3.00	3.00	2.50	1.20	0.80	0.60		21
22	3.00	3.00	2.50	1.20	0.80	0.60		22
23	3.00	3.00	2.50	1.20	0.80	0.60		23
24	3.00	3.00	2.50	1.20	0.80	0.60		24
25	3.00	3.00	2.50	1.20	0.80	0.60		25
26	3.00	3.00	2.50	1.20	0.80	0.60		26
27	3.00	3.00	2.50	1.20	0.80	0.60		27
28	3.00	3.00	2.50	1.20	0.80	0.60		28
29	3.00	3.00	2.50	1.20	0.80	0.60		29
30	3.00	3.50	2.50	1.20	0.80	0.60		30
31		3.50		1.20	0.80			31
TOTAL	48.00	94.00	86.00	45.80	26.80	19.00	9.00	

YEARLY C F S	329
YEARLY ACRE FEET	651
TOTAL NO OF DAYS	184
YEARLY MEAN	2

37-22968
GLORIA CAMILLE MC CRAY1965 TRUST

WATER DISTRICT 37

CANAL NAME		SEAMANS CREEK RECHARGE						2019
OWNER		VARIOUS						
DATE	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	DATE
1		3.00	3.50	2.50	1.80	1.20	1.00	1
2		3.00	3.50	2.50	1.80	1.20	1.00	2
3		3.00	3.50	1.80	1.80	1.20	1.00	3
4		3.00	3.50	1.80	1.80	1.20	1.00	4
5		3.00	3.50	1.80	1.80	1.20	1.00	5
6		3.00	3.50	1.80	1.80	1.20	1.00	6
7		3.00	3.50	1.80	1.80	1.20	1.00	7
8		3.00	3.50	1.80	1.80	1.20	1.00	8
9		3.00	3.50	1.80	1.80	1.20	1.00	9
10		3.00	3.50	1.80	1.80	1.20	1.00	10
11		3.00	3.50	1.80	1.80	1.20	1.00	11
12		3.00	2.50	1.80	1.80	1.20	1.00	12
13		3.00	2.50	1.80	1.80	1.20	1.00	13
14		3.00	2.50	1.80	1.80	1.20	1.00	14
15	3.00	3.00	2.50	1.80	1.80	1.20	1.00	15
16	3.00	3.00	2.50	1.80	1.80	1.20		16
17	3.00	3.00	2.50	1.80	1.80	1.20		17
18	3.00	3.00	2.50	1.80	1.80	1.20		18
19	3.00	3.00	2.50	1.80	1.80	1.20		19
20	3.00	3.00	2.50	1.80	1.80	1.20		20
21	3.00	3.00	2.50	1.80	1.80	1.20		21
22	3.00	3.00	2.50	1.80	1.20	1.00		22
23	3.00	3.00	2.50	1.80	1.20	1.00		23
24	3.00	3.00	2.50	1.80	1.20	1.00		24
25	3.00	3.00	2.50	1.80	1.20	1.00		25
26	3.00	3.00	2.50	1.80	1.20	1.00		26
27	3.00	3.00	2.50	1.80	1.20	1.00		27
28	3.00	3.00	2.50	1.80	1.20	1.00		28
29	3.00	3.00	2.50	1.80	1.20	1.00		29
30	3.00	3.50	2.50	1.80	1.20	1.00		30
31		3.50		1.80	1.20			31
TOTAL	48.00	94.00	86.00	57.20	49.80	34.20	15.00	

YEARLY C F S 384
 YEARLY ACRE FEET 761
 TOTAL NO OF DAYS 184
 YEARLY MEAN 2

37-22968

GLORIA CAMILLE MC CRAY1965 TRUST

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

AD

1. WELL TAG NO. D 0070677
Drilling Permit No. 878479
Water right or injection well # 37-22968
2. OWNER: Gloria McCray
Name Gloria McCray
Address 310 Bayhorse Road
City Bellevue State Id Zip 83313

3. WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 19 East ☒ or West ☐
Sec. 31 1/4 NE 1/4 SW 1/4
Gov't Lot _____ County Blaine
Lat. 43 ° 27 ' 667 (Deg. and Decimal minutes)
Long. 114 ° 14 ' 481 (Deg. and Decimal minutes)
Address of Well Site 310 Bayhorse Roa
City Bellevue

(Give at least name of road - Distance to Road or Landmark)
Lot _____ Blk. _____ Sub. Name _____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☒ Other Storage

5. TYPE OF WORK:
☒ New well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method/procedure
Bentonite Chips	20	0	800 lbs	Dry Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing Liner	Threaded	Welded
6"	+1.5	134	250	Steel	☒	☐	☒
4.5"	120	280	40	PVC	☐	☒	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 134 ft

9. PERFORATIONS/SCREENS:
Perforations ☒ Y ☒ N Method Factory
Manufactured screen ☐ Y ☐ N Type _____
Method of installation _____

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
120	280	.20	100	4.5	PVC	40

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method

11. FLOWING ARTESIAN:
Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) _____
Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 110ft Static water level (ft) 110ft
Water temp. (°F) Cold Bottom hole temp. (°F) Cold
Describe access port Well Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
160ft	23	45

Test method:

Pump	Bailer	Air	Flowing artesian
☐	☐	☒	☐

Water quality test or comments: Good

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
10	0	6	Top Soil & Gravel		X
10	6	14	Boulders & Gravel		X
10	14	20	Gravel & Clay		X
6	20	120	Gravel & Clay	X	
6	110	130	Soft Black Slate	X	
6	130	140	Hard Black Slate	X	
6	140	150	Broken Limestone & Clay	X	
6	150	170	Soft Limestone	X	
6	170	180	Broken Limestone & Clay	X	
6	180	240	Soft Black Slate	X	
6	240	280	Med Hard Black Slate	X	

Completed Depth (Measurable): 280 ft
Date Started: 4/28/2016 Date Completed: 5/04/2016

14. DRILLER'S CERTIFICATION:
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Dirt Works Co. No. 652
Principal Driller Brian McHarg Date 5/05/2016
Driller _____ Date _____
Operator II _____ Date _____
Operator I Brian McHarg Date 5/05/2016
* Signature of Principal Driller and co operator are required

37-22968
GLORIA CAMILLE MC CRAY 1965 TRUST