Owyhee County
Planning & Zoning

PO Box 128, Murphy Id. 83650
Phone (208) 495-2095 Fax (208) 495-2051

PRELIMINARY PLAT APPLICATION

Requiring Public Hearing

Drake & Whitnee Hungate
APPLICANT/ APPLICANT REPRESENTATIVE

18694 Chicken Dinner Road
MAILING ADDRESS

Caldwell, Idaho 83607
CITY STATE ZIP CODE

(208) 720-3301
TELEPHONE FAX OR EMAIL

Drake hungate / Wayne Hungate
OWNER'S NAME

18694 Chicken Dinner Road
OWNER'S MAILING ADDRESS

Caldwell, Idaho 83607
CITY STATE ZIP CODE

(208) 720-3301
OWNER'S TELEPHONE NUMBER

Owyhee Heights Subdivision
SUBDIVISION NAME

10 T2N R4W
SECTION TOWNSHIP RANGE

Have you contacted Southwest District Health? [Y] N

RP02N04W106001
TAX ASSESSOR'S PARCEL NUMBER(s)

Multi Use
CURRENT ZONING OF THE SUBJECT PARCEL

Z23-02 - Instrument# 314563
CUP FILE NUMBER

0 Highway 78
SITE ADDRESS

AREA OF CITY IMPACT

I DECLARE UNDER PENALTY OF PERJURY that I/we, WAYNE HUNGATE, being duly sworn, depose and say that I/we am/are the applicant(s) in the foregoing application, that I/we have read the foregoing application and know the content thereof and state that the same is true and correct to the best of my knowledge. Furthermore, all information and data submitted to Owyhee County in support of my application is true and correct to the best of my knowledge. I/we acknowledge that by submitting this application a member or members of the planning and zoning commission may physically make a site visit to the proposed site and surrounding vicinity. I/we understand that this will be done at an unannounced time without conversation with owners, applicants, or the public.

Dated: 1/23/2025 Signed: Wayne Hungate

Dated: _____ Signed: _____

On the 23 day of January, 2025, before me, the undersigned Notary Public, personally appeared, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that s/he executed the same.

IN WITNESS WHEREOF, I have set my hand and seal the day and year as above written.

LAURA JOHNSON NOTARY PUBLIC Comm. No. 36718 STATE OF IDAHO

Laura Johnson
Notary Public

Residing at Owyhee County
Commission Expires: 8/15/2025

FOR ADMINISTRATIVE USE

File No. 225-14 Rec'd by: [signature] Date: 2/18/25 Pd. ✓ 980 CO Check No. 11325

SUBMITTAL REQUIREMENTS:

With the exception of full size plat documents, all other documents must be submitted in collated, bound, or three hole fastened presentation folders or binders. Clipped, loose, rubber banded, or non-collated packets will not be accepted. One copy must be the originals of any documents signed by the applicant/developer.

Plat documents shall have a minimum dimension of 18" x 27" and shall be drawn at a horizontal scale of 50 feet to one inch or such other scale as the department determines will clearly portray all of the required information. All copies of the plat documents shall be folded so as to have a maximum dimension no larger than 9" x 14". The title block shall be prominently visible when so folded. Please submit 12 collated packets of the following documents.

- ☐ Application (Typically, the name on the deed will be the name of the applicant, not the consulting firm. If the applicant is someone other than the landowner on the deed, an affidavit from the land owner must be included)
- ☐ Copy of recorded warranty deed for the subject property
- ☐ Copy of decision from original Conditional Use Permit (if applicable), and any other required documents (i.e. Road Users Agreement, Water Users Agreement, etc.) that were conditions of the CUP approval
- ☐ Color Aerial Map, Vicinity Map, Zone Map, Assessor's Parcel Map with subject property clearly identified
- ☐ Approved Irrigation Plan from irrigation entity (if applicable)
- ☐ Site report from Southwest District Health (SER)
- ☐ Full size preliminary plat documents, plus an emailed electronic copy. Paper copies folded to no larger than 9" x 14"
- ☐ Reduced 8½" x 11" copies of preliminary documents
- ☐ Preliminary engineered plans for any required improvements
- ☐ Copy of any private restrictions (CC&Rs) that will be imposed for purpose of privately regulating this development
- ☐ Statement requesting variance and the reason therefor (if applicable)

Is a variance, as specified in Title 10 Chapter 8, being requested? ☐ Yes ☐ No

SUBDIVISION FEATURES:

Total Area: 33.49 acres Number of Lots: 6 (excluding common lots)
(Not to exceed ten lots)

Smallest Buildable Lot Data: (excluding common lots)

Width: 347 Depth: 256 Area: 65650 sq.ft.

Proposed Number of Dwelling Units: (multi-family developments only) _____

Type of Dwelling(s) Proposed:

☑ Single Family Detached ☐ Single Family Attached ☐ Townhomes
☐ Duplexes ☐ Multi-Family ☐ Other

Type of Utilities Proposed:

Water: Well Electric: Yes Septic: Individual Septic

Access (From nearest public street or road): Howard Rd & Highway 78

Will you be bonding for improvements? If yes, list:

Does the proposed development require special development considerations?

If yes, combining the preliminary and final plats are not allowed pursuant to Owyhee County Code 10-3-3.

Lot Types	# of lots in preliminary plat	# of lots in final plat
Residential	6	
Commercial		
Industrial		
Common (landscape, utility, or other)	2	
Open space		
TOTAL	8	

Owyhee County
Planning & Zoning

PO Box 128, Murphy Id. 83650
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Drake hungate / Wayne Hungate
OWNER'S NAME

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OWNER'S MAILING ADDRESS

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I DECLARE UNDER PENALTY OF PERJURY that I/we, Whitnee + Drake Hungate, being duly sworn, depose and say that I/we am/are the applicant(s) in the foregoing application, that I/we have read the foregoing application and know the content thereof and state that the same is true and correct to the best of my knowledge. Furthermore, all information and data submitted to Owyhee County in support of my application is true and correct to the best of my knowledge. I/we acknowledge that by submitting this application a member or members of the planning and zoning commission may physically make a site visit to the proposed site and surrounding vicinity. I/we understand that this will be done at an unannounced time without conversation with owners, applicants, or the public.

Dated: 1/22/25 Signed: Whitnee Hungate

Dated: 1/22/2025 Signed:

On the 22 day of January, 2025, before me, the undersigned Notary Public, personally appeared, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that s/he executed the same.

IN WITNESS WHEREOF, I have set my hand and seal the day and year as above written.

LAURA JOHNSON NOTARY PUBLIC Comm. No. 36718 STATE OF IDAHO

Laura Johnson
Notary Public

Residing at Owyhee County
Commission Expires: 8/15/2025

FOR ADMINISTRATIVE USE

File No._____ Rec'd by: _____ Date: _____ Pd._____ Check No._____

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Commercial		
Industrial		
Common (landscape, utility, or other)	2	
Open space		
TOTAL	8	

AFFIDAVIT

STATE OF IDAHO)
COUNTY OF OWYHEE)

I, Whitnee & Drake Hungate, being duly sworn, depose and say that I am the applicant in the foregoing application, that I have read the foregoing application and know the content thereof and state that the same is true and correct to the best of my knowledge. Furthermore, all information and data submitted to Owyhee County in support of my application is true and correct to the best of my knowledge.

Whitnee Hungate / Drake Hungate
APPLICANT SIGNATURE

18895 Waitz Rd
ADDRESS

Caldwell Idaho 83607
CITY/STATE/ZIP

208-720-3301
TELEPHONE

I, _____, the owner (if other than the applicant) of the real property involved in this application, do hereby consent to the filing of this application.

OWNER SIGNATURE

_____
ADDRESS

_____
CITY/STATE/ZIP

_____
TELEPHONE

On the 22 day of January, 2025, before me, the undersigned Notary Public, personally appeared Whitnee Hungate / Drake Hungate known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that s/he executed the same.

IN WITNESS WHEREOF, I have set my hand and seal the day and year as above written.

LAURA JOHNSON NOTARY PUBLIC Comm. No. 36718 STATE OF IDAHO

Laura Johnson
Notary Public

Residing at Owyhee County
Commission Expires: 8/15/2025

AFFIDAVIT

STATE OF IDAHO)
COUNTY OF OWYHEE)

I, _____, being duly sworn, depose and say that I am the applicant in the foregoing application, that I have read the foregoing application and know the content thereof and state that the same is true and correct to the best of my knowledge. Furthermore, all information and data submitted to Owyhee County in support of my application is true and correct to the best of my knowledge.

_____
APPLICANT SIGNATURE

_____
ADDRESS

_____
CITY/STATE/ZIP

_____
TELEPHONE

I, WAYNE HUNGATE, the owner (if other than the applicant) of the real property involved in this application, do hereby consent to the filing of this application.

Wayne Hungate
OWNER SIGNATURE

18694 Chicken Dinner Rd.
ADDRESS

Caldwell, ID 83607
CITY/STATE/ZIP

208-880-2335
TELEPHONE

On the 23 day of January, 2025, before me, the undersigned Notary Public, personally appeared Wayne Hungate, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that s/he executed the same.

IN WITNESS WHEREOF, I have set my hand and seal the day and year as above written.

LAURA JOHNSON
NOTARY
PUBLIC
Comm. No. 36718
STATE OF IDAHO

Laura Johnson
Notary Public

Residing at Owyhee County
Commission Expires: 8/15/2025

Owyhee County, Idaho

RIGHT TO FARM
Disclosure Statement

A. It is the intent of the Legislature of the State of Idaho pursuant to IDAHO CODE Title 22 Chapter 45, RIGHT TO FARM ACT to reduce the loss to the state of its agricultural resources by limiting the circumstances under which agricultural operations may be deemed to be a nuisance.
B. It is the intent of the Owyhee County Board of Commissioners and the Planning and Zoning Commission to uphold, support, and enforce the RIGHT TO FARM ACT.
C. The County of Owyhee fully supports and permits "agricultural operations" as defined in IDAHO CODE 22-4502, Definitions, when operated in accordance with generally recognized agricultural practices which includes conformity with Federal, State, and local laws and regulations and when not adversely affecting public health and safety.

I acknowledge Idaho's RIGHT TO FARM, and I accept the agricultural environment they protect and do agree to live within said environment.

Name: Whitney Hungate

Name: Drake Hungate

Address: 18895 Weitz Rd

Legal: Section: _____ Township: _____ Range: _____

Assessor's Parcel Number: _____

Whitney Hungate — Signature — 1/22/25 — Date

Signature — 1/22/25 — Date

STATE OF IDAHO, County of Owyhee ss.

On this 22 **day of** January, 2025**, before me, the undersigned, a Notary Public in and for said State, personally appeared:**

Whitney Hungate + Drake Hungate

Known or identified to me to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same.

Signature: Laura Johnson
Name: Laura Johnson
Residing at: Owyhee County
My Commission expires: 8/15/2025

LAURA JOHNSON
NOTARY PUBLIC
Comm. No. 36718
STATE OF IDAHO

Owyhee County, Idaho

RIGHT TO FARM
Disclosure Statement

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I acknowledge Idaho's RIGHT TO FARM, and I accept the agricultural environment they protect and do agree to live within said environment.

Name: WAYNE HUNGATE

Name:

Address: 18699 Chicken Dinner Rd. Caldwell ID 83607

Legal: Section: 10 Township: 2N Range: 4W

Assessor's Parcel Number: RP02N04W106001

Wayne Hungate — Signature
1/23/2025 — Date

Signature — Date

STATE OF IDAHO, County of Owyhee ss.

On this 23 **day of** January, **20** 25, **before me, the undersigned, a Notary Public in and for said State, personally appeared:**

Wayne Hungate

Known or identified to me to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same.

Signature: Laura Johnson
Name: Laura Johnson
Residing at: Owyhee County
My Commission expires: 8/15/2025

LAURA JOHNSON NOTARY PUBLIC Comm. No. 36718 STATE OF IDAHO

PioneerTitleCo.
GOING BEYOND

100 10th Avenue South
Nampa, ID 83651

ELECTRONICALLY RECORDED-DO NOT REMOVE THE COUNTY STAMPED FIRST PAGE AS IT IS NOW INCORPORATED AS PART OF THE ORIGINAL DOCUMENT

File No. 661486 CH/TG

WARRANTY DEED

For Value Received **John M. Larsen, Trustee of the John M. Larsen Trust**

hereinafter referred to as Grantor, does hereby grant, bargain, sell, warrant and convey unto

Drake Wyatt Hungate, an unmarried man DH

hereinafter referred to as Grantee, whose current address is 18694 Chicken Dinner Rd., Caldwell, ID 83607

The following described premises, to-wit:

See Exhibit A attached hereto and made a part hereof.

To HAVE AND TO HOLD the said premises, with their appurtenances unto the said Grantee(s), and Grantees(s) heirs and assigns forever. And the said Grantor(s) does (do) hereby covenant to and with the said Grantee(s), the Grantor(s) is/are the owner(s) in fee simple of said premises; that said premises are free from all encumbrances EXCEPT those to which this conveyance is expressly made subject and those made, suffered or done by the Grantee(s); and subject to U.S. Patent reservations, restrictions, dedications, easements, rights of way and agreements, (if any) of record, and current years taxes, levies, and assessments, includes irrigation and utility assessments, (if any) which are not yet due and payable, and that Grantor(s) will warrant and defend the same from all lawful claims whatsoever.

Dated: November 17, 2018

John M. Larsen, Trustee of the John M. Larsen Trust

By: John M. Larsen Trustee
John M. Larsen, Trustee

State of IDAHO, County of CANYON

This record was acknowledged before me on November 17, 2018 by John M. Larsen, as Trustee of The John M. Larsen Trust.

Cari Heck
Signature of notary public
Commission Expires: 11/2/2019

CARI HECK
COMMISSION #37142
NOTARY PUBLIC
STATE OF IDAHO

EXHIBIT A

A parcel of land being a portion of the South Half of the Southwest Quarter of Section 10, Township 2 North, Range 4 West, Boise Meridian, Owyhee County, Idaho, and more particularly described as follows:

Commencing at a found 1-inch pipe marking the west quarter corner of said Section 10, which bears North 89°51'31" West a distance of 2,643.86 feet from a found axle marking the center of said Section 10, thence following the westerly line on the Northwest Quarter of the Southwest Quarter of said Section 10, South 00°35'58" East a distance of 1,332.92 feet to a found brass cap marking the South 1/16 corner of Sections 9 and 10; thence leaving said westerly line and following the northerly line of the said South Half of the Southwest Quarter of Section 10, South 89°48'38" East a distance of 466.70 feet to a found 5/8-inch rebar and being the POINT OF BEGINNING; thence following said northerly line,

South 89°48'38" East a distance of 1,217.48 feet to a point on the centerline of an existing irrigation lateral being witnessed by a set 5/8-inch rebar which bears North 89°48'38" West a distance of 55.00 feet from said point; thence leaving said northerly line and following the said centerline of an existing irrigation lateral the following courses:

South 57°06'10" West a distance of 78.64 feet to a point;

South 32°17'08" West a distance of 160.00 feet to a point;

73.09 feet along the arc of a circular curve to the left, said curve having a radius of 108.24 feet, a delta angle of 38°41'24", a chord bearing of South 12°56'27" West a chord distance of 71.71 feet to a point;

South 06°24'15" East a distance of 183.17 feet to a point;

88.83 feet along the arc of a circular curve to the right, said curve having a radius of 225.43 feet, a delta angle of 22°34'41", a chord bearing of South 04°53'06" West and a chord distance of 88.26 feet to a point;

South 16°10'27" West a distance of 192.85 feet to a point;

86.59 feet along the arc of a circular curve to the right, said curve having a radius of 128.87 feet, a delta angle of 38°29'52", a chord bearing of South 35°25'22" West and a chord distance of 84.97 feet to a point;

South 54°40'18" West a distance of 107.12 feet to a point;

South 57°45'05" West a distance of 150.12 feet to a point;

97.08 feet along the arc of a circular curve to the left, said curve having a radius of 164.29 feet, a delta angle of 33°51'18", a chord bearing of South 40°49'26" West and a chord distance of 95.67 feet to a point;

South 23°53'47" West a distance of 371.06 feet to a set 5/8-inch rebar on the southerly line of the Southwest Quarter of the Southwest Quarter of said Section 10; thence leaving said centerline of an existing irrigation lateral and following said southerly line of the Southwest Quarter of the Southwest Quarter,

North 89°36'10" West a distance of 373.44 feet to a set 5/8-inch rebar; thence leaving said southerly line,

North 57°32'33" West a distance of 689.64 feet to a set 5/8-inch rebar on the easterly right-of-way line of State Highway 78; thence following said easterly right-of-way line,

North 00°39'26" West a distance of 397.38 feet to a found 5/8-inch rebar; thence following said easterly right-of-way line,

94.72 feet along the arc of a circular curve to the right, said curve having a radius of 5,696.58 feet, a delta angle of 00°57'10", a chord bearing of North 00°10'52" West and a chord distance of 94.72 feet to a found 5/8-inch rebar; thence leaving said easterly right-of-way line,

South 89°48'38" East a distance of 432.91 feet to a found 5/8-inch rebar; thence

North 00°39'26" West a distance of 466.70 feet to the POINT OF BEGINNING.

PioneerTitleCo.
GOING BEYOND

100 10th Avenue South
Nampa, ID 83651

ELECTRONICALLY RECORDED-DO NOT REMOVE THE COUNTY STAMPED FIRST PAGE AS IT IS NOW INCORPORATED AS PART OF THE ORIGINAL DOCUMENT

File No. 698600 CH/TG

WARRANTY DEED

For Value Received **Drake Wyatt Hungate, a married man as his sole and separate property** hereinafter referred to as Grantor, does hereby grant, bargain, sell, warrant and convey unto

Wayne Hungate and Teri Hungate, husband and wife

hereinafter referred to as Grantees, whose current address is 18694 Chicken Dinner Rd., Caldwell, ID 83607

The following described premises, to-wit:

See Exhibit A attached hereto and made a part hereof.

To HAVE AND TO HOLD the said premises, with their appurtenances unto the said Grantee(s), and Grantees(s) heirs and assigns forever. And the said Grantor(s) does (do) hereby covenant to and with the said Grantee(s), the Grantor(s) is/are the owner(s) in fee simple of said premises; that said premises are free from all encumbrances EXCEPT those to which this conveyance is expressly made subject and those made, suffered or done by the Grantee(s); and subject to U.S. Patent reservations, restrictions, dedications, easements, rights of way and agreements, (if any) of record, and current years taxes, levies, and assessments, includes irrigation and utility assessments, (if any) which are not yet due and payable, and that Grantor(s) will warrant and defend the same from all lawful claims whatsoever.

Dated: December 12, 2019

Drake Wyatt Hungate

State of IDAHO, County of CANYON

This record was acknowledged before me on 12/13/19 by Drake Wyatt Hungate.

Signature of notary public
Commission Expires: 11/2/2025

CARI HECK
COMMISSION #37142
NOTARY PUBLIC
STATE OF IDAHO

EXHIBIT A

A parcel of land being a portion of the Southwest Quarter of the Southwest Quarter and a portion of the Southeast Quarter of the Southwest Quarter of Section 10, Township 2 North, Range 4 West, Boise Meridian, Owyhee County Idaho, more particularly described as follows:

Commencing at the southwest corner of the Southwest Quarter of the Southwest Quarter; thence
North 00°39'26" West a distance of 387.05 feet along the west boundary of the Southwest Quarter of the Southwest Quarter; thence
South 57°32'33" East a distance of 39.40 feet, thence
North 00°39'26" West a distance of 291.15 feet parallel with the west boundary of the Southwest Quarter of the Southwest Quarter to the POINT OF BEGINNING; thence
North 00°39'26" West a distance of 106.23 feet parallel with the west boundary of the Southwest Quarter of the Southwest Quarter; thence
Along a curve to the right, having a radius of 5696.58 feet, a delta angle of 00°57'10", and whose long chord bears North 00° 10° 51" West a distance of 94.72 feet; thence
South 89°48'38" East a distance of 432.91 feet; thence
South 00°39' 26" East a distance of 200.96 feet parallel with the west boundary of the Southwest Quarter of the Southwest Quarter; thence
North 89°48'38" West a distance of 433.70 feet to the POINT OF BEGINNING.

TOGETHER WITH a 60.00 foot wide ingress-egress and utility easement as follows:

Commencing at the southwest corner of the Southwest Quarter of the Southwest Quarter; thence
North 00°39'26" West a distance of 387.05 feet along the west boundary of the Southwest Quarter of the Southwest Quarter; thence
South 57°32'33" East a distance of 39.40 feet; thence
North 00°39'26" West a distance of 231.16 feet parallel with the west boundary of the Southwest Quarter of the Southwest Quarter to the POINT OF BEGINNING; thence
North 00°39'26" West a distance of 60.00 feet parallel with the west boundary of the Southwest Quarter of the Southwest Quarter; thence
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North 89°48'38" West a distance of 433.70 feet to the POINT OF BEGINNING.

BEFORE THE OWYHEE COUNTY PLANNING AND ZONING COMMISSION

Re: Application for Conditional Use Permit)	No. Z23-02
)	Memorandum of Decision
Filed by:)	
Drake & Whitnee Hungate)	
Owyhee Heights Subdivision)	
)	

Instrument # 314563
MURPHY, OWYHEE, IDAHO
2-17-2023 03:21:52 PM No. of Pages: 8
Recorded for : OWYHEE COUNTY PLANNING & ZONING
ANGELA BARKELL Fee: 0.00
Ex-Officio Recorder Deputy
Index to: MEMORANDUM

SUMMARY

Drake & Whitnee Hungate, (hereinafter "Applicant") applied for a conditional use permit seeking approval to develop a 22-lot residential subdivision on approximately 33 acres of land located near the corner of Howard Road and Highway 78, approximately 1 mile south of Marsing. The subject parcels, RP02N04W10600 and RP02N04W106020 are in a multiuse zone in a portion of the SW¼ of Section 10, Township 2 North, Range 4 West, Boise Meridian, Owyhee County, Idaho. After a duly noticed hearing conducted on November 16, 2022, the Commission enters the following decision:

FINDINGS

All statements in this narrative summary of the evidence are findings of fact made by the Commission after the hearing, and considering evidence admitted in the case. The statements of fact contained herein are "Findings of Fact" made by the Commission, even absent the phrase "The Commission finds." The same applies to narrative statements. All facts contained therein are "Findings of Fact."

1. The Commission finds that the Applicant proposed a 22–lot residential subdivision on approximately 33 acers of land with lots averaging 1 acre in size.
2. The Commissions finds that the property is located near the corner of Howard Road and Highway 78 approximately one mile south of Marsing.
3. The Commission finds that the subject parcel is located in an area of Owyhee County that has been designated a Multiuse District (hereinafter "District M"). Owyhee County Code, Title 9, Chapter 5, Article B., Section 9-5B-3 sets forth allowed uses in District M. Contained therein, "Uses allowed in the R district except residential subdivisions." Therefore, a residential subdivision requires approval of a conditional use permit.
4. The Commission finds that Owyhee County Code, Title 9, Chapter 9-6-4 sets forth the process and criteria used for issuance of a conditional use permit. This section sets out that the Applicant has the burden of proof justifying approval of the conditional use permit. Section 9-6-4 B requires that the Applicant meet the burden of proof on the following criteria:
   - Whether this Code permits the use by conditional use permit.
   - Whether the intended use is necessary or desirable to the public convenience and welfare.
   - Whether the proposed use may create a hazard, nuisance, detriment, or other injury to other property in the immediate vicinity or to the health or safety to the citizens of the county in general.

- Whether essential public services, or the general public health or safety, or the general public environment may be negatively impacted by such use or whether there may be a requirement of additional public funding in order to meet the needs created by the requested use.
- Whether adequate sewer, water and drainage facilities, and utility and other service systems are to be provided by the applicant to accommodate said use.
- When a permit is granted with appropriate conditions, bonds and safeguards which are in conformity with this title may be prescribed. Violations of such conditions, bonds, or safeguards, when made a part of the terms under which the conditional use is granted, shall be deemed a violation of this title.
- Whether the proposed use may have adverse impact on water and water supplies, both surface, aquifer and underground in the county.
- Whether the geological base on which the use is to be placed may or may not support such proposed use.
- Whether the proposed use at the proposed site may endanger human health, animal life and plant life in the surrounding area and/or the county in general.
- Whether the proposed use complements, benefits, and is compatible with the surrounding land uses.
- Whether special conditions could be imposed upon the proposed use which would so minimize any adverse impact as to justify the granting of the conditional use permit.

5. The Commission finds that the land located to the north, east, and west of the property is zoned multiuse and the land immediately to the south is zoned agricultural.
6. The Commission finds that the proposed development is in the Gem Herd District and finds that the Applicants are aware that all livestock are required to be fenced in.
7. The Commission finds that 8 neighbors were against the proposed use, 1 neutral, and 2 citizens in support.
8. The Commission finds that the Applicants propose to add amenities to the development such as: a school bus stop, mailbox kiosk, landscaping, stone signage, and a pressurized irrigation system.
9. The Commission finds credible the Applicant's testimony that they are willing to commit to requiring drilling of specialized wells such as a mud rotary drilled wells which helps eliminate ground contamination, and each well will have a full depth seal.
10. The Commission finds credible well logs provided in the application which indicate that the average well depth is approximately 276 feet.
11. The Commission finds credible the well driller's reports provided in the application which reports that out of the 13 well logs pulled from the surrounding area, 7 of those wells are at risk and two wells have already had to be replaced.
12. The Commission finds that the Applicants propose to drill individual wells for each of the 22 lots, which may have an adverse impact on water and water supplies, both surface, and underground.
13. The Commission finds credible the testimony of the Applicants that the traffic study that was done in this area indicated that an additional 220 trips per day will be expected from their proposed development.
14. The Commission finds credible information provided by the Applicant that access for the development would be from Howard Road since the Idaho Transportation Department (ITD) would not grant access directly to the State Highway.

15. The Commission finds credible the testimony of the neighbors that the current intersection of Howard Road and Highway 78 is already hazardous due to the low visibility. The Commission finds that the proposed additional 22 lots would greatly increase traffic.
16. The Commission finds that by reducing the number of lots of the development, traffic would be reduced and could alleviate the need for a turn lane, and reduce some of the added traffic hazards.
17. The Commission finds credible the testimony of the neighbors in the area that 22 additional homes and traffic in this area may create a hazard, nuisance, detriment or other injury to other property in the immediate by increased demand on water, and public services.
18. The Commission finds credible concerns about the adverse impact to public services in the area which are largely run by volunteers. Incidents continue to increase as more people move in and they are not seeing a proportional increase in new volunteers so the volunteer services are being overwhelmed.
19. The Commission finds that from past economic studies, it has been shown that residential developments do not pay their way for the amount of services needed for such developments.
20. The Commission finds credible the testimony of the neighbors in the area that all the additional families in the proposed homes would impact the Marsing School District from increased student population but that by reducing the number of lots, it would lessen that impact and be more consistent with the area, and control development to a more sustainable pace.
21. The Commission finds credible the concerns of neighbors that no CC&Rs were proposed in the application, but also finds credible the Applicant's testimony that if approved, they are willing to put CC&Rs in place to ensure upkeep of the properties.
22. The Commission finds credible the testimony of the neighbors which stated that the density proposed in this development is too high and is inconsistent with the surrounding properties and immediate vicinity in general and is not desirable to the public at the proposed density.
23. The Commission finds that it is in the best interest of the citizens of Owyhee County and the public services we all depend on for this density of development to originate within residential zones, cities, and areas of city impact rather than going further out to edge of the multiuse zone where we plan for lower density development and where it borders the agricultural zone.
24. The Commission finds from testimony in the record that approximately 24 acres of farm ground would be taken out of production if the proposed development was approved as presented.
25. The Commission finds that the subject parcels were rezoned to multiuse zone where some development is expected, but that it would be out of character with the immediate vicinity to develop the fringe of the multiuse zone at the proposed density before the areas between the city and the edge of the multiuse zone are developed.
26. The Commission finds that the density proposed is not consistent with, or compatible with the surrounding land where it was proposed.
27. The Commission finds that the multiuse zone is a transition zone from residential to agriculture and that a reduction of the number of lots would better fit within the multiuse zone and the surrounding area.
28. The Commission finds credible testimony that the average size of residential lots already in this area is generally between 5 - 9 acres.
29. The Commission finds that while they are not opposed to some residential development in this area, the Applicant indicated that they would consider a lower density. The Commission finds six lots would be more appropriate in this area.

CONCLUSION

In consideration of the information provided in the application, the testimony provided at the hearing, and the findings stated above, the Commission concludes that the application should be approved for six (6) residential lots subject to the following special conditions:

SPECIAL CONDITIONS

1. Applicants must recognize, and any future occupant or purchaser of subject parcel must be advised, through recorded marketing disclosure and /or deed restrictions, that any agricultural activity, which is in existence on lands adjoining or in the vicinity of the subject property, may not be considered a nuisance pursuant to the Idaho Right to Farm Act. A signed and recorded Right to Farm affidavit must be provided to the Administrator prior to the issuance of a Certificate of Occupancy.
2. Approval by Southwest District Health Subdivision Engineering Report must be submitted prior to preliminary plat.
3. This decision will be recorded by the Administrator prior to the issuance of a certificate of compliance, recording fee having been included in the application fee.
4. The Applicant must comply with all applicable laws and regulations.
5. All structures, improvements, and construction must be developed according to the approval granted and the presentation given under oath at the public hearing for which the conditional use permit was approved.
6. Any new exterior lighting must be shielded. The bulb shall not be visible below a horizontal plane running through the lowest point of the fixture, and no light shall be emitted from the sides of the fixture.
7. Abandoned and/or junk vehicles, debris, rubbish, or other solid waste will not be allowed to accumulate on the property.
8. A containment area for trashcans must be constructed to minimize the occurrence of wind, animals, or other uncontrollable sources spreading trash to surrounding areas.
9. Applicant will control weeds and pests (including, but not limited to, gophers) on the parcel for which the permit is granted.
10. The subdivision is approved for a maximum of six residential lots.
11. Due to the change in configuration, the platting process will not be allowed to short plat, but shall separately apply for preliminary plat, and then final plat.
12. The Applicants shall work with South Board of Control to get an approved irrigation plan, water users' agreement, and all irrigation easements shall be shown on the preliminary plat.
13. Applicants shall either drill specialized wells such as a mud rotary drilled well or require such drilling via a plat note and marketing disclosure at the sale of each lot.
14. The Applicant shall present a plan for fencing at preliminary plat.
15. A Road users' agreement shall be developed and prescnted at preliminary plat.
16. CC&Rs shall be development and presented at preliminary plat.
17. This conditional use permit will expire twenty-four (24) months from the date the written decision is signed if the preliminary plat application and submittals have not been filed with the Administrator.

ORDER

Conditional use permit Z23-02 filed by Drake & Whitnee Hungate is approved as modified and subject to the conditions set forth in the Conclusion above. Notice is hereby given that the Applicant has a right to request a regulatory taking analysis pursuant to section 67-8003, Idaho Code.

Issued: This 17th day of February, 2023

Chad Nettleton – Acting Chair

Attest: Mary Hauff

Appeal Deadline: March 9th, 2023

Owyhee County, Idaho

RIGHT TO FARM
Disclosure Statement

A. It is the intent of the Legislature of the State of Idaho pursuant to IDAHO CODE Title 22 Chapter 45, RIGHT TO FARM ACT to reduce the loss to the state of its agricultural resources by limiting the circumstances under which agricultural operations may be deemed to be a nuisance.
B. It is the intent of the Owyhee County Board of Commissioners and the Planning and Zoning Commission to uphold, support, and enforce the RIGHT TO FARM ACT.
C. The County of Owyhee fully supports and permits "agricultural operations" as defined in IDAHO CODE 22-4502, Definitions, when operated in accordance with generally recognized agricultural practices which includes conformity with Federal, State, and local laws and regulations and when not adversely affecting public health and safety.

I acknowledge Idaho's RIGHT TO FARM, and I accept the agricultural environment they protect and do agree to live within said environment.

Name: Drake Hungate

Name: Wayne Hungate

Address: 18895 Weitz Rd Caldwell, ID 83607

Legal: Section: 10 Township: 2N Range: 4W

Assessor's Parcel Number: RP02N04W106020, RP02N04W106001

Signature — Date: 6/21/22

Signature: Wayne Hungate — Date: 6/21/22

STATE OF IDAHO, County of Owyhee ss.

On this 21 **day of** June **, 20**22**, before me, the undersigned, a Notary Public in and for said State, personally appeared:**

Drake Hungate / Wayne Hungate

Known or identified to me to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same.

Signature: Laura Johnson
Name: Laura Johnson
Residing at: Owyhee County
My Commission expires: 8/15/2025

LAURA JOHNSON NOTARY PUBLIC Comm. No. 36718 STATE OF IDAHO

STANDARD SPECIAL CONDITIONS

a. Access to the new use must be constructed with an all weather driving surface at least twenty (20) feet wide with a six (6) inch gravel base, graded and compacted, and a turnaround space provided pursuant to the 2012 International Fire Code (Attachment A). Written approval of the access from the local fire district must be provided prior to the issuance of a building permit. If subject property is not within the boundaries of a fire district, the access shall be constructed as previously stated, and approved by the Building Official prior to the issuance of a building permit.

b. Applicants must recognize, and any future occupant or purchaser of subject parcel must be advised, through recorded marketing disclosure and /or deed restrictions, that any agricultural activity, which is in existence on lands adjoining or in the vicinity of the subject property, may not be considered a nuisance pursuant to the Idaho Right to Farm Act. A signed and recorded Right to Farm affidavit must be provided to the Administrator prior to the issuance of a Certificate of Occupancy.

c. Approval by Southwest District Health of the septic system and well site must be submitted prior to the issuance of a certificate of occupancy for the new use.

d. This decision will be recorded by the Administrator prior to the issuance of a certificate of compliance, recording fee having been included in the application fee.

e. The Applicant must comply with all applicable laws and regulations.

f. All structures, improvements, and construction must be developed according to the presentation given under oath at the public hearing for which the conditional use permit was approved.

g. Any new exterior lighting must be shielded. The bulb shall not be visible below a horizontal plane running through the lowest point of the fixture, and no light shall be emitted from the sides of the fixture.

h. Abandoned and/or junk vehicles, debris, rubbish, or other solid waste will not be allowed to accumulate on the property.

i. A containment area for trashcans must be constructed to minimize the occurrence of wind, animals, or other uncontrollable sources spreading trash to surrounding areas.

j. Applicant will control weeds and pests (including, but not limited to, gophers) on the parcel for which the permit is granted.

k. This conditional use permit will expire twenty-four (24) months from the date the written decision is signed if substantial progress toward development of the use permitted by the conditional use permit has not been accomplished or an extension of the life of the permit has been requested prior to the expiration of the permit.

ATTACHMENT A

FIRE APPARATUS ACCESS ROADS

SECTION D101
GENERAL

D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the *International Fire Code*.

SECTION D102
REQUIRED ACCESS

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an *approved* fire apparatus access road with an asphalt, concrete or other *approved* driving surface capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds (34 050 kg).

SECTION D103
MINIMUM SPECIFICATIONS

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).

D103.2 Grade. Fire apparatus access roads shall not exceed 10 percent in grade.

Exception: Grades steeper than 10 percent as *approved* by the fire chief.

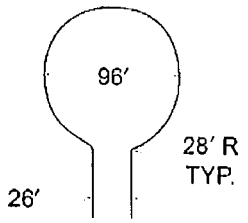
D103.3 Turning radius. The minimum turning radius shall be determined by the *fire code official*.

D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.

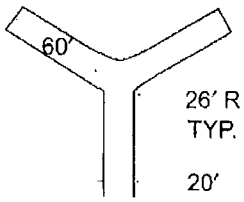
TABLE D103.4
REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0-150	20	None required
151-500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501-750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

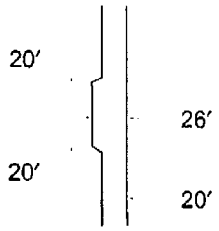
For SI: 1 foot = 304.8 mm.



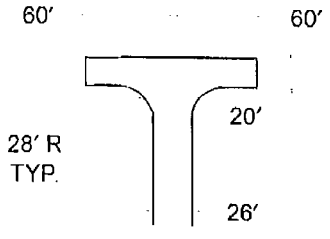
96-FOOT DIAMETER CUL-DE-SAC



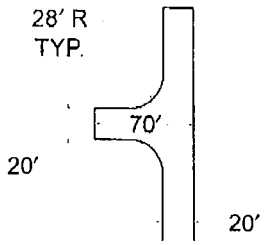
60-FOOT "Y"



MINIMUM CLEARANCE AROUND A FIRE HYDRANT



120-FOOT HAMMERHEAD



ACCEPTABLE ALTERNATIVE TO 120-FOOT HAMMERHEAD

For SI: 1 foot = 304.8 mm.

FIGURE D103.1
DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

DECLARATION

OF

COVENANTS, CONDITIONS, AND

RESTRICTIONS

FOR

OWYHEE HEIGHTS

Notice

THIS DOCUMENT IS A VERY IMPORTANT LEGAL DOCUMENT WHICH EACH AND EVERY POTENTIAL RESIDENT AND OWNER OF AN INTEREST WITHIN THE PROPERTY SHOULD READ AND UNDERSTAND. THIS DOCUMENT DETAILS THE OBLIGATIONS AND RESPONSIBILITIES IMPOSED UPON ALL OWNERS AND OCCUPANTS OF THE PROPERTY.

THE DECLARANT EXPRESSLY DISCLAIMS ANY REPRESENTATIONS, WARRANTIES, STATEMENTS OR INFORMATION NOT SET FORTH HEREIN OR IN ANY WRITTEN DOCUMENT EXECUTED BY DECLARANT. ANY REPRESENTATIONS OR WARRANTIES MADE BY ANY REAL ESTATE BROKER OR AGENT OR OTHER PERSON CONCERNING ANY ASPECT OF THE PROPERTY, INCLUDING THE TOTAL OR TYPE OF EXPENSES TO BE LEVIED AGAINST AN OWNER SHOULD BE DISREGARDED IN THEIR ENTIRETY. IN ALL EVENTS THE TERMS OF THIS DECLARATION SHALL CONTROL.

POTENTIAL RESIDENTS AND OWNERS ARE ADVISED TO REVIEW THIS DECLARATION WITH THEIR LEGAL AND OTHER ADVISORS PRIOR TO ACQUIRING A RESIDENCE INTEREST IN THE PROPERTY.

OWYHEE HEIGHTS

Declaration of Covenants, Conditions and Restrictions

THIS DECLARATION made on the date hereinafter set forth by [Owner Name], [Owner Address], hereinafter refereed to as "Declarant."

WITNESSETH

WHEREAS, Declarant is the Owner of certain real property in Owyhee County, State of Idaho, which is more particularly described as:

Lots 1 through 6, Block 1. See Legal (Exhibit A)

NOW, THEREFORE, Declarant hereby declares that all of the properties described aboe shall be held, sold and conveyed subject to the following easements, restrictions, covenants, and conditions, which are for the purpose of protecting the value and desirability of, and which shall run with, the real property and binding on all parties having any right, title, or interest in the described properties or any part thereof, their heirs, successors, and assigns, and shall inure to the benefit of each owner thereof.

ARTICLE 1 – DEFINITIONS

Section 1. "Owners" shall mean and refer to the recorded Owner, whether on or more persons or entities, of a fee simple title to any Lot which is part of the Properties, including contract sellers, but excluding those having such interest merely as security for the performance of obligation.

Section 2. "Properties" shall mean and refer to that certain real property hereinbefore described.

Section 3. "Lot" shall mean and refer top any plot of land shown upon any recorded Subdivision map of the Properties with the exception of any Common Area, if there is any.

Section 4. "Declarant" shall mean and refer to [Owner Name], his successors and/or assigns if such successors or assigns should acquire more than one undeveloped Lot from the Declarant for their purpose of development.

Section 5. "Architectural Control Committee (ACC)" shall mean and refer to the Declarant, his successors and/or assigns until such time as all Lots have been sold. When the Declarant no longer has interest in a Lot, the ACC shall consist of a minimum of three (3) homeowners elected by a majority of the Lot Owners. The Committee shall have the responsibility of granting or denying all required approvals in writing, and maintaining records of their actions.

ARTICLE 2 GENERAL COVENANTS CONDITIONS AND RESTRICTIONS

Section 1. Homes built in Owyhee Heights must meet or exceed 2,500 square feet of living space and receive written approval from the ACC prior to construction.

Section 2. "Garages" – All homes are required to have a two-car garage area and shall be well constructed of good quality material and workmanship. All houses shall have an enclosed garage with a minimum of 500 square feet of floor area. Side entry garages are encouraged.

Section 3. "Exterior Appearance" – Broken rooflines, gables, hip roofs, etc. are strongly encouraged. Roofs must be of at least 6 in 12 pitch. No Gravel roofs will be allowed. All building exteriors are subject to ACC approval.
Exterior colors of earth tones shall be encouraged for the body of the house. Bright or bold colors or very dark colors shall be discouraged. Dark roof colors are encouraged.

Section 4. "Landscaping" A landscaping plan shall be approved, in writing, by the ACC prior to installation. Landscaping of front yard must be completed within thirty (30) days of substantial completion of home an is to include sod with automatic underground sprinkling system in the front yard, and sprinkling systems in rear yards and pastures. Berms and sculptured planting areas are encouraged. In the event of undue hardship due to weather conditions, this provision may extend for a reasonable period of time. Grass shall be planted in the back yard and pasture, within one year of occupancy. Driveways between the road pavement and the garage apron shall be surfaced with either concrete or asphalt, however rock or gravel may be used as landscaping to provide parking adjacent to driveways.

Section 5. "Fences" – Fences, if desired, shall be of good quality and workmanship and shall be properly finished and maintained. Three rail, white vinyl fences are required. Chain link fences are not allowed except along common areas and/or ditches. All fences shall require prior written approval from the ACC.

Section 6. "Vehicles" – Junk cars or other unsightly vehicles, and like items shall not be allowed on any part of said properties nor on public ways adjacent thereto excepting only within the confines of an approved enclosure. Parking or storage of automobiles or other vehicles on any part of the properties or on any common roadway shall be prohibited in excess of five (5) days, except within garages, carports, or other approved areas. RV's, trailers, stored vehicles, boats, and vehicles larger than standard family cars, vans, or pickup trucks shall be kept a minimum of 10 feet behind the front corner of the house of garage.

Section 7. "Animals" – Keeping or raising of farm animals shall be limited to horses, cattle, sheep, lamas, or poultry. All other type animals must receive association approval before being brought to the property.
All animals kept on a Lot must be adequately cared for and adequately fenced so as not to annoy or trespass upon the use of the property of others.

Section 8. "Setbacks" – No building shall be located on any Lot nearer than fifty (50) feet from any property line and all other setbacks as per county regulations. The recorded Solar Covenants for the subdivision may determine additional setbacks.

Section 9. "Additional Easements" – In addition to the easements shown on the recorded plat, an easement is further reserved five (5) feet on each side of all other Lot lines for installation and maintenance of utilities, irrigation, and drainage.
Within these easements no structure, planting, or other material shall be placed or permitted to remain which may damage, or interfere with the installation and maintenance of utilities or roads, or which may change the direction of the flow of the water through drainage channels in the easements. The easements area of each Lot and all improvements in it shall be maintained continuously by the Onwers of the Lot, except for those improvements for which a public authority or utility is responsible.

Section 10. "Construction Time" – Construction of any residence in the subdivision shall be diligently pursued after commencement thereof, to be completed within twelve (12) months. All improvement projects such as fencing, landscaping, etc. shall be approved by the Architectural Committee in writing and completed in a predetermined time frame.

Section 11. "Type of Residence" – No shack, tent, trailer house, or basement only house shall be used within the Subdivision for living quarters, permanent or temporary.

Section 12. "Outbuildings" – All outbuildings shall be constructed of quality building materials, finished on the outside with the same siding and roof as existing house and shall be of quality and character that will be in harmony with the other buildings on said properties. Temporary structures such as tents or other canvas buildings shall be limited to use for seven (7) days, with the exception of quality manufactured patio shade canopies. No building shall be moved onto the premises without association approval.

Section 13. "Offensive Items" – As defined by the Architectural Committee, nothing of an offensive, dangerous, odorous, or noisy endeavor shall be conducted or carried on, nor shall anything be done or permitted in said Subdivision which may be or become an annoyance or nuisance to the other property Owners in said Subdivision.

Section 14. "Conducting Business on Properties" – No business shall be conducted on the above properties that cannot be conducted within the residence of the Owner as permitted by law. No signs shall be installed to advertise said business. No oil exploration or development of any nature or kind of mining exploration, development or structure shall be permitted upon the premises of this Subdivision.

Section 15. "Irrigation Water" – This subdivision has pressurized irrigation water for irrigating outside landscaped areas. This pressurized water is NOT potable, drinkable, and does NOT meet safe drinking water standards established from time to time by federal, state, and/or local governments.
The Owyhee Heights irrigation system is privately owned and operated by the Owyhee Heights Water Users Association. Each Lot owner shall be a member of said Association and by acceptance of a deed to a Lot, covenants and agrees to pay when due assessments levied to provide for all costs related to the maintenance and operation of said irrigation system.

Section 16. "Sewer Locations" – All bathrooms, sink, and toilet facilities shall be located inside the dwelling house or other suitable appurtenant building and shall be connected by underground pipe to a septic system which shall be installed in compliance with all local building codes and maintained by the Lot owner.

Section 17. "Signs" – No signs of any kind shall be displayed to public view on any building or building site on said Properties except a professional sign of not more than five (5) square feet advertising the property for sale or rent by an Owner to

advertise the property. If a property is sold or rented, an ysign relating thereto shall be removed immediately, except that a "sold" sign may be posed for a reasonable period following the sale. Notwithstanding any provisions to the contrary, the Declarant may display signs of any size and dimension, without limitation thereto, for Subdivision identification.

Section 18. "Waste Disposal" – No Lot or building site included within the Subdivision shall be used or maintained as a dumping ground for waste material, incinerators are not permitted. Receptacles for storage of trash, garbage, etc. shall be manufactured for that purpose and maintained in a neat, sanitary, and clean condition.

Section 19. "Construction Equipment" – No machinery, building equipment, or materials shall be stored upon site until the Builder is ready and able to immediately commence construction. Such building materials must be kept within the property line of such building site upon which the structure is to be constructed.

Section 20. "Damage to Improvements" - It shall be the responsibility of the Builder of any residence in the Subdivision to leave street curbs, sidewalk, fences, tiled irrigation lines, if any, and utility facilities free of damage and in good condition at the conclusion of the construction period. It shall be conclusively presumed that all such improvements are in good condition at the time building is begun on each Lot unless contrary is shown in writing on the date of conveyance or by date of possession, whichever date shall first occur. Such notices shall be addressed to the Declarant.

Section 21. "Architectural Approval" – All house plans and other substantial improvements or changes to landscaping or the exterior of a structure, must have architectural approval prior to the start of construction or demolition.

Article 3 GENERAL PROVISIONS

Section 1."Enforcement" – Enforcement against any person or persons violating or attempting to violate any covenant hereafter ten (10) days notice thereof in writing, served on the offending party, shall be had by an Lot owner/s either at law or equity. In the event of a judgment against any person for such, the Court may award injunction against any person for such violation, require such compliance as the Court deems necessary, award such damages, reasonable counsel fees, and Court costs as may be suffered or incurred, and such other or further relief as may be deemed just and equitable.
Any Owner, shall have the right to enforce, by proceeding at law or in equity all restrictions, conditions, covenants, reservations, liens, and charges now or thereafter imposed by the provision of the Declaration. Failure by any Owner to enforce any covenant or restriction herein shall in no event be deemed a waiver of the right to do so thereafter or effect the enforceability of any other covenant or restriction herein.

Section 2."Severability" – Invalidation of any one of these covenants or restrictions by judgment or Court order shall in no way affect any other provisions, which shall remain in full force effect.

Section 3."Amendment" – This Declaration may be amended by the Declarant until a lot has been sold to an Owner. Following that period, amendment shall be by an instrument signed by not less than sixty seven (67%) of the Lot Owners. Any amendment must be recorded with the County.

Section 4."Time Extension of Covenants" – The covenants set forth in this instrument shall run with the land and shall be binding on all persons owning a Lot(s) under them for a period of thirty (30) years from the date of this recording thereof, after which time such covenants shall be automatically extended for successive periods of ten (10) years, unless at any time after the initial recording of this instrument signed by sixty seven (67%) of the Lot Owners of this Subdivision has been recorded agreeing to terminate said covenants in whole or in part.

ARTICLE 4 DECLARATIONS

Section 1. "Right to Farm" – The Declarant and Lot Owners recognize that the Subdivision is subject to Sections 22-4501, 22-4502, 22-4503, & 22-4504, of the Idaho Code, "RIGHT TO FARM ACT" which is intended to reduce the loss to the state of its agricultural resources by limiting the circumstances under which agricultural operations may be deemed to be a nuisance.

Section 2. "Well Construction Standards" All water wells drilled within the boundaries of the Subdivision must adhere to industry-standard techniques to ensure proper water flow, safety, and compliance with state and local regulations. The preferred and required method for well drilling is **mud rotary drilling**, due to its effectiveness in maintaining borehole stability, preventing collapse, and ensuring accurate well placement.

ARTICLE 5 Assessments

Section 1."Covenant to Pay Assessments" – Each Owner hereby, and by acceptance of a deed to a Lot, covenants and agrees to pay when due all Initial, Regular, Special, and Limited Assessments and other charges made by the Association of which the Owner is a Member.

Section 2."Initial Assessment" A one time assessment in the amount of $[Insert Amount] shall be assessed a the time the Grantor transfers title to the initial Lot Owner.

Section 3."Regular Assessments" – Regular Assessments of $[Insert Amount] shall be assessed on an annual basis, to be used for the purpose of conducting the normal business of the Association, including the maintenance of any common property. The Association shall have the authority to increase the regular assessment by no more than ten (10%) annually. The regular assessment may be increased over ten (10%) by a sixty seven (67%) majority vote of all Owners.

Section 4."Special Assessments" – In addition to Regular Assessments, the Association may levy at any time a Special Assessment payable over such period as the Association may deem appropriate for the purpose of providing for the cost of any maintenance or reconstruction of improvements to common areas or to cure a default in common and ordinary expenses of the Association for which regular assessments are inadequate.

Section 5."Limited Assessments" – In addition to Regular and Special Assessments, the Association shall have the authority to levy a Limited Assessment to cover any cost to the Association for the correction of a violation to the Covenants, Conditions, and Restrictions, or for other fees or fines limited to a specific Owner as determined by the Association. Such assessments shall not be made until the Owner in violation is given notice and allowed a reasonable amount of time to correct said violation, or is given opportunity for a hearing concerning said assessment.

IN WITNESS WHEREOF, the undersigned has duly executed this Declaration effective as of the date first set forth above.

DECLARANT: _____

Date: _____

STATE OF IDAHO)
) ss.
County of Owyhee)

On this _____ day of _____, _____ before me, the undersigned, a Notary Public in and of the State of Idaho, personally appeared _____, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

_____
Notary Public for Idaho
Residing at: _____

My commission expires: _____

Exibhit A

Owyhee Heights Road Users Association

Road User Agreement

This Road User Agreement ("Agreement") is established for present and future lot owners ("Members") of the Owyhee Heights Road Users Association ("Association"), an unincorporated non-profit association located in Owyhee County, Idaho. The purpose of this Agreement is to manage the maintenance, repair, and usage of private roads within the subdivision.

This Agreement is binding upon all Members as of the effective date below and shall remain binding on their heirs, successors, and assigns in perpetuity.

Article I: Road Maintenance and Repair

1. **Shared Responsibility**: Members agree to share the costs of maintaining and repairing private roads within the subdivision.
2. **Scope of Maintenance**:
    - Regular grading, graveling, and snow removal.
    - Repairing potholes, erosion damage, and other wear and tear.
    - Maintaining drainage systems and culverts to ensure road longevity.
3. **Exclusions**: This Agreement does not cover maintenance of individual driveways or other property outside of the designated private road system.

Article II: Financial Obligations

1. **Annual Dues**: Members shall pay annual dues sufficient to cover:
    - Regular maintenance and repair costs.
    - Reserve funds for major road repairs or unexpected damage.
2. **Apportionment**: Dues shall be apportioned based on:
    - [Option 1] Equal shares per lot.
    - [Option 2] Lot acreage as a percentage of the total subdivision acreage.

- The chosen method of apportionment shall be determined by a majority vote of Members.

3. **Payment Schedule**: Dues shall be payable no later than **[Insert Deadline],** with late payments subject to penalties as determined by the Association.
4. **Special Assessments**: Additional funds may be assessed as needed for extraordinary repairs, subject to a majority vote of Members.

Article III: Road Usage Rules

1. **Speed Limits**: Members and their guests shall adhere to a speed limit of [Insert Speed] mph on private roads to minimize wear and ensure safety.
2. **Vehicle Restrictions**:
   - Heavy vehicles (e.g., construction equipment) may require prior approval from the Association.
   - Members are responsible for any road damage caused by vehicles exceeding weight limits.
3. **Right of Way**: All users shall respect the right of way and use the roads in a manner that promotes safety and cooperation.
4. **Liability**: Members agree to indemnify and hold the Association harmless from any claims arising from their use of the private roads.

Article IV: Meetings and Voting

1. **Regular Meetings**: The Association shall hold an annual meeting to address road management, financial obligations, and other matters. Additional meetings may be called as needed.
2. **Voting Rights**: Each Member's vote is weighted based on:
   - [Option 1] One vote per lot.
   - [Option 2] Lot acreage relative to the total subdivision acreage.
   - The chosen voting method shall be determined by the initial vote upon adoption of this Agreement.

3. **Quorum**: A quorum for any meeting shall consist of Members representing at least [Insert Percentage]% of the total voting rights.

Article V: Enforcement

1. **Compliance**: Members agree to comply with this Agreement and any rules or regulations established by the Association.
2. **Penalties**: Failure to comply with the terms of this Agreement, including non-payment of dues, may result in:
    - Suspension of road usage privileges.
    - Liens placed on the offending lot.
    - Other remedies as determined by the Association.
3. **Dispute Resolution**: Disputes may be submitted to a vote of the Members or resolved through mediation, with the decision being final unless otherwise provided by law.

Article VI: Amendments

This Agreement may be amended by a majority vote of Members, with votes apportioned according to the chosen voting method.

Signatures

By signing below, each Member agrees to abide by the terms of this Agreement and to bind their property to the same in perpetuity:

Effective Date: [Insert Date]

Member Name: _____
Lot Number: _____
Acreage: _____
Signature: _____

(Repeat for all Members)

Association Representative Acknowledgment

Representative Name: _____

Signature: _____

Owyhee Heights Water Users Association

Water Users Agreement

This Water Users Agreement ("Agreement") is established for present and future lot owners ("Members") of the Owyhee Heights Water Users Association ("Association"), an unincorporated non-profit association located in Owyhee, Idaho, for the purpose of managing water usage within the subdivision.

This Agreement is binding upon all Members as of the effective date below.

This Agreement is subject to Idaho State Law and the policies of the South Board of Control (Also known as Gem Irrigation District).

Article I: Water Rotation Manager

1. **Appointment**: The Association shall elect a Water Rotation Manager who will serve as the point of contact with the Enterprise Ditch Company.
2. **Election**: The Water Rotation Manager shall be elected by a majority vote of Members, with votes apportioned by lot acreage as a percentage of the total subdivision acreage. Elections will occur annually at the Association's regular meeting.
3. **Duties and Authority**:
    - The Water Rotation Manager shall have the authority and responsibility to call for water delivery from Enterprise Ditch and to cease water delivery as needed.
    - The Water Rotation Manager shall adjudicate disputes concerning water rotation and may enforce limitations to ensure compliance with this Agreement.

Article II: Water Usage

1. **Proportional Sharing**: Members agree to share the costs of operating and maintaining the subdivision's irrigation system in proportion to their lot acreage.
2. **Individual Responsibility**: Each lot owner is solely responsible for their on-site irrigation system, which is outside the scope of this Agreement.
3. **Water Allocation**:
    - Members shall use only the water appurtenant to their respective lots, unless they agree to rotate water usage according to an agreed schedule by a majority vote.
    - In the event of a dispute concerning water rotation, the Water Rotation Manager has the authority and responsibility to make the final decision.

4. **Binding Nature**: This Agreement shall be binding on all lot owners and their heirs, successors, and assignees in perpetuity.

Article III: Financial Obligations

1. **Annual Dues**: Members shall pay annual dues sufficient to cover:
    - Annual water assessments to the Enterprise Ditch Company.
    - Maintenance and repair of the subdivision irrigation infrastructure.
    - Other necessary expenses as determined by the Association.
2. **Apportionment**: Votes and dues shall be apportioned based on each lot's acreage as a percentage of the total subdivision acreage.
3. **Payment Schedule**: Dues shall be payable no later than February 15th, with late payments subject to penalties as determined by the Association.

Article IV: Meetings and Voting

1. **Regular Meetings**: The Association shall hold an annual meeting to address water management, financial obligations, and other matters. Additional meetings may be called by the Water Rotation Manager.
2. **Voting Rights**: Each Member's vote is weighted based on their lot acreage relative to the total subdivision acreage.
3. **Quorum**: A quorum for any meeting shall consist of Members representing at least 51% of the total subdivision acreage.

Article V: Enforcement

1. **Compliance**: Members agree to comply with this Agreement and the Water Rotation Manager's directives.
2. **Penalties**: Failure to comply with the terms of this Agreement, including non-payment of dues, may result in:
    - Suspension of water delivery to the offending lot.
    - Other remedies as determined by the Association up to and including Civil action.

Article VI: Amendments

This Agreement may be amended by a majority vote of Members, with votes apportioned by lot acreage.

Signatures

By signing below, each Member agrees to abide by the terms of this Agreement and to bind their property to be subject to the same in perpetuity:

Effective Date:_____

Member Name: _____

Lot Number: _____

Acreage: _____

Signature: _____

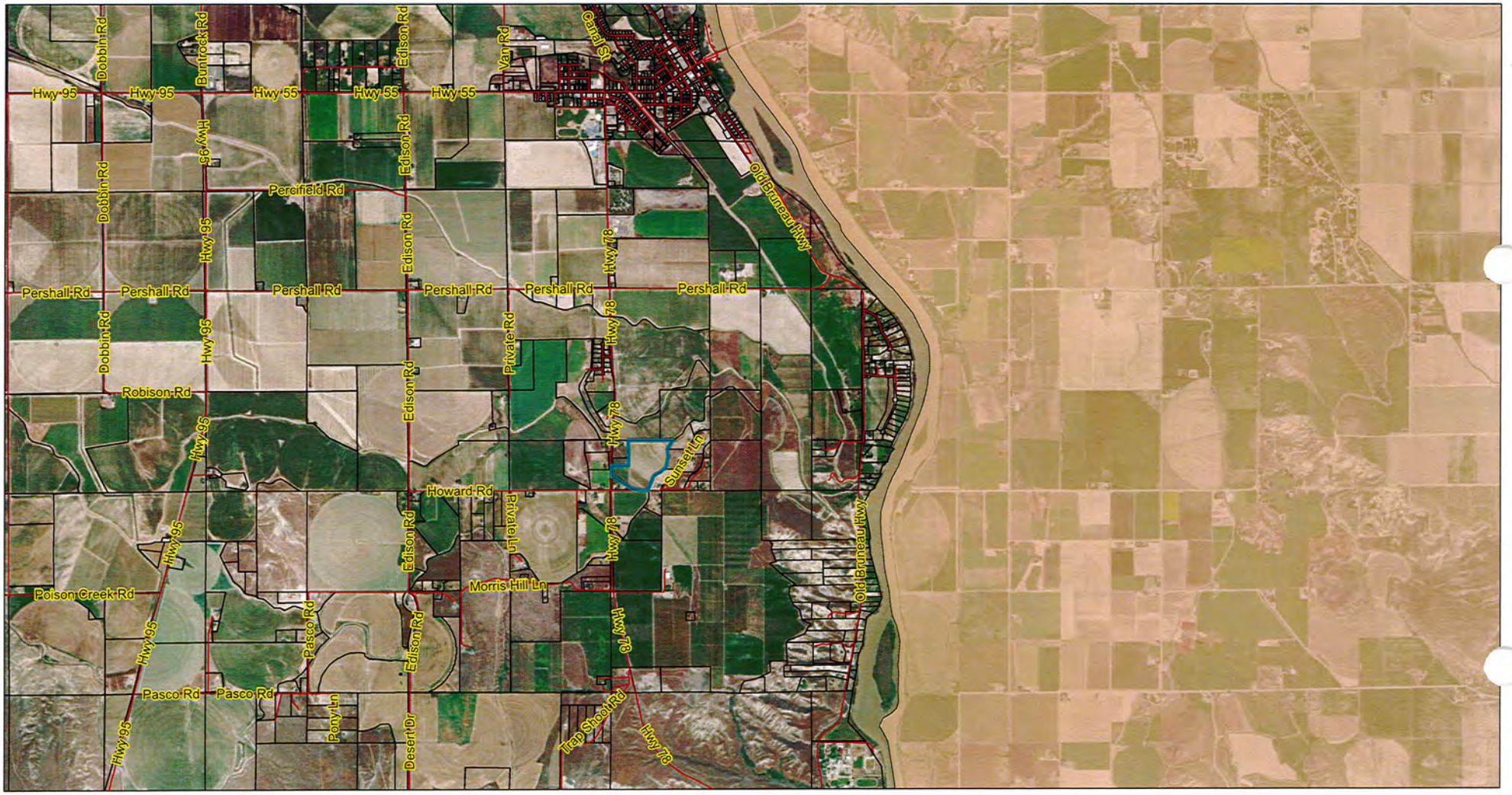
Water Rotation Manager Acknowledgment

Water Rotation Manager Name: _____

Signature: _____

Date: _____

ArcGIS Web Map



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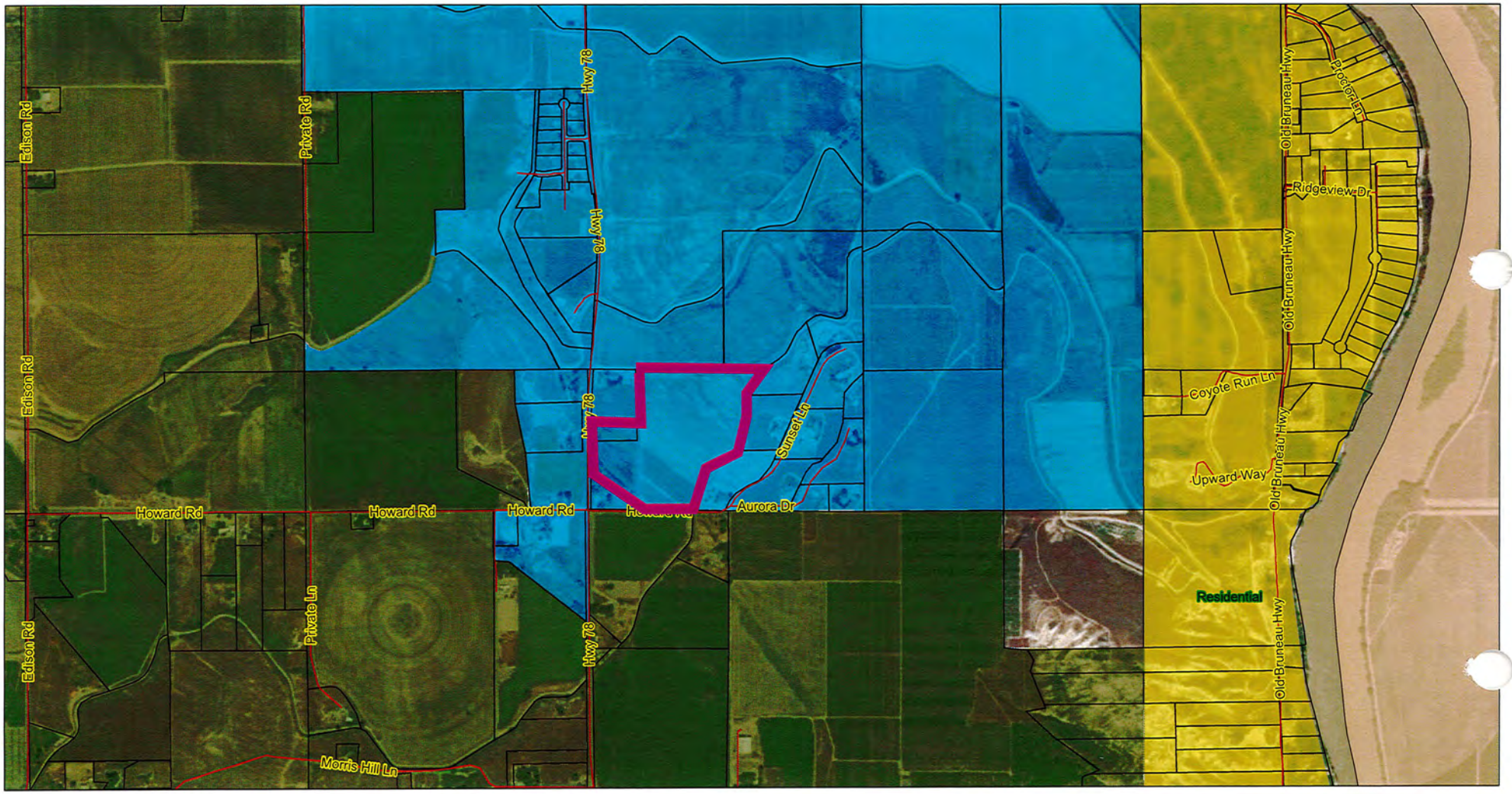
ArcGIS Web Map



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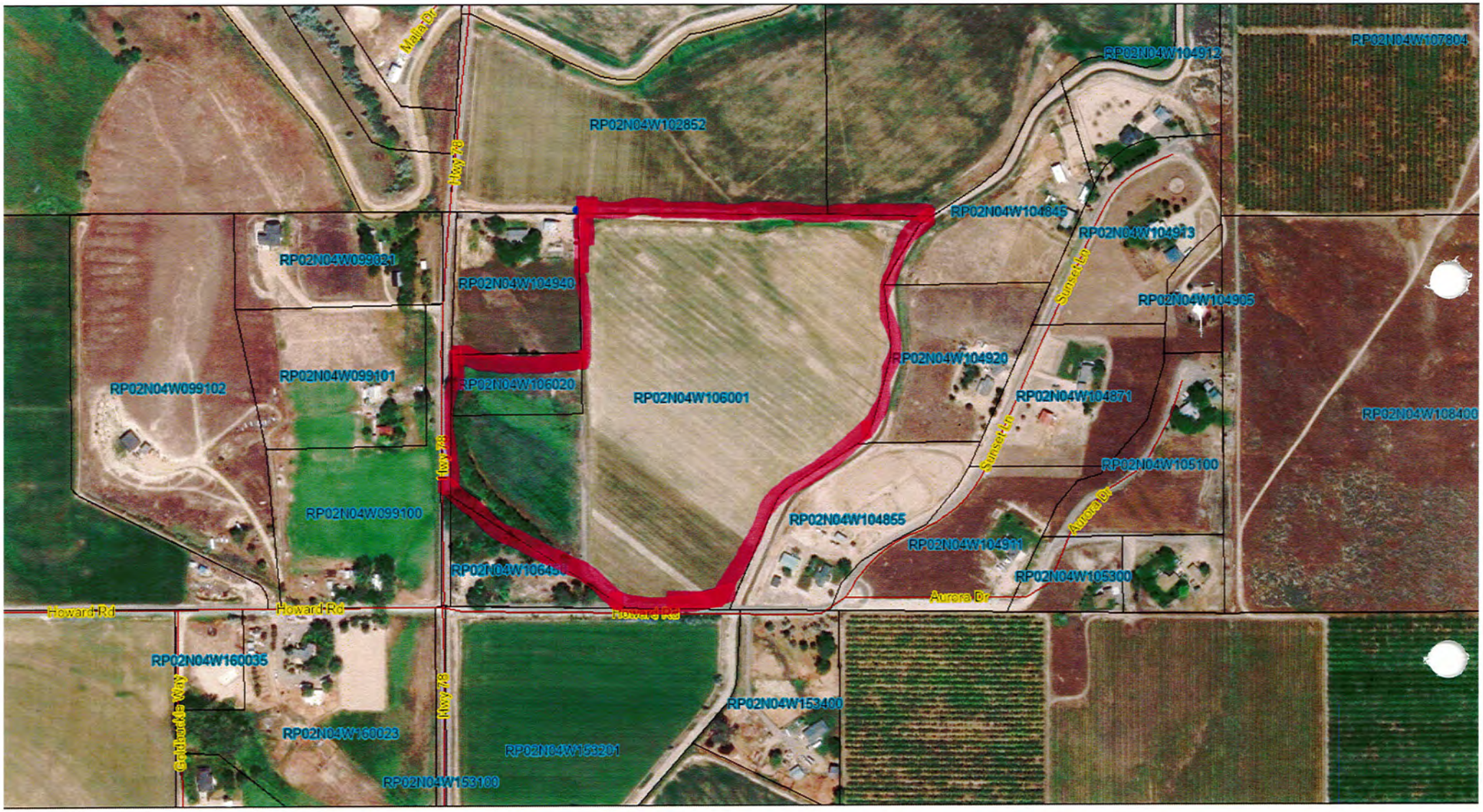

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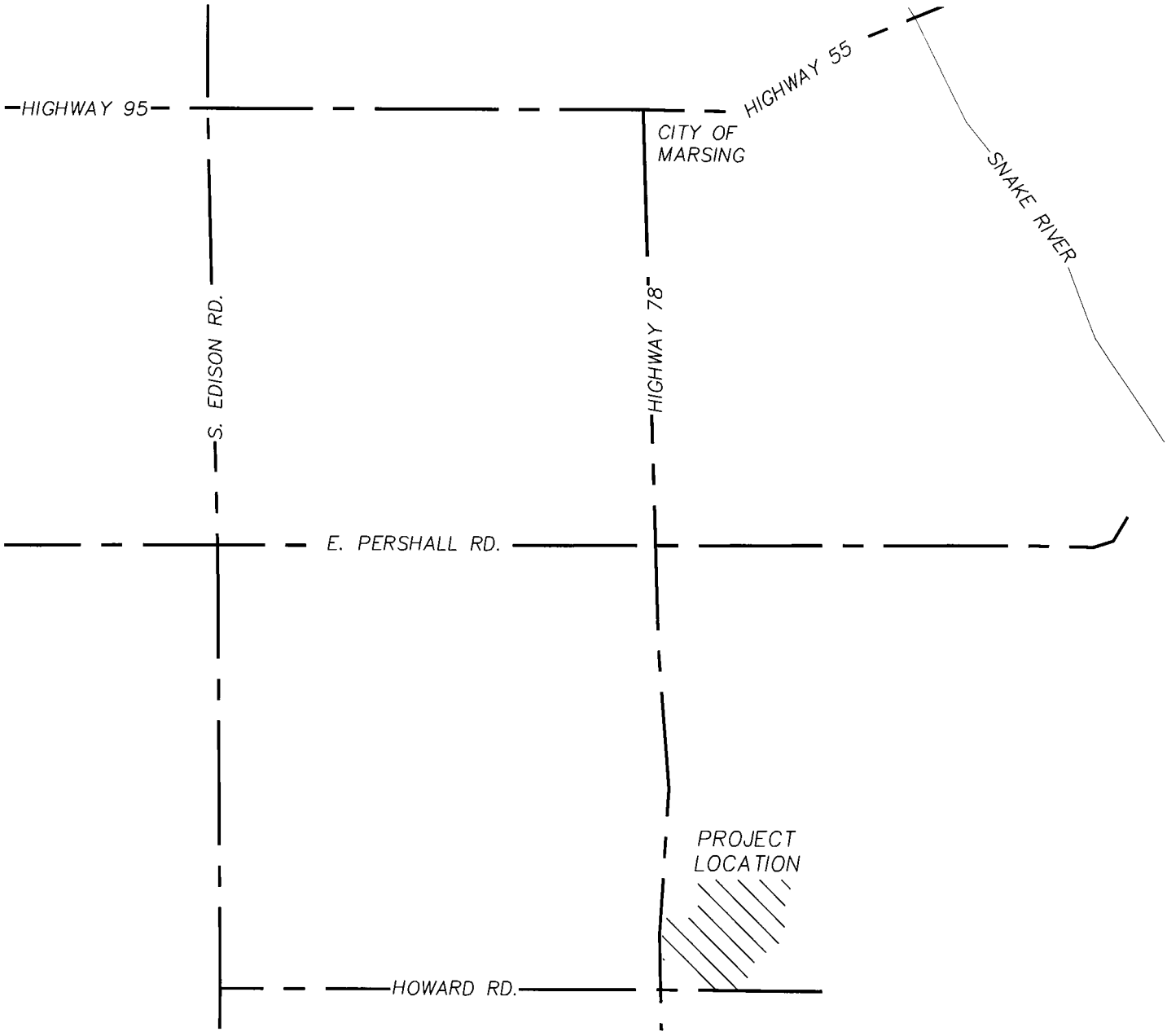
VICINITY MAP



OWYHEE HEIGHTS

VICINITY MAP

Mason & Associates
Professional Engineers, Land Surveyors & Planners
924 3rd St South Nampa ID 83651
(208) 454-0256

JOB NO.	OC1420
DWG NO.	OC1420:PP
SCALE:	1"=2000'
REV.	△
FIELD BOOK NO.	
DRAWN BY:	AMC
DATE:	01/13/25

Mason & Associates Inc.
Professional Engineers, Land Surveyors and Planners
924 3rd St So. Nampa, ID 83605
Ph (208) 454-0256

SUBDIVISION ENGINEERING REPORT

FOR

OWYHEE HEIGHTS SUBDIVISION

Located in a Part of the SW1/4 SW1/4 and a Portion of the SE1/4 SW1/4 of Section, T. 2 N., R. 4 W., B.M., OWYHEE COUNTY IDAHO, 2025

JOB # OC1420:PP

January 30, 2025

Description of Project

Owyhee Heights Subdivision is located in Owyhee County, Idaho, southwest of the City of Marsing.

The property is a part of a portion of the SW1/4 SW1/4 AND A PORTION OF THE SE1/4 SW1/4 OF SECTION 10, T. 2 N., R. 4 W., B.M., Owyhee County Idaho.

The Owner is Whitnee Hungate: 18895 Weitz Road, Caldwell, Id 83607, (208) 720-3301.

The Area of the subdivision is approximately 10.57 acres.

Six (6) single-family residential lots are proposed. Each lot will be 1.51 acre minimum. Current Land use designated Multi-Use. Lot 1 is a common lot providing road access into the subdivision and will have a road user agreement.

Informational Plat Map

A copy of the Informational Plat Map is attached. The map contains the elements required by Southwest District Health Department.

Specifications and maps (8-1/2x11) of each individual lot are attached.

Test Holes

Groundwater was not encountered during the soil classification evaluation. Three soil evaluations were conducted on shared Lot boundaries for six systems.

Test hole numbering and lot numbering is as follows: TH# 1 corresponds to Lot 2 & 3 Block 1.
TH# 2 corresponds to Lot 4 & 5 Block 1.
TH# 3 corresponds to Lot 6 & 7 Block 1.

Soils encountered in the selected test pits were judged to be suitable for treatment and disposal of effluent in accordance with the Technical Guidance Manual for Individual and Subsurface Sewage Disposal Systems.

A Level 1 Nutrient Pathogen evaluation by Bowen Collins & Associates is attached. The evaluation concluded 65% nitrate reducing septic systems be used.

Soil profiles are included on the Information Map and on the individual maps.

A copy of the NRCS soil map and descriptions are attached.

As shown on the attached maps, adequate area will exist for primary and replacement systems. A 25' separation (Piped GI Line) is shown where required from adjacent irrigation features around the development site.

In the event the owner or contractor desires to construct the septic drainfield in a different location than the test pit(s) provided for each lot, additional test pits may be required by the Health District to verify the soil and/or groundwater conditions for that location.

Community or Central Subsurface Sewage Disposal System

This is not applicable to this project.

Wells (individual)

As demonstrated on the informational plat map, each lot meets the recommended setbacks for existing wells and planned individual wells.

At this time, there appears to be adequate supply of groundwater to meet the domestic needs of the lots in the subdivision. Additional demand should not adversely affect the existing groundwater table.

Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) has been suspended. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of contaminants at Southwest District Health Department.

Public Water Systems (community & non-community)

This is not applicable to the project.

Other Items as Needed

Location of proposed development site is within the 2020 Nitrate Priority Area. Bowen Collins & Associates have provided a level 1 nutrient pathogen evaluation. The draft of this evaluation is attached. It was noted that a 65% nitrate reducing septic system is recommended for lots 2 through 6. Lot 7 is the only lot that may be able to use a standard septic system and remain within the guidelines of the Idaho Department of Environmental Quality (IDEQ). The evaluation will be finalized after IDEQ and SWDH have reviewed and commented on the appropriate septic system for subdivision approval.

At the time of this report, no known hazards to safety (abandoned mine shafts, chemicals, nearby landfills, etc...) exist onsite nor are they known to have historically existed onsite.

STANDARD TRENCH

Designated Areas: **OWYHEE HEIGHTS SUBDIVISION – Lot 2 Block 1**
Test Pits: **T.H. No. 1, See attached Septic Drainfield Placement Map**

Soil Design Subgroup: **B-2,**
0.45 GPD/ft2

Depth to normal high groundwater from existing ground surface >10.0

SIZING REQUIREMENTS:

Depth of system: In accordance with the technical guidance manual. Over excavate to a depth of 8' and backfill with ASTM-C33 sand back to 4' depth below ground surface.

Number of bedrooms: **Three (3) single family residential @ 250 gpd/unit.**

Total area: **556 square feet**

Number of bedrooms: **Four (4) single family residential @ 300 gpd/unit.**

Total area: **667 square feet**

The finished grade of gravel over the drain pipe shall be covered with geotextile or an equivalent as shown in the "Technical Guidance Manual".

SEPTIC TANK SIZE REQUIREMENTS:

Nitrate reducing system: **65%**
Minimum Liquid Capacity: **1,000 gallons**
Number of bedrooms per lot: **Three (3) or Four (4)**

*Provide for 250 gallon additional liquid capacity for the equivalent of bedrooms numbering more than four (4)

*Notes:

1. Any system serving residences of more than four (4) bedroom single family homes shall have drainfields sized in accordance with the requirements listed under Area Requirements and Total Trench Lengths for Standard Subsurface Sewage Disposal Systems of the Technical Guidance Manual.

2. Restrictions by SWDH: "Lots shall not be reduced in size without prior approval from SWDH."

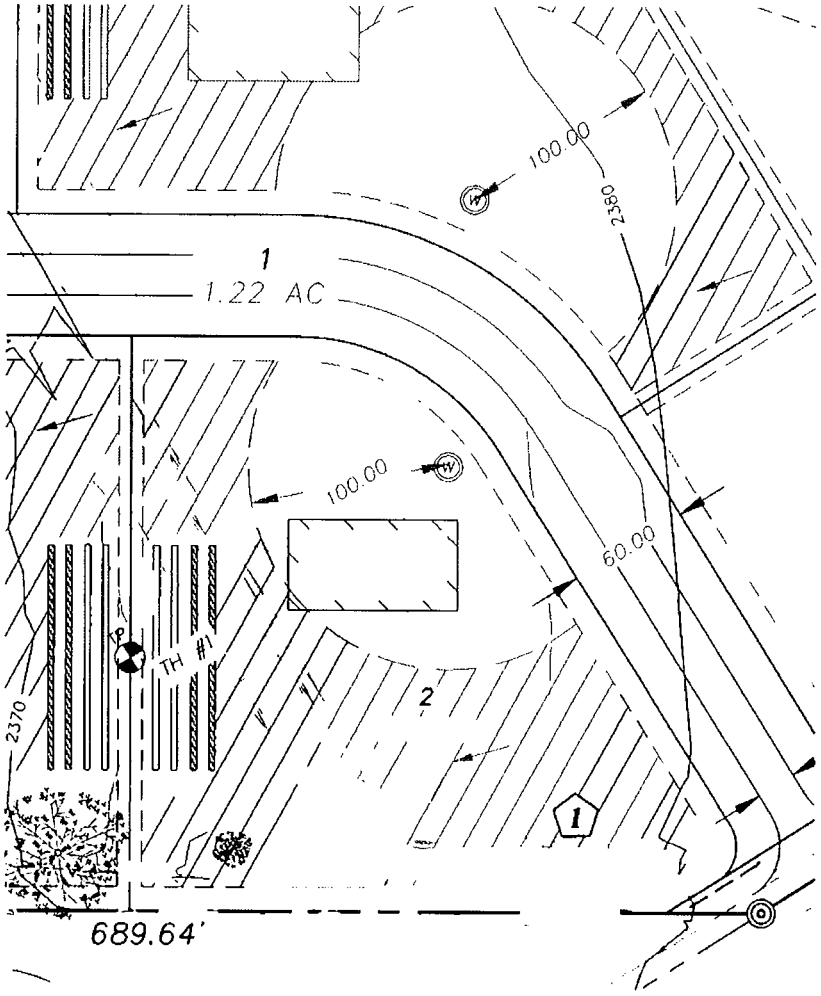
3. Alternative systems described in the Technical Guidance Manual and approved by the Southwest District Health Staff may be utilized.

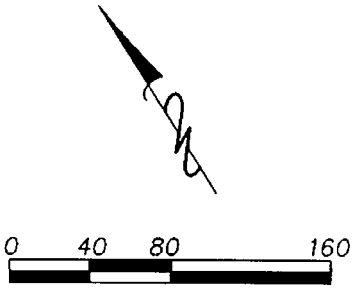
4. If hard pan is encountered excavate through hard pan layers and backfill to design depth with ASTM C-33 sand.

5. **All wells must be located a minimum of 100 feet from septic drainfields, and a minimum of 50 feet from septic tanks.**

6. **Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report, water quality in aquifers in the project vicinity is generally good, with some limitations. Testing data for wells located adjacent to the proposed development, as reported by the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) are attached. Nitrate levels in these wells tested above the MCL. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of arsenic and other contaminants at Southwest District Health Department.**

WELL & SEPTIC AREA PLACEMENT





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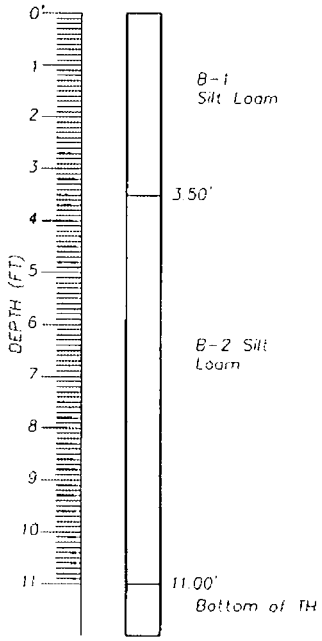


TEST HOLE

TH#1 L2B1

LEGEND

- CONTOUR LINE
- AVAILABLE SEPTIC SYSTEM AREA
- 100' WELL SETBACK
- DIRECTION OF SLOPE
- TP — TEST HOLE
- W — PROPOSED WELL
- PRIMARY SEPTIC SYSTEM
- REPLACEMENT SEPTIC SYSTEM

OWYHEE HEIGHTS SUBDIVISION

LOT 2 BLOCK 1 WELL & SEPTIC AREA PLACEMENT

Mason & Associates
Professional Engineers, Land Surveyors & Planners
924 3rd St. South Nampa ID 83651
(208) 454-8206

JOB NO. OC1420			
DWG NO. OC1420SEPTIC			
SCALE: 1" = 80'			REV
FIELD BOOK NO.			
DRAWN BY:	DATE:	SHEET	
AMC	01/13/25	3 of 3	

STANDARD TRENCH

Designated Areas: **OWYHEE HEIGHTS SUBDIVISION – Lot 3 Block 1**
Test Pits: **T.H. No. 1, See attached Septic Drainfield Placement Map**

Soil Design Subgroup: **B-2,**
0.45 GPD/ft2

Depth to normal high groundwater from existing ground surface >10.0

SIZING REQUIREMENTS:

Depth of system: In accordance with the technical guidance manual. Over excavate to a depth of 8' and backfill with ASTM-C33 sand back to 4' depth below ground surface.

Number of bedrooms: **Three (3) single family residential @ 250 gpd/unit.**

Total area: **556 square feet**

Number of bedrooms: **Four (4) single family residential @ 300 gpd/unit.**

Total area: **667 square feet**

The finished grade of gravel over the drain pipe shall be covered with geotextile or an equivalent as shown in the "Technical Guidance Manual".

SEPTIC TANK SIZE REQUIREMENTS:

Nitrate reducing system: **65%**
Minimum Liquid Capacity: **1,000 gallons**
Number of bedrooms per lot: **Three (3) or Four (4)**

*Provide for 250 gallon additional liquid capacity for the equivalent of bedrooms numbering more than four (4)

*Notes:

7. Any system serving residences of more than four (4) bedroom single family homes shall have drainfields sized in accordance with the requirements listed under Area Requirements and Total Trench Lengths for Standard Subsurface Sewage Disposal Systems of the Technical Guidance Manual.

8. Restrictions by SWDH: "Lots shall not be reduced in size without prior approval from SWDH."

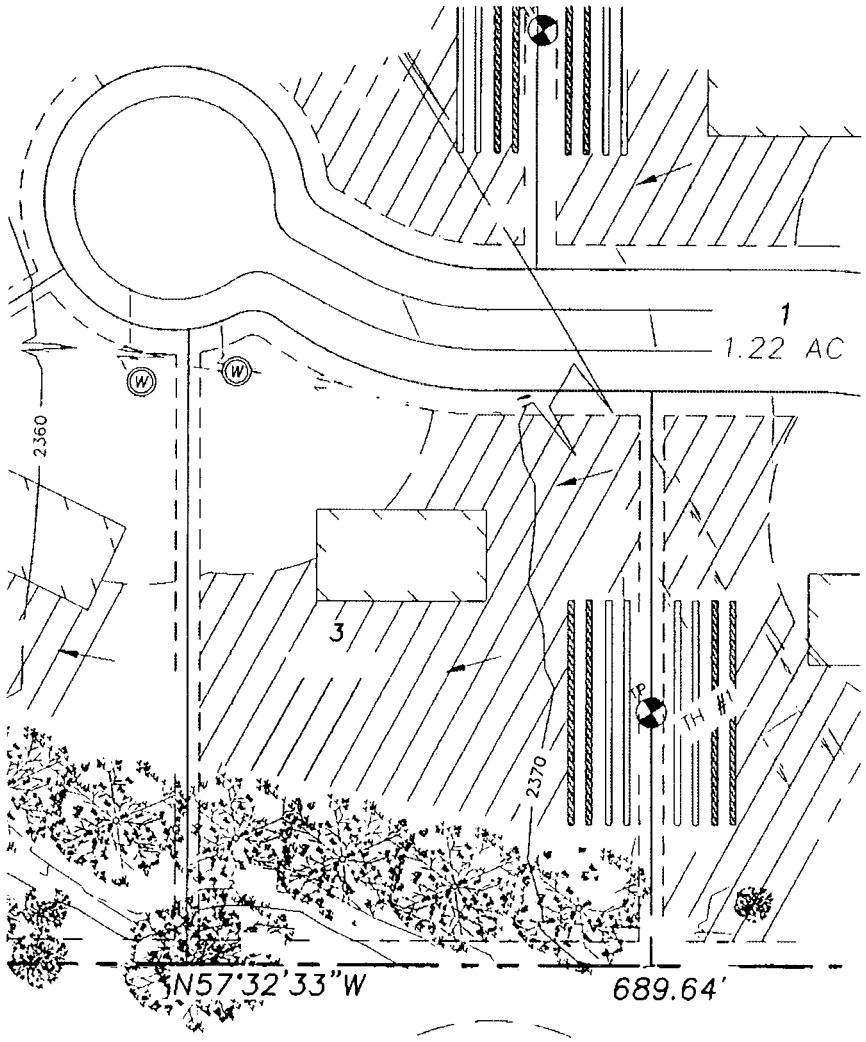
9. Alternative systems described in the Technical Guidance Manual and approved by the Southwest District Health Staff may be utilized.

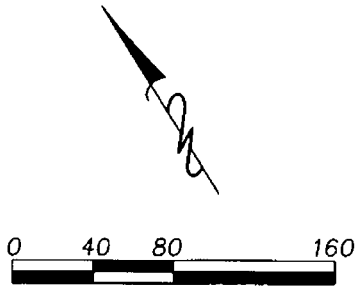
10. If hard pan is encountered excavate through hard pan layers and backfill to design depth with ASTM C-33 sand.

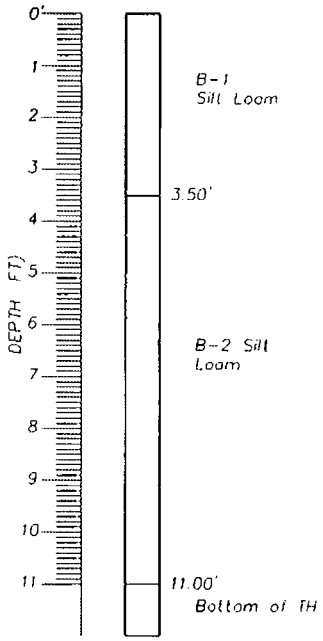
11. **All wells must be located a minimum of 100 feet from septic drainfields, and a minimum of 50 feet from septic tanks.**

12. **Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report, water quality in aquifers in the project vicinity is generally good, with some limitations. Testing data for wells located adjacent to the proposed development, as reported by the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) are attached. Nitrate levels in these wells tested above the MCL. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of arsenic and other contaminants at Southwest District Health Department.**

WELL & SEPTIC AREA PLACEMENT







TEST HOLE

TH#1 L3B1

LEGEND

- CONTOUR LINE
- AVAILABLE SEPTIC SYSTEM AREA
- 100' WELL SETBACK
- DIRECTION OF SLOPE
- TP — TEST HOLE
- W — PROPOSED WELL
- PRIMARY SEPTIC SYSTEM
- REPLACEMENT SEPTIC SYSTEM

OWYHEE HEIGHTS SUBDIVISION

LOT 3 BLOCK 1 WELL & SEPTIC AREA PLACEMENT

Mason & Associates
Professional Engineers, Land Surveyors & Planners
921 3rd St. South Nampa ID 83651
(208) 454-0256

JOB NO.	OC1420
DWG NO.	OC1420SEPTIC
SCALE:	1" = 80'
REV.	
FIELD BOOK NO.	

DRAWN BY:	DATE:	SHEET
AMC	01/13/25	3 of 3

STANDARD TRENCH

Designated Areas: **OWYHEE HEIGHTS SUBDIVISION – Lot 4 Block 1**
Test Pits: **T.H. No. 2, See attached Septic Drainfield Placement Map**

Soil Design Subgroup: **B-1,**
0.6 GPD/ft2

Depth to normal high groundwater from existing ground surface >10.0

SIZING REQUIREMENTS:

Depth of system: Excavate to 7.5', backfill with ASTM C-33 sand to 4' and install in accordance with the technical guidance manual.

Number of bedrooms: **Three (3) single family residential @ 250 gpd/unit.**

Total trench area: **417 square feet**

Number of bedrooms: **Four (4) single family residential @ 300 gpd/unit.**

Total trench area: **500 square feet**

The finished grade of gravel over the drain pipe shall be covered with geotextile or an equivalent as shown in the "Technical Guidance Manual".

SEPTIC TANK SIZE REQUIREMENTS:

Nitrate reducing system: **65%**
Minimum Liquid Capacity: **1,000 gallons**
Number of bedrooms per lot: **Three (3) or Four (4)**

*Notes:

1. Any system serving residences of more than four (4) bedroom single family homes shall have drainfields sized in accordance with the requirements listed under Area Requirements and Total Trench Lengths for Standard Subsurface Sewage Disposal Systems of the Technical Guidance Manual.

2. Restrictions by SWDH: "Lots shall not be reduced in size without prior approval from SWDH."

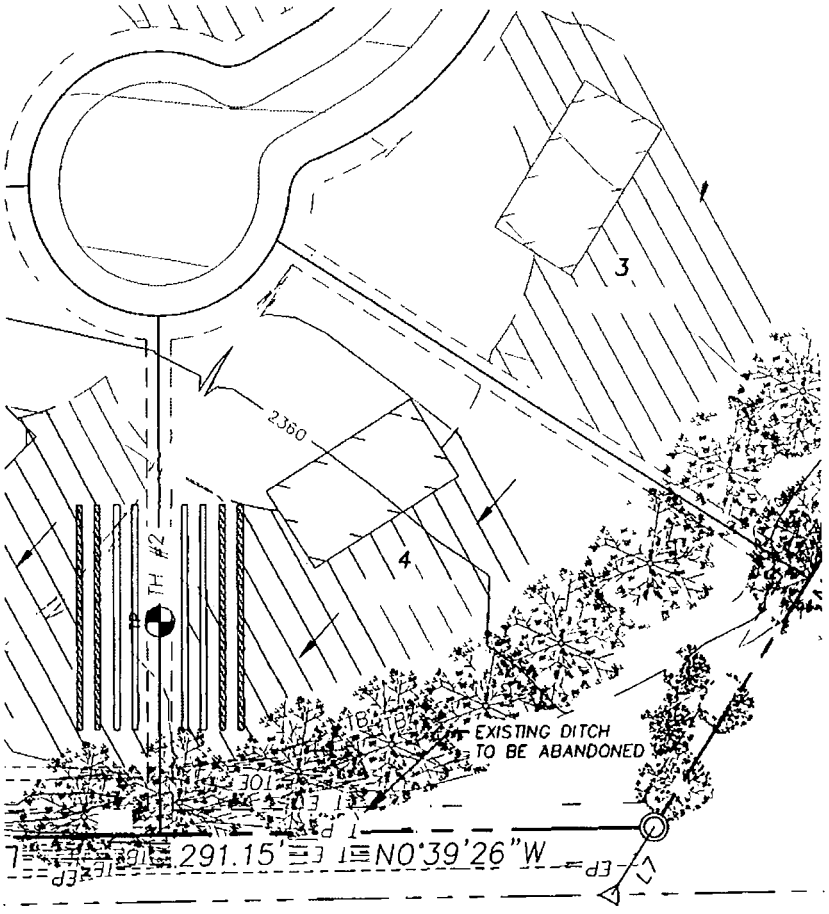
3. Alternative systems described in the Technical Guidance Manual and approved by the Southwest District Health Staff may be utilized.

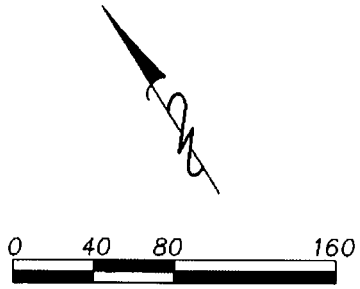
4. If hard pan is encountered excavate through hard pan layers and backfill to design depth with ASTM C-33 sand.

5. **All wells must be located a minimum of 100 feet from septic drainfields, and a minimum of 50 feet from septic tanks.**

6. **Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report, water quality in aquifers in the project vicinity is generally good, with some limitations. Testing data for wells located adjacent to the proposed development, as reported by the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) are attached. Nitrate levels in these wells tested above the MCL. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of arsenic and other contaminants at Southwest District Health Department.**

WELL & SEPTIC AREA PLACEMENT





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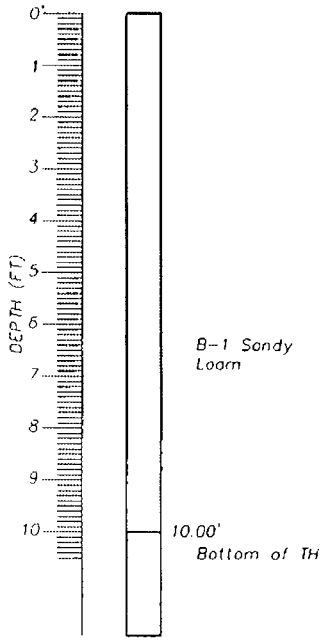


TEST HOLE

TH#2 L4B1

LEGEND

- CONTOUR LINE
- AVAILABLE SEPTIC SYSTEM AREA
- 100' WELL SETBACK
- DIRECTION OF SLOPE
- TP — TEST HOLE
- W — PROPOSED WELL
- PRIMARY SEPTIC SYSTEM
- REPLACEMENT SEPTIC SYSTEM

OWYHEE HEIGHTS SUBDIVISION

LOT 4 BLOCK 1 WELL & SEPTIC AREA PLACEMENT

Mason & Associates
Professional Engineers, Land Surveyors & Planners
924 3rd St. South Nampa, ID 83651
(208) 454-0256

JOB NO. OC1420		
DWG NO. OC1420SEPTIC		
SCALE: 1" = 80'		REV.
FIELD BOOK NO.		
DRAWN BY:	DATE:	SHEET
AMC	01/13/25	3 of 3

STANDARD TRENCH

Designated Areas: **OWYHEE HEIGHTS SUBDIVISION – Lot 5 Block 1**
Test Pits: **T.H. No. 2, See attached Septic Drainfield Placement Map**

Soil Design Subgroup: **B-1,**
0.6 GPD/ft2

Depth to normal high groundwater from existing ground surface >10.0

SIZING REQUIREMENTS:

Depth of system: Excavate to 7.5', backfill with ASTM C-33 sand to 4' and install in accordance with the technical guidance manual.

Number of bedrooms: **Three (3) single family residential @ 250 gpd/unit.**

Total trench area: **417 square feet**

Number of bedrooms: **Four (4) single family residential @ 300 gpd/unit.**

Total trench area: **500 square feet**

The finished grade of gravel over the drain pipe shall be covered with geotextile or an equivalent as shown in the "Technical Guidance Manual".

SEPTIC TANK SIZE REQUIREMENTS:

Nitrate reducing system: **65%**
Minimum Liquid Capacity: **1,000 gallons**
Number of bedrooms per lot: **Three (3) or Four (4)**

*Notes:

7. Any system serving residences of more than four (4) bedroom single family homes shall have drainfields sized in accordance with the requirements listed under Area Requirements and Total Trench Lengths for Standard Subsurface Sewage Disposal Systems of the Technical Guidance Manual.

8. Restrictions by SWDH: "Lots shall not be reduced in size without prior approval from SWDH."

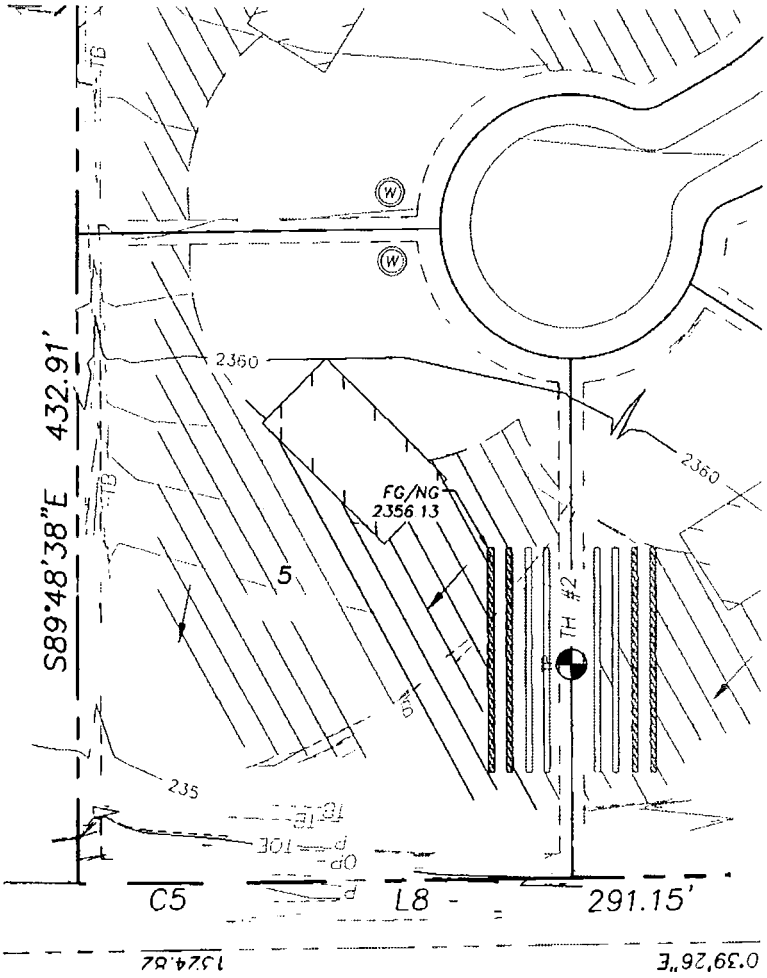
9. Alternative systems described in the Technical Guidance Manual and approved by the Southwest District Health Staff may be utilized.

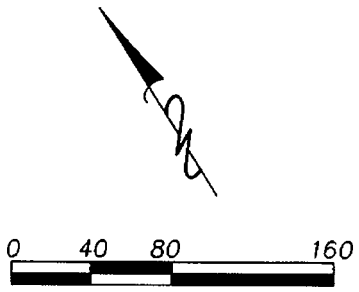
10. If hard pan is encountered excavate through hard pan layers and backfill to design depth with ASTM C-33 sand.

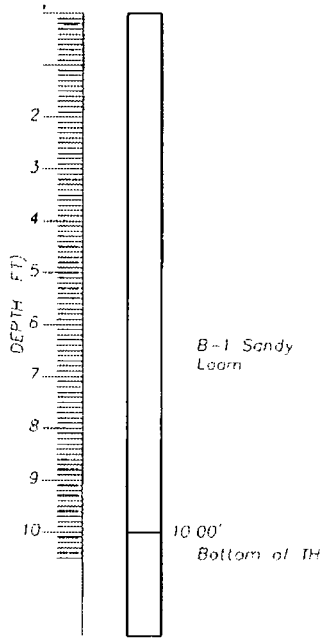
11. **All wells must be located a minimum of 100 feet from septic drainfields, and a minimum of 50 feet from septic tanks.**

12. **Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report, water quality in aquifers in the project vicinity is generally good, with some limitations. Testing data for wells located adjacent to the proposed development, as reported by the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) are attached. Nitrate levels in these wells tested above the MCL. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of arsenic and other contaminants at Southwest District Health Department.**

WELL & SEPTIC AREA PLACEMENT







TEST HOLE

TH#2 L5B1

LEGEND

- CONTOUR LINE
- AVAILABLE SEPTIC SYSTEM AREA
- 100' WELL SETBACK
- DIRECTION OF SLOPE
- TP — TEST HOLE
- PROPOSED WELL
- PRIMARY SEPTIC SYSTEM
- REPLACEMENT SEPTIC SYSTEM

OWYHEE HEIGHTS SUBDIVISION

LOT 5 BLOCK 1 WELL & SEPTIC AREA PLACEMENT

Mason & Associates
Professional Engineers
Land Surveyors
& Planners
924 3rd St. South Nampa ID 83651
(208) 454-0256

JOB NO.	OC1420
DWG NO.	OC1420SEPTIC
SCALE:	1" = 80'
REV.	
FIELD BOOK NO.	
DRAWN BY:	AMC
DATE:	01/13/25
SHEET	3 of 3

STANDARD TRENCH

Designated Areas: **OWYHEE HEIGHTS SUBDIVISION – Lot 6, Block 1**
Test Pits: **T.H. No. 3, See attached Septic Drainfield Placement Map**

Soil Design Subgroup: **A-2b,**
0.75 GPD/ft2

Depth to normal high groundwater from existing ground surface >10.0

SIZING REQUIREMENTS:

Depth of system: Excavate to 7.5', backfill with ASTM C-33 sand to 4' and install in accordance with the technical guidance manual.

Number of bedrooms: **Three (3) single family residential @ 250 gpd/unit.**

Total trench area: **333 square feet**

Number of bedrooms: **Four (4) single family residential @ 300 gpd/unit.**

Total trench area: **400 square feet**

The finished grade of gravel over the drain pipe shall be covered with geotextile or an equivalent as shown in the "Technical Guidance Manual".

SEPTIC TANK SIZE REQUIREMENTS:

Nitrate reducing system: **65%**
Minimum Liquid Capacity: **1,000 gallons**
Number of bedrooms per lot: **Three (3) or Four (4)**

*Notes:

1. Any system serving residences of more than four (4) bedroom single family homes shall have drainfields sized in accordance with the requirements listed under Area Requirements and Total Trench Lengths for Standard Subsurface Sewage Disposal Systems of the Technical Guidance Manual.

2. Restrictions by SWDH: "Lots shall not be reduced in size without prior approval from SWDH."

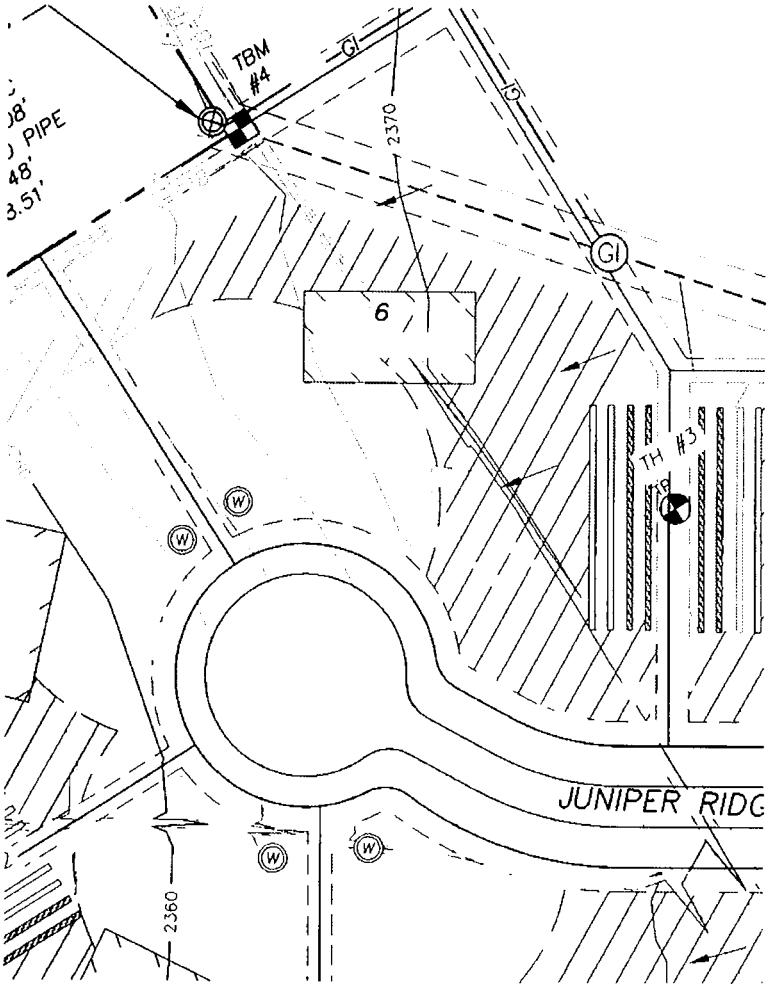
3. Alternative systems described in the Technical Guidance Manual and approved by the Southwest District Health Staff may be utilized.

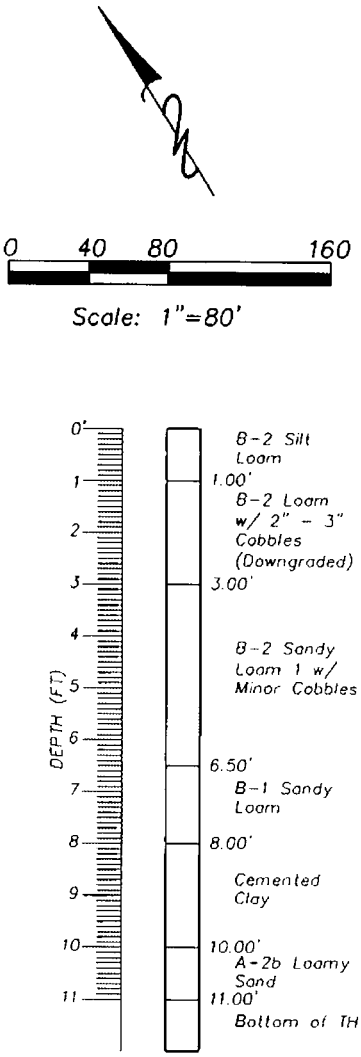
4. If hard pan is encountered excavate through hard pan layers and backfill to design depth with ASTM C-33 sand.

5. **All wells must be located a minimum of 100 feet from septic drainfields, and a minimum of 50 feet from septic tanks.**

6. **Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report, water quality in aquifers in the project vicinity is generally good, with some limitations. Testing data for wells located adjacent to the proposed development, as reported by the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) are attached. Nitrate levels in these wells tested above the MCL. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of arsenic and other contaminants at Southwest District Health Department.**

WELL & SEPTIC AREA PLACEMENT





TEST HOLE

TH#3 L6B1

LEGEND

- CONTOUR LINE
- AVAILABLE SEPTIC SYSTEM AREA
- 100' WELL SETBACK
- DIRECTION OF SLOPE
- TP — TEST HOLE
- W — PROPOSED WELL
- PRIMARY SEPTIC SYSTEM
- REPLACEMENT SEPTIC SYSTEM

OWYHEE HEIGHTS SUBDIVISION

LOT 6 BLOCK 1 WELL & SEPTIC AREA PLACEMENT

Mason & Associates
Professional Engineers, Land Surveyors & Planners
924 3rd St. South Nampa ID 83651
208) 454-0256

JOB NO.	OC1420
DWG NO.	OC1420SEPTIC
SCALE:	1" = 80'
REV	
FIELD BOOK NO.	

DRAWN BY:	DATE:	SHEET
AMC	01/13/25	3 of 3

STANDARD TRENCH

Designated Areas: **OWYHEE HEIGHTS SUBDIVISION – Lot 7, Block 1**
Test Pits: **T.H. No. 3, See attached Septic Drainfield Placement Map**

Soil Design Subgroup: **A-2b,**
0.75 GPD/ft2

Depth to normal high groundwater from existing ground surface >10.0

SIZING REQUIREMENTS:

Depth of system: Excavate to 7.5', backfill with ASTM C-33 sand to 4' and install in accordance with the technical guidance manual.

Number of bedrooms: **Three (3) single family residential @ 250 gpd/unit.**

Total trench area: **333 square feet**

Number of bedrooms: **Four (4) single family residential @ 300 gpd/unit.**

Total trench area: **400 square feet**

The finished grade of gravel over the drain pipe shall be covered with geotextile or an equivalent as shown in the "Technical Guidance Manual".

SEPTIC TANK SIZE REQUIREMENTS:

Nitrate reducing system: **65%**
Minimum Liquid Capacity: **1,000 gallons**
Number of bedrooms per lot: **Three (3) or Four (4)**

*Notes:

7. Any system serving residences of more than four (4) bedroom single family homes shall have drainfields sized in accordance with the requirements listed under Area Requirements and Total Trench Lengths for Standard Subsurface Sewage Disposal Systems of the Technical Guidance Manual.

8. Restrictions by SWDH: "Lots shall not be reduced in size without prior approval from SWDH."

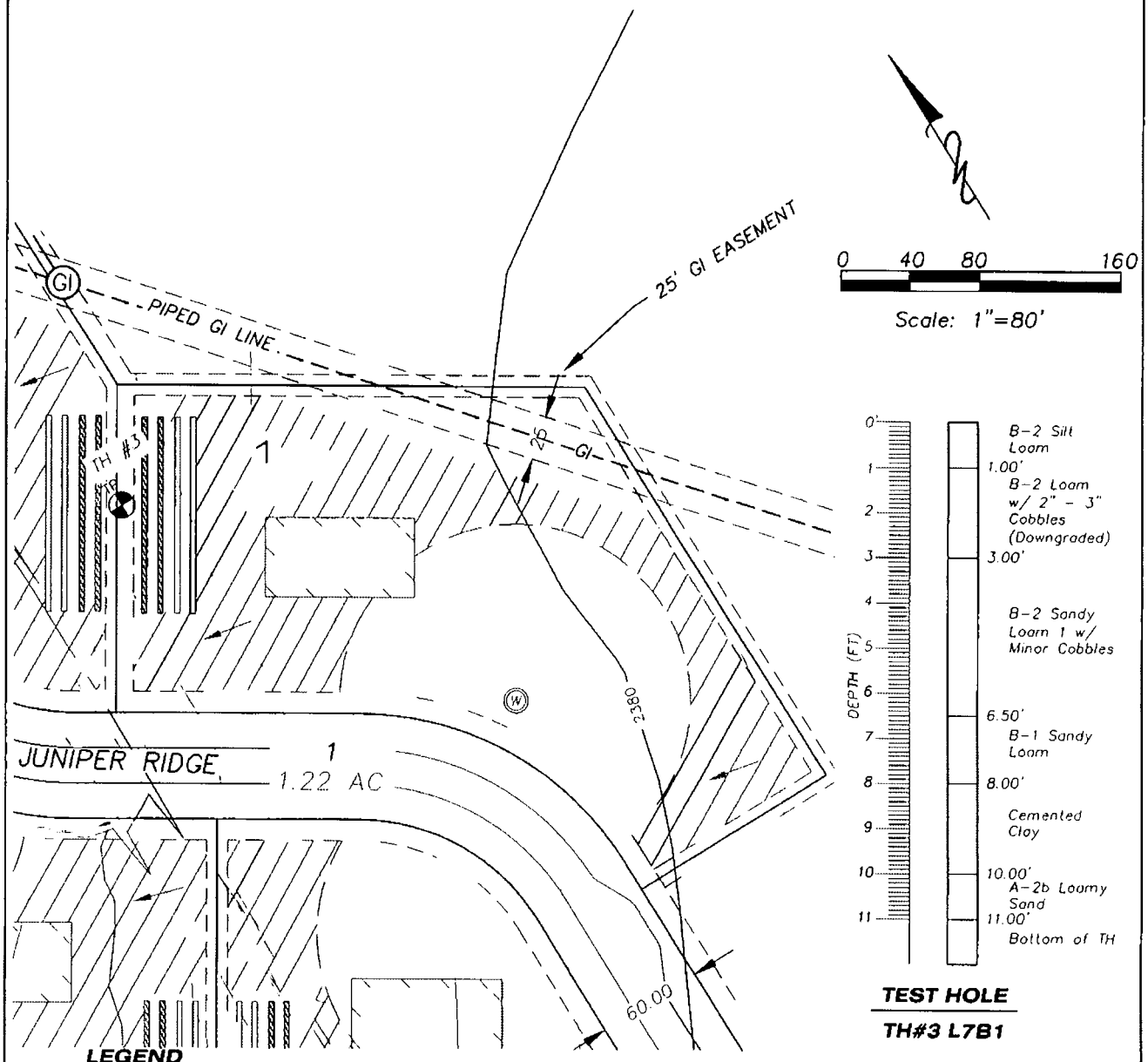
9. Alternative systems described in the Technical Guidance Manual and approved by the Southwest District Health Staff may be utilized.

10. If hard pan is encountered excavate through hard pan layers and backfill to design depth with ASTM C-33 sand.

11. **All wells must be located a minimum of 100 feet from septic drainfields, and a minimum of 50 feet from septic tanks.**

12. **Water quality in private wells is not monitored by the Health District or other agencies. It is the responsibility of the well owner to ensure that water used for domestic purposes is suitable for consumption and other uses. At the time of this report, water quality in aquifers in the project vicinity is generally good, with some limitations. Testing data for wells located adjacent to the proposed development, as reported by the Statewide Groundwater Quality Monitoring Program (maintained by the Idaho Department of Water Resources) are attached. Nitrate levels in these wells tested above the MCL. Well owners and well drillers are advised to test water bearing zones during construction of new wells, and to locate screens and seals to best provide suitable potable water, and to protect cross-contamination between aquifers. Well owners may find additional information on the health effects of arsenic and other contaminants at Southwest District Health Department.**

WELL & SEPTIC AREA PLACEMENT



TEST HOLE

TH#3 L7B1

LEGEND

- CONTOUR LINE
- AVAILABLE SEPTIC SYSTEM AREA
- 100' WELL SETBACK
- DIRECTION OF SLOPE
- TP — TEST HOLE
- W — PROPOSED WELL
- PRIMARY SEPTIC SYSTEM
- REPLACEMENT SEPTIC SYSTEM

OWYHEE HEIGHTS SUBDIVISION

LOT 7 BLOCK 1 WELL & SEPTIC AREA PLACEMENT

Mason & Associates
Professional Engineers, Land Surveyors & Planners
321 3rd St. South Nampa ID 83651
(208) 454-0256

JOB NO.	OC1420
DWG NO.	OC1420SEPTIC
SCALE:	1" = 80'
REV.	
FIELD BOOK NO.	
DRAWN BY:	AMC
DATE:	01/13/25
SHEET	3 of 3

APPENDIX

A. **Well Driller's Reports & Well Test Data**

B. **Soils Report**

C. **Nutrient Pathogen Evaluation**

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name JACK THOMPSON

Address MARSING IDAHO

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other

Thickness	Diameter	From	To
.250 inches	6 inches + 1	feet	210 feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet

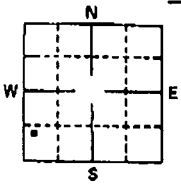
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation ___ inches by ___ inches

Number	From	To
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from ___ feet to ___ feet
Surface seal depth 18 Material used in seal: ☐ Cement grout ☐ Bentonite ☒ Puddling clay ☐ ___
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL MICROFILMED

Sketch map location must agree with written location



Subdivision Name _____
Lot No ___ Block No. ___
County Owyhee
SW ¼ SW ¼ Sec 10, T. 2 N, R. 4 W.

7. WATER LEVEL

Static water level 95 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ____ °F. Quality 40 GRNS.
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
15	105	2

9. LITHOLOGIC LOG 85178

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	3	BROWN CLAY		✓
	3	8	GRAVEL		✓
	8	45	BROWN CLAY		✓
	45	50	SANDY BROWN CLAY	✓	
	50	70	BROWN CLAY		✓
	90	105	BROWN SAND	✓	
	105	145	BROWN CLAY		✓
	145	175	BROWN SAND	✓	
	175	190	BLUE CLAY		✓
	190	205	BROWN SAND	✓	
	205	265	BLUE CLAY		✓
	265		BLACK SAND	✓	

RECEIVED
OCT 20 1983
Department of Water Resources
Water Allocation Bureau

10. Work started 6-28-83 finished 7-5-83

11. DRILLERS CERTIFICATION

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

Firm Name KENDE HETZER DRL. Firm No. 93
Address RT-2 HAMMOND IDA Date 7-9-83
Signed by (Firm Official) Kenneth Hetzer
and
(Operator) _____

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

882707-815533

Form 238 7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat. Long:

1. DRILLING PERMIT NO. D0031404
Other IDWR No

2. OWNER:
Name Jack Thompson
Address Rt. 1 Box 470
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp 2 North X or South ☐
Rge 4 East or West X
Sec 10 1/4 (10 acres) 1/4 (40 acres) SE 1/4 SW (160 acres)
Gov't lot County Owyhee
Lat Long
Address of Well Site 6525 Sunset Lane
City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt Blk Sub Name

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

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD
X Air Rotary ☐ Cable Mud Rotary ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	38	1200 lbs	overbore

Was drive shoe used? X Y N Shoe Depth(s) 457
Was drive shoe seal tested? X Y N How? Air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+3	457	.250	steel	X	☐	X	☐

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS
Perforations Method
Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
360 ft. below ground Artesian Pressure lb
Depth flow encountered 454-482 Describe access port or control devices: cap

11. WELL TESTS:
Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
40	460	460	3 hr.

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encountered 282

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	6	Brown Sand		X
10	6	19	Cemented gravel		X
10	19	27	Gravel & boulders		X
10	27	33	Brown sand w/ gravel		X
10	33	38	Sandy tan clay		X
8	38	223	Sandy tan clay		X
8	223	245	Brown sand		X
8	245	282	Baked tan clay		X
8	282	289	Baked tan clay w/cracks	X	
8	289	340	Blue clay		X
6	340	417	Blue clay		X
6	417	454	Fractured sand stone	X	
6	454	482	Blue clay w/cracks	X	

RECEIVED
JUN 08 2004
WATER RESOURCES
WESTERN REGION

Completed Depth: 482 (Measurable)
Date: Started 5-28-04 Completed 6-1-04

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

Firm Name Treasure Valley Drilling Firm No. 560
Firm Official Date 6-3-04
Supervisor or Operator Date 6-3-04
(Sign once if Firm Official & Operator)

Ammended Log

Form 238-7
11/97 JGE 57

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat Long

1. WELL TAG NO. D 0031404
DRILLING PERMIT NO.
Other IDWR No.

2. OWNER:
Name Jack Thompson
Address Rt. 1 Box 470
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 10 1/4 (10 acres) SE 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot County Owyhee
Lat: Long:
Address of Well Site 6525 Sunset Lane City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt. Blk. Sub. Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[ ] New Well [X] Modify [ ] Abandonment [ ] Other
Deepen

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	38	1200 lbs	overbore

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 457
Was drive shoe seal tested? [X] Y [ ] N How? Air

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+3	457	.250	steel	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS:
[X] Perforations Method Skill Saw
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
455	495	1/4x6	30	4 1/2	PVC	[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
360 ft below ground Artesian pressure lb
Depth flow encountered 454-482 ft. Describe access port or control devices: cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
40	460	460	3 hr
60	480	480	1/2 hr
40	440	440	1 hr

Water Temp 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encounter 282

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology Water Quality & Temperature	Water Y	Water N
10	0	6	Brown Sand		
10	6	19	Cemented Gravel		
10	19	27	Gravel & Boulders		
10	27	33	Brown Sand w/ Gravel		
10	33	38	Sandy Tan Clay		
8	38	223	Sandy Tan Clay		
8	223	245	Brown Sand		
8	245	282	Baked Tan Clay		
8	282	289	Baked Tan Clay w/ Cracks	X	
8	289	340	Blue Clay		
6	340	417	Blue Clay		
6	417	454	Fractured Sand Stone	X	
6	454	482	Blue Clay w/ Cracks	X	
6	482	490	Blue Clay w/ Cracks	X	
6	490	495	Blue Clay		

RECEIVED
SEP 27 2004
WATER RESOURCES
WESTERN REGION

Completed Depth 495 (Measurable)
Date: Started 8/24/2004 Completed 8/24/2004

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official and Driller or Operator [signature] Date 9/22/2004
Date 9/22/2004
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0074718
Drilling Permit No
Water right or injection well #

2. OWNER:
Name Jack Thompson Sr.
Address 927 W. Hackamore Ct.
City Nampa State ID Zip 83686

3.WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge 4 East ☐ or West ☒
Sec. 10 ___ 1/4 SE 1/4 SW 1/4
Gov't Lot ___ County Owyhee
Lat. 43 ° 30.992 (Deg and Decimal minutes)
Long 116 ° 48.191 (Deg and Decimal minutes)
Address of Well Site .1 miles up Our Lane - private lane .5 miles off Aurora City Marsing
(Give at least name of road - Distance & road at Landmark)
Lot. ___ Blk. ___ Sub. Name

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/4 Bent. Chips	0'	44'	23 bags	10" Overbore
3/4 Bent. Chips	278'	284'	5 bags	Under Reamer

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	296'	.250	SS	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 296'

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method
Manufactured screen ☒ Y ☐ N Type Certalock
Method of installation Set with Sandline

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
304'	364'	20		4.5"	PVC	SDR17

Length of Headpipe 20' Length of Tailpipe
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	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) 232' Static water level (ft) 225'
Water temp (°F) 60° Bottom hole temp. (°F)
Describe access port Well Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Test method: Pump	Bailer	Air	Flowing artesian
119'	20-25 GPM	30 minutes	☐	☐	☒	☐
			☐	☐	☐	☐

Water quality test or comments: Iron 3.5 PH 7.75 Hardness 38

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	Water N
10"	0'	8'	Gravel & Silt		X
10"	8'	44'	Tan Clay		X
6"	44'	232'	Tan Clay		X
6"	232'	276'	Hard Tan Clay w/Sand Strips	X	
6"	276'	278'	Blue Clay		X
10"	278'	284'	Blue Clay		X
6"	284'	296'	Blue Clay w/Sand Strips	X	
6"	296'	344'	Blue Clay w/Sand Strips	X	
6"	344'	364'	Blue Clay		X

RECEIVED
JUN 22 2017
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable) 364'
Date Started Jun 5, 2017 Date Completed Jun 8, 2017

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 Adamson Pump & Drilling Co. No. 457
*Principal Driller [signature] Date Jun 13, 2017
*Driller [signature] Date Jun 13, 2017
*Operator II [signature] Date
Operator I Date Jun 13, 2017

* Signature of Principal Driller and rig operator are required.

57

847363

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Location Corrected by IDWR To:
T02N R04W Sec. 15 NENWNW
By: mciscell 2013-10-18

1. WELL TAG NO. D 0047955
DRILLING PERMIT NO.
Water Right or Injection Well No.

2. OWNER:
Name Joan M Lee
Address 6532 HOWARD ROAD
City MARSING State ID Zip 83639

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 2 North X or South
Rge. 4 East or West X
Sec. 10 SW 1/4 SW 1/4 SW 1/4
Gov't Lot County OWYHEE
Lat: 43:30:994 Long: 116:48:414
Address of Well Site 6532 HOWARD ROAD
City MARSING
(Give at least name of road - Distance to road or landmark)
Lt. Blk. Sub. Name

4. USE:
X Domestic Municipal Monitor Irrigation
Thermal Injection Other

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well Modify Abandonment Other

6. DRILL METHOD:
X Air Rotary Cable Mud Rotary Other

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
Dry Gran Bent + Well Cuttings	0	18	600#	Overburd

Was drive shoe used? X Y N Shoe Depth(s) 302
Was drive shoe seal tested? Y X N How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	302	1/4	Steel	X		X	

Length of Headpipe Length of Tailpipe
Packer Y N Type

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method
Screen Type & Method of Installation No Screen

From	To	Slot Size	Number	Diameter	Material	Casing	Liner

10. FILTER PACK

Filler Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
168 ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices
Sanitary Well Cap

12. WELL TESTS: Lat : : Long: :
Pump Bailer X Air Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
60	NA	280	1 Hr

Water Temp. 59° Bottom hole temp. N/A
Water Quality test or comments
Depth first Water Encountered 228

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	5	Soil		X
10	5	8	Hardpan / Gravel		X
10	8	18	Brn Clay		X
6	18	117	Brn Clay		X
6	117	160	Sandy Brn Clay		X
6	160	165	Hard Brn Clay		X
6	165	181	Sandy Brn Clay		X
6	181	185	Gray Clay		X
6	185	228	Blue Clay		X
6	228	258	Blue Shale Thin Blk Sand	X	
6	258	293	Blue Clay		X
6	293	302	Blue Clay Shale Thin Blk Sand	X	
6	302	304	Blue Clay		X
6	304	346	Blue Clay Shale Thin Blk Sand	X	
6	346	350	Blue Clay		X

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JUL 26 2007
WATER RESOURCES
WESTERN REGION

Completed Depth 350 (Measurable)
Date Started 6/25/07 Completed 7/2/07

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed SYLVAN ADAMSON
Company Name DOMESTIC PUMP + WELL DRILLING Lic. No. 483
Principal Driller Date 7/16/07
and
Driller or Operator II Date
Operator I Date
Principal Driller and Rig Operator *Required*.
Operator I must have signature of Driller/Operator II.

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Form 238-7
11/97 JGE

786535

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp ___ Rge ___ Sec ___
___ 1/4 ___ 1/4 ___ 1/4
Lat: Long:

1. WELL TAG NO. D0025385
DRILLING PERMIT NO.
Other IDWR No

2. OWNER:
Name CHAD SHOWALTER
Address HOWARD LANE
City MARSING State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 15 1/4 (10 acres) NW 1/4 (40 acres) NW 1/4 (160 acres)
Gov't Lot ___ County OWYHEE
Lat: Long:
Address of Well Site HOWARD LANE E OF HWY
78. S SIDE OF HOWARD (Give at least name of road + Distance to Road or Landmark) City
Lt. ___ Blk. ___ Sub Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	18	600#	POUR

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 198
Was drive shoe seal tested? [X] Y [ ] N How? AIR

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	198	250	STEEL	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe ___ Length of Tailpipe ___

9. PERFORATIONS/SCREENS:
[ ] Perforations Method
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
151 ft below ground Artesian pressure ___ lb.
Depth flow encountered ___ ft. Describe access port or control devices:

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal /min	Drawdown	Pumping Level	Time
20	10	200	2 HR

Water Temp ___ Bottom hole temp
Water Quality test or comments:
Depth first Water Encounter

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	12	TOP SOIL		
	12	16	SABD/ GRAVEL	X	
	16	18	BROWN CLAY		
8	18	100	BROWN CLAY/ YELLOW SHALE		
6	100	170	BROWN CLAY / YELLOW SHALE		
	170	200	BLUE CLAY		
	200	230	BLE SHALE/ CLAY	X	
	230	235	BLUE SAND	X	
	235	263	BLUE SHALE/ CLAY	X	

RECEIVED
NOV 13 2002
WATER RESOURCES
WESTERN REGION

Completed Depth 263 (Measurable)
Date: Started 10/1/2002 Completed 10/2/2002

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

Company Name DAVIS WELL & PUMP Firm No. 101
Firm Official Chuck Davis Date 10/3/2002
and
Driller or Operator ___ Date 10/3/2002
(Sign once if Firm Official & Operator)

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Form 238-7
3/95

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
Use Typewriter or Ballpoint Pen

60516

Office Use Only
Inspected by ____
Twp.____ Rge.____ Sec ____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 57 96 C-0021 .000
Other IDWR No.

2. OWNER:
Name Demi Treasure
Address Howard
City Marsing State IDA Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp. 2 [✓ North] or South ☐
Rge. 4 East ☐ or [✓ West]
Sec 16, ____ 1/4 NE 1/4 NE 1/4
(10 acres) (40 acres) (160 acres)
Gov't Lot ____ County ____
Lat: : : Long: : :
Address of Well Site Howard
(Give at least name of road + Distance to Road or Landmark) City Marsing

Lt. ____ Blk. ____ Sub. Name ____

4. USE:
[✓ Domestic] ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
[✓ New Well] ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
☐ Air Rotary [✓ Cable] ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or [✓ Pounds]	METHOD
Inviro Plug	0	50	500	over Bore

Was drive shoe used? [✓ Y] N Shoe Depth(s) 105
Was drive shoe seal tested? [✓ Y] N How? Baled Dry

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+1	105	250	Steel	☐	☐	✓	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

MICROFILMED
[illegible]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
41 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: ____

11. WELL TESTS:
[✓ Pump] ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
20	10	100	4 h

Water Temp. 60 Bottom hole temp ____
Water Quality test or comments: Good
Depth first Water Encountered ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	2	Top Soil		
8	2	41	Brown Clay		
6	41	49	Brown Sand Stone		
6	49	110	Blue Clay		
6	110	120	Broken Shell	✓	

RECEIVED
JUN 22 1998
Department of Water Resources

Completed Depth 4-25-96 (Measurable)
Date: Started 4-22-96 Completed 4-25-96

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

Firm Name Rocker Mount Drilling Firm No. 211
Firm Official [illegible] Date 4-26-96
and
Supervisor or Operator ____ Date ____
(Sign once if Firm Official & Operator)

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Form 238-7
6/07

57

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0095639
Drilling Permit No. 903797
Water right or injection well #

2. OWNER:
Name Cody Hendrickson
Address PO Box 785
City MARSING State ID Zip 83639

3.WELL LOCATION:
Twp. 02 North ☒ or South ☐ Rge. 04 East ☐ or West ☒
Sec. 15 10 acres 1/4 NE 40 acres 1/4 NW 160 acres 1/4
Gov't Lot County Owyhee
Lat. N 43 ° 31 : 081 (Deg. and Decimal minutes)
Long. W116 ° 48 : 916 (Deg. and Decimal minutes)
Address of Well Site 6342 Howard Rd
(Give at least name of road + Distance to Road or Landmark) City MARSING
Lot. Blk. Sub. Name NO SUB

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/8 Bent	0	40	20 SACKS	Hydrated

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
10	+2	120	250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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

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

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
120	150	14	80	4½	PVC	40

Length of Headpipe 20 Length of Tailpipe 0
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
8-12 Silica	125	150	10 SACKS	Poured

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) 120 Static water level (ft) 85
Water temp. (°F) 48 Bottom hole temp. (°F)
Describe access port

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
94	25	3HRS

Test method: Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	5	SANDY CLAY BROWN		X
10	5	30	SANDY CLAY BROWN		X
10	30	40	SANDY CLAY BROWN		X
6	40	60	SANDY CLAY BROWN		X
6	60	90	SANDY CLAY BROWN		X
6	90	110	GRAY CLAY		X
6	110	120	GRAY CLAY		X
6	120	125	LAYERED SAND STONE	X	
6	125	130	GRAY CLAY LAYERED HARD		X
6	130	140	GRAY CLAY		X
6	140	142	LAYERED SAND STONE	X	
	142	150	BROWN CLAY		X

RECEIVED
MAR 18 2022
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 150
Date Started: 2-15-22 Date Completed: 3-14-22

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 Gary's Well Drilling Co. No. 317
*Principal Driller Gary Wilson Date 3-14-22
*Driller Date
*Operator II Date
Operator I Date

* Signature of Principal Driller and rig operator are required.

Form 238-7
11/97 JGE

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

788803

Office Use Only
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D D0025852
DRILLING PERMIT NO.
Other IDWR No

2. OWNER:
Name Steve Faust
Address Hwy 78 Rt 1 Box 467
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec 9 ____ 1/4 (10 acres) SE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't Lot County Owyhee
Lat: Long:
Address of Well Site Hwy 78, 2 miles So. of Marsing
(Give at least name of road + Distance to Road or Landmark)
City Marsing
Lt. ____ Blk. T Sub. Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	500 lbs	overbore

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 58
Was drive shoe seal tested? [X] Y [ ] N How? Air

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	58	.250	steel	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS:
[X] Perforations Method skill saw
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
57	97	6x1/4		4 1/2	pvc	[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
26 ft. below ground Artesian pressure ____ lb.
Depth flow encountered 60-97 ft. Describe access port or control devices: cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
35	60	95	1/2 hr

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encounter 23

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks, Lithology, Water Quality & Temperature	Water Y	Water N
10	0	2	TOP SOIL		
10	2	3	HARD PAN		
10	3	17	SANDY CLAY		
10	17	18	GRAVLE		
6	18	23	GRAVLE		
6	23	54	TAN CLAY, SAND STRIPS	X	
6	54	60	TAN CLAY		
6	60	97	CRACKED TAN CLAY	X	

RECEIVED
NOV 25 2002
WATER RESOURCES
WESTERN REGION

Completed Depth 97 (Measurable)
Date: Started 11/15/2002 Completed 11/18/2002

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official and Driller or Operator Date 11/21/2002
(Sign once if Firm Official & Operator) Date 11/21/2002

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Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0071654
Drilling Permit No. 971798 - 677855
Water right or injection well #
2. OWNER: Michael R Simmons
Name
Address PO Box 633
City Marsing State ID Zip 83639

3. WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒
Sec. 9 ____ 1/4 NE 1/4 SE 1/4
Gov't Lot ____ County Owhee
Lat. 43 ° 31.295 (Deg. and Decimal minutes)
Long. 116 ° 48.720 (Deg. and Decimal minutes)
Address of Well Site 1 Mile outside of Marsing on Hwy 78 right side of Hwy 78 City Marsing
Lot ____ Blk. ____ Sub. Name

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/4" Bentonite	0	40'	1150lbs	pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	47	250	steel	☒	☐	☐	☒
4 1/2	8	128	sdr-17	pvc	☐	☒	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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

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

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
128	168'	.020	—	4 1/2"	pvc	sdr-17

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

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
6-9 silica sand	168'	8'	1050 lbs	pour

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) 41' Static water level (ft) 41'
Water temp. (°F) 62.5 Bottom hole temp. (°F)
Describe access port well cap
Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Test method: Pump	Bailer	Air	Flowing artesian
	40 gpm	120	☐	☐	☒	☐
			☐	☐	☐	☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	2	topsoil		
	2	25	tan clay		
	25	39	tan clay with gravel		
	39	40	tan clay		
6	40	41	tan clay		
	41	43	gravel	X	
	43	100	tan clay		
	100	119	tan clay with sand streaks	X	
	119	146	gray clay		
	146	173	gray clay sand streaks	X	
	173	180	gray clay		

RECEIVED
MAY 04 2016
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 168'
Date Started: Feb 3, 2016 Date Completed: Feb 9, 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 Treasure Valley Well Drilling Co. No. 560
*Principal Driller [signature] Date Feb 9, 2016
*Driller Jason Wilson Date Feb 9, 2016
*Operator II Date
Operator I Date
* Signature of Principal Driller and rig operator are required.

SCANNED APR 1 1 2004

RECEIVED APR 0 2 2004 WATER RESOURCES WESTERN REGION

811799

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Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: Long:

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. D0031057
Other IDWR No

2. OWNER:
Name Herb Callaham
Address 609 N. Midland Blvd
City Nampa State ID Zip 83651

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp 2 North x or South ☐
Rge 4 East or West x
Sec 9 1/4 (10 acres) NE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't lot County Owyhee
Lat: : : Long:
Address of Well Site 6468 Morris Hill Rd
City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt Blk. Sub Name

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

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD
X Air Rotary ☐ Cable Mud Rotary ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	800 lbs.	overbore

Was drive shoe used? X Y N Shoe Depth(s) 239
Was drive shoe seal tested? X Y N How? air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	239	250	steel	X	☐	X	☐

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS
Perforations Method
Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
134 ft. below ground
Depth flow encountered 245
Artesian Pressure lb
Describe access port or control devices: cap

11. WELL TESTS:
Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
50	220	220	1 hr
15	180	180	½ hr

Water Temp 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encountered 160

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	2	Top soil		X
10	2	4	Hard pan		X
10	4	18	Embedded rock in sandy clay		X
6	18	23	Embedded rock in sandy clay		X
6	23	160	Brown clay		X
6	160	161	Sand stone		X
6	161	178	Baked brown clay with cracks	X	
6	178	218	Baked brown clay		X
6	218	228	Baked brown clay with cracks	X	
6	228	232	Baked brown clay		X
6	232	240	Blue clay		X
6	240	245	Baked blue clay with baked brown clay		X
6	245	250	Fine blue sand	X	

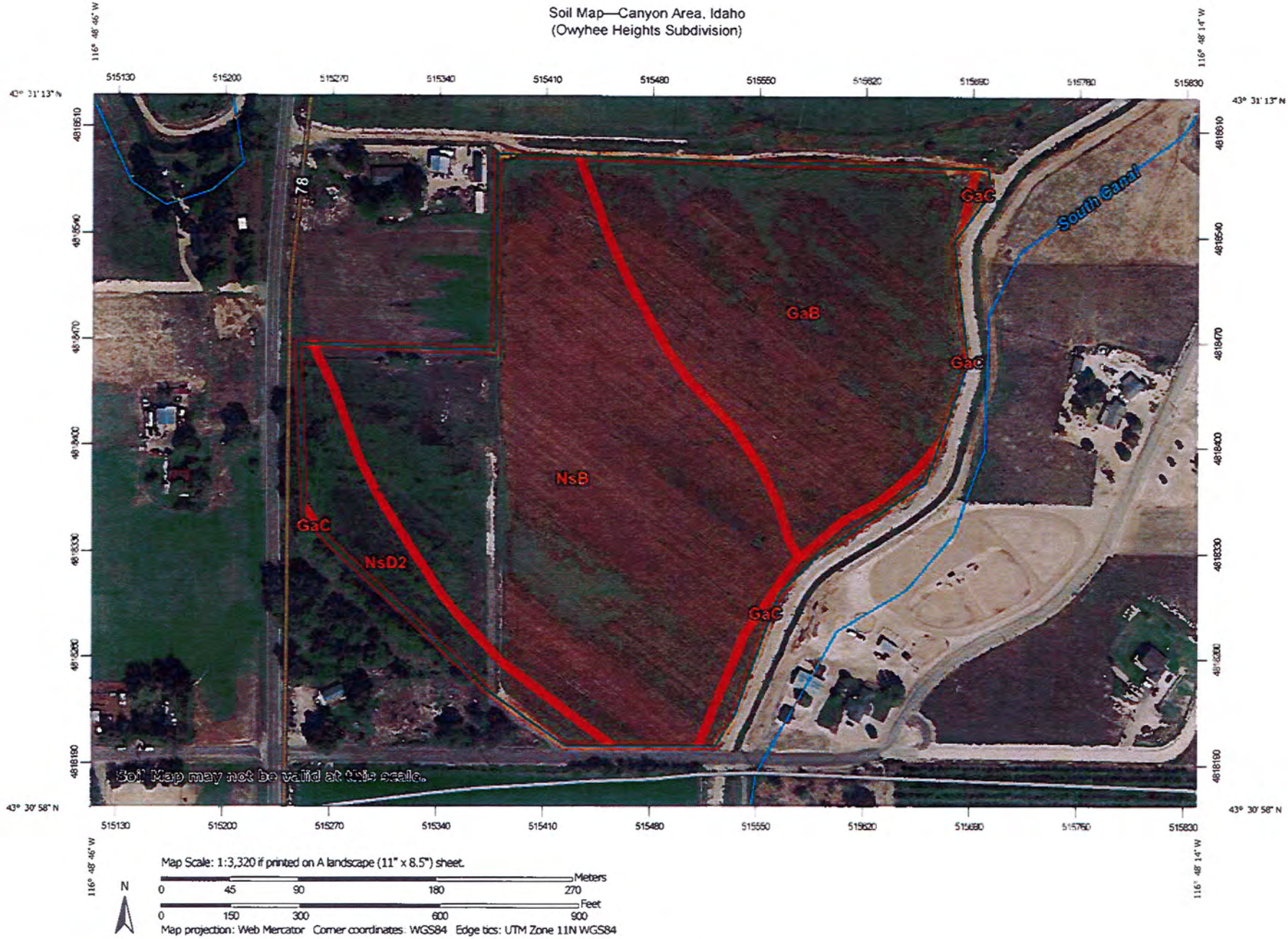
Completed Depth 245 (Measurable)
Date: Started 03/19/04 Completed 03/22/04

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

Firm Name Treasure Valley Drilling Firm No. 560
Firm Official Date 03/25/04
Supervisor or Operator Date 03/25/04
(Sign once if Firm Official & Operator)

Date: 3/25/2004 Time: 1:42 PM

Soil Map—Canyon Area, Idaho
(Owyhee Heights Subdivision)



Map Scale: 1:3,320 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 21, Aug 22, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 9, 2023—Sep 14, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GaB	Garbutt silt loam, 1 to 3 percent slopes	10.7	36.1%
GaC	Garbutt silt loam, 3 to 7 percent slopes	0.7	2.3%
NsB	Nyssaton silt loam, 1 to 3 percent slopes	16.0	54.0%
NsD2	Nyssaton silt loam, 7 to 12 percent slopes, eroded	2.3	7.7%
Totals for Area of Interest		**29.7**	**100.0%**

Canyon Area, Idaho

GaB—Garbutt silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q15
Elevation: 2,000 to 5,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 165 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Garbutt and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Garbutt

Setting

Landform: Terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or lacustrine deposits and/or loess

Typical profile

A - 0 to 5 inches: silt loam
C - 5 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: R011XY009ID - Silty 7-10 PZ KRLA2/ACHY

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 21, Aug 22, 2024

Canyon Area, Idaho

GaC—Garbutt silt loam, 3 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2q16
Elevation: 2,000 to 5,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 165 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Garbutt and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Garbutt

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or lacustrine deposits and/or loess

Typical profile

A - 0 to 5 inches: silt loam
C - 5 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: R011XY009ID - Silty 7-10 PZ KRLA2/ACHY

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 21, Aug 22, 2024

Canyon Area, Idaho

NsB—Nyssaton silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q30
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nyssaton and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 11 inches: silt loam
Bk - 11 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: R011XY009ID - Silty 7-10 PZ KRLA2/ACHY

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 21, Aug 22, 2024

Canyon Area, Idaho

NsD2—Nyssaton silt loam, 7 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2q32
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Nyssaton, eroded, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton, Eroded

Setting

Landform. Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bk - 8 to 60 inches: silt loam

Properties and qualities

Slope. 7 to 12 percent
Depth to restrictive feature. More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site. R010XY001ID - North Slope Loamy 12-16 PZ FEID-PSSPS

Hydric soil rating. No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 21, Aug 22, 2024

LEVEL 1 NUTRIENT PATHOGEN EVALUATION FOR OWYHEE HEIGHTS

Prepared for:

Brent Orton, PE
Orton Engineering
17338 Sunnydale Pl.
Caldwell, Idaho 83607

Prepared by:

BOWEN COLLINS & ASSOCIATES

October 2024

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INTRODUCTION

This report presents the results of a Level 1 Nutrient Pathogen (NP) Study conducted for the proposed Owyhee Heights subdivision in Owyhee County, ID. The study aims to determine if the proposed number of residential lots will have a negligible impact on groundwater conditions and if a comprehensive Level 2 NP Study, as outlined by Southwest District Health (SWDH), will be required. Bowen Collins & Associates (BC&A) prepared this evaluation for Orton Engineering (Orton). The purpose of the study is to assess various site parameters to determine the potential impact on groundwater conditions. This study complies with the requirements established by Owyhee County and SWDH for area developments, in accordance with the Idaho Department of Environmental Quality (IDEQ) guidelines dated May 6, 2002.

1.0 PROJECT DESCRIPTION AND EXISTING SITE CONDITIONS

1.1 PROJECT AND VICINITY DESCRIPTION INCLUDING SITE TOPOGRAPHY AND DRAINAGE

The proposed development occupies approximately 33 acres across two parcels (PN RP02N04W106020, RP03N04W106001) in a multiuse zone, located 1 mile south of Marsing in the SW1/4 of Section 10, Township 2 North, Range 4 West, Boise Meridian, Owyhee County, ID. Currently, the site consists of agricultural land, gently sloping towards the northwest with roughly 40 feet of relief. The site is bounded to the west by Marsing Murphy Rd. and to the south by Howard Rd. Surrounding the site are existing residential properties and agricultural land.

The proposed development will consist of 6 single-family residential lots with individual wells and septic systems. There are no stormwater drainage facilities in the vicinity, and the project site does not receive off-site drainage. Stormwater drainage for the project site is achieved through percolation into surficial soils, with regional drainage flowing north and east towards the Snake River. Figure 1 shows a topographic map and location of the project area.

1.2 REGIONAL GEOLOGY

The project site is located within the western Snake River Plain of southwestern Idaho and eastern Oregon. This northwest-trending rift basin, approximately 45 miles wide and 200 miles long, developed about 14 million years ago and has intermittently been occupied by large inland lakes. The geologic materials found within and along the plain's margins reflect volcanic and fluvial/lacustrine sedimentary processes, resulting in the accumulation of approximately 1 to 2 kilometers of interbedded volcanic and sedimentary deposits. Streams draining the highlands to the north and south of the plain's margins provided coarse to fine-grained sediments eroded from granitic and volcanic rocks, respectively. About 2 million years ago, the last of these lakes drained, leading to a landscape dominated by fluvial erosion and deposition. Around 14,000 years ago, Pleistocene Lake Bonneville occupied much of northeast Utah and drained in a catastrophic flood that significantly modified the landscape near the Snake River in southwestern Idaho. The project site is underlain by thinly-bedded tan silt, silty sand, and fine sand of the "Sandy Silt of Bonneville Flood Slack Water" (Othberg and Stanford, 1992). These sediments were deposited by slack water from the Bonneville Flood, which inundated the Boise River and Snake River valleys up to an elevation of 2,450 feet, typically burying the gravels of the Whitney terrace. A geologic map showing the approximate site boundary is included in Appendix A.

1.3 LOCALIZED GEOLOGY AND HYDROGEOLOGY

Prior to preparing this Nutrient Pathogen Study, Mason & Associates conducted a subsurface geotechnical investigation of the property. Based on the review of the Geotechnical Engineering Report, the onsite soils primarily consist of silt and sandy loam, underlain by a mix of silt and sandy loam containing 15 to 35 percent cobbles. This soil profile is similar to those found in nearby driller's well logs, which are included later in this report. Generally, these well logs indicate topsoil and clay/sand mixtures underlain by gravel layers. At greater depths, varying layers of sand and clay were observed. Copies of the test pit logs and a map showing the test pit locations can be found in Appendix B.

Groundwater was not encountered in the test pits, which were advanced to a maximum depth of 11 feet. A review of driller's well logs shows static groundwater depths ranging from 5 to 98 feet below ground surface (bgs), varying with location and topography. Since the site elevations vary by roughly 40 feet from the low points to the high points, seasonal high groundwater levels are anticipated to vary significantly.

1.4 SOIL SURVEY REVIEW

BC&A reviewed soil survey information for Owyhee County on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Service website. The research indicated that the project site is characterized by Garbutt Silt Loams and Nyssaton Silt Loams. Specific characteristics of these soils, as defined by the USDA NRCS, are listed below, and the soil survey data from the NRCS website is included in Appendix C of this report:

- **Garbutt Silt Loams:** These soils occur on terraces and fan remnants and are classified as well-drained. The most limiting soil layer has a moderately high to high capacity to transmit water. Typical soil profiles include silt loam at the surface, underlain by more silt loam.
- **Nyssaton Silt Loam:** These soils occur in fan remnants and are classified as well-drained. The most limiting soil layer has a moderately low to moderately high capacity to transmit water. Typical soil profiles include silt loam at the surface, underlain by more silt loam.

1.5 REVIEW OF NUTRIENT PATHOGEN STUDIES IN THE VICINITY OF THE PROJECT SITE

BC&A filed a request for information with IDEQ to access nutrient pathogen studies completed near the referenced site. BC&A has since reviewed the following documents:

- **Level 1 Nutrient Pathogen Study, Alyson Meadows Subdivision, Canyon County, Idaho** (prepared by BC&A, dated April 30, 2024)
- **Level 1 Nutrient Pathogen Study, Bradshaw Subdivision, 15361 Willis Road, Caldwell, Idaho** (prepared by BC&A, dated February 23, 2022); **Level 1 Nutrient Pathogen Study Addendum** (prepared by GeoEngineers, dated June 1, 2023)
- **Level 1 Nutrient Pathogen Evaluation, Cascade Hills Subdivision Phase 2, Canyon County, Idaho** (prepared by ALLWEST Testing & Engineering, dated August 3, 2020); **Revised Level 1 Nutrient Pathogen Study, Cascade Hills Subdivision Phase 2, Canyon County** (prepared by ALLWEST Testing & Engineering, dated March 25, 2022)
- **Revised Level 1 Nutrient Pathogen Study, Arezzo View Subdivision, Canyon County, Idaho** (prepared by BC&A, dated September 25, 2023)

Information gathered from review of these documents is referenced within the Hydraulic Conductivity and Aquifer Effective Porosity sections of this report.

2.0 SITE PARAMETERS FOR LEVEL 1 NITRATE MASS-BALANCE ANALYSIS

2.1 WATER BUDGET PARAMETERS

2.1.1 Well Driller's Report Review

Prior to 1967, well driller's logs in the State of Idaho were submitted to the Idaho Department of Water Resources (IDWR) on a voluntary basis. After 1967, it became a requirement to submit logs for all wells drilled. However, the state was unable to track or enforce this requirement until 1987 when well permits also became mandatory. As a result, available records maintained by the IDWR may be incomplete for the area researched.

BC&A conducted a review of Well Driller's Reports (well logs) maintained on the IDWR website for wells within a 1-mile radius of the study area. A total of 33 Well Driller's Reports were identified for this area and are included in Appendix D of this report. Figure 2 shows the locations of the wells. Although numerous well logs are available, only 22 wells provided complete pump test data. A spreadsheet with tabulated data from all 33 well logs can be found in Appendix D.

Several wells were excluded from analysis for the following reasons:

- Drilled greater than 100 feet past the first encountered water.
- Listed a pumping rate or drawdown exceedingly higher than other wells in the area.
- Well numbers 13, 14, and 21 did not specify the location of water-bearing zones.
- Well logs for well numbers 24, 30, and 32 were incomplete and did not include pump test data or indicate the water-bearing zones.

BC&A ultimately used 10 well logs for hydraulic conductivity analysis. Among the 10 wells with complete pump test data, discharge rates ranged from 15 to 50 gallons per minute, and drawdown data generally ranged from 10 to 220 feet. Soils commonly encountered included sand and gravel with intermittent silt/clay layers.

2.1.2 Hydraulic Conductivity

BC&A calculated the transmissivity of each of the wells using the following relationship provided by Razack and Huntley (C.W. Fetter, 2001):

$$T = 33.6\left(\frac{Q}{h_o - h}\right)^{0.67}$$

Where:

T = Transmissivity (feet^2/day)

Q = Pumping Rate (feet^3/day)

h_0 - h = Drawdown (feet)

The hydraulic conductivity values for each of the wells were then obtained by the following relationship (C.W.Fetter, 2001);

$$K = \frac{T}{b}$$

Where:

K = Hydraulic Conductivity (feet/day)

T = Transmissivity (feet^2/day)

b = Aquifer Thickness (feet)

Using the previously stated equations and input data, BC&A calculated hydraulic conductivity values ranging from 5 to 30 feet/day, with an average value of 17 feet/day. Additionally, based on four previous NP studies conducted in the vicinity of the project site, hydraulic conductivity values between 13 and 70 feet/day were used and approved during the IDEQ/SWDH review process.

This evidence suggests that the hydraulic conductivity values for sand and gravel with some silt and clay content are most representative of the shallow groundwater flow regime across the site. Typical hydraulic conductivity rates for these sediments vary from approximately 3 to 300 feet/day (C.W. Fetter, 2001). For the mass-balance spreadsheets, BC&A used a hydraulic conductivity value of 17 feet/day, which is the average of the well logs and near the lower end of the values used in previous NP studies.

2.1.3 Groundwater Gradient And Direction

To gather groundwater gradient information for the site, BC&A reviewed relevant regional literature. Specifically, BC&A examined Figure 3 (Potentiometric Surface Map, Pg. 8) from the 2001 Annual Ground Water Quality Monitoring Summary Results for Northwest Owyhee County, Idaho. This figure was georeferenced in ArcGIS Pro to match the regional extent of the study area. Using the potentiometric contour elevations from the figure, BC&A calculated the elevation difference between the potentiometric surface lines in the site vicinity and the distance between these lines. The elevation difference was found to be 10 feet, and the distance between the lines was approximately 900 feet, resulting in a hydraulic gradient of approximately 0.01 ft/ft. The azimuth was estimated at 40 degrees.

For this report, BC&A used a hydraulic gradient of 0.01 ft/ft for the mass-balance spreadsheet. Figure 3 shows a map of the IDEQ groundwater flow contours.

2.1.4 Mixing Zone Thickness

In the mass-balance spreadsheets, the mixing zone thickness refers to the induction zone anticipated for the septic tank effluent or contaminant source. According to IDEQ guidance, the mixing zone thickness varies with the distance from the proposed septic system location to the property boundary as follows:

- If the distance is less than 500 feet to the property boundary, use a mixing zone thickness of 15 feet.
- If the distance is between 500 and 1,000 feet to the property boundary, use a mixing zone thickness of 30 feet.

- If the distance is greater than 1,000 feet to the property boundary, use a mixing zone thickness of 60 feet.

Since the distance between the closest individual septic system location and the property boundary is approximately 10 feet, BC&A used a mixing zone thickness of 15 feet for the mass-balance spreadsheets.

2.1.5 Aquifer/Lot Widths Perpendicular to Flow

BC&A used a northern groundwater flow direction (approximately 40° azimuth) and the property site plan to determine the aquifer/lot widths for the mass-balance spreadsheets. The perpendicular lot widths for the lots ranging between 1.51 and 1.74 acres vary from 232 to 324 feet. The perpendicular lot width for the 22.92-acre lot is 1,192 feet. A site map with the identified perpendicular widths is located in Appendix E of the report.

2.1.6 Area of Parcel, Percent of Lot Impervious, and Number of Proposed Lots

The client described the project as encompassing 33 acres, with six proposed lots. Five of the lots range in size from 1.51 to 1.74 acres, while the sixth lot is approximately 22.92 acres. For the mass-balance spreadsheets, BC&A estimated that approximately 6 percent of the parcel (5 parcels only) would be impervious to percolation due to the proposed development.

2.1.7 Gallons of Septic Tank Effluent

The client described the project as having individual septic tank systems for each proposed single-family residential lot. For the mass-balance spreadsheets, BC&A used the default value of 300 gallons per day per septic system as the amount of effluent discharge.

2.1.8 Regional Climatology and Natural Recharge Rate

For the region, the annual average temperature ranges from 21°F to 93°F, with average precipitation between 10 and 12 inches per year.

The natural recharge rate (NRR) was estimated using the following relationship provided by IDEQ:

$$NRR = 0.0046(Annual\ Precipitation\ in\ Inches)^2$$

Using this relationship, an annual precipitation rate of 11.45 inches yields an estimated natural recharge rate of 0.6 inches per year. This value was used in the mass-balance spreadsheets. A copy of the research data showing the annual precipitation for the project area is included in Appendix F.

2.2 NITROGEN BUDGET PARAMETERS

2.2.1 Vicinity Water Quality And Background Groundwater Nitrate Concentration

BC&A reviewed the Idaho DEQ (2020) Nitrate Priority Areas with Monitoring Wells ArcGIS layer package data from the IDEQ website for 10 wells near the project site. The monitoring and sampling for these wells occurred from 2009 to 2016, with nitrate (NO_3) concentrations ranging from 0.01 to 6.6 mg/L. BC&A calculated the average nitrate concentration from these wells, resulting in a value of 2.1 mg/L. This average was used as the background nitrate level for the mass-balance spreadsheets in this report. Table 1 presents the tabulated data from these 10 wells. Figure 4 shows a map indicating their locations.

Table 1
Vicinity Nitrate Concentrations

SiteID	Agency	NO_3 (mg/L)	Sample Date	Aquifer	Latitude	Longitude
433226116484201	IDWR	0.04	6/10/2009	Homedale - Murphy	43.540417	-116.813361
8601301	ISDA	0.01	6/3/2009	Homedale - Murphy	43.532199	-116.81047
2458	DEQ	5.32	5/18/2015	Homedale - Murphy	43.53234	-116.8011
2457	DEQ	5.32	5/18/2015	Homedale - Murphy	43.53252	-116.79928
A0004445	DEQ-SDWIS	2.8	Vicinity nitrate concentrations	Homedale - Murphy	43.525168	-116.812796
DY16730871	ISDA-Dairy	0.7	11/16/2010	Homedale - Murphy	43.53	-116.7875
433042116494401	IDWR	1.1	7/1/2015	Homedale - Murphy	43.511694	-116.83
8601401	ISDA	6.6	8/3/2016	Homedale - Murphy	43.516224	-116.823931
8601501	ISDA	0.01	6/3/2009	Homedale - Murphy	43.520302	-116.802441
E0008411	DEQ-SDWIS	0.01	9/23/2015	Homedale - Murphy	43.518246	-116.786752

mg/L - milligrams per liter

2.2.2 Septic Tank Effluent Concentrations

In the mass-balance spreadsheets, the value for septic tank effluent concentrations refers to the amount of nitrate anticipated to be released into the groundwater system from effluent or a contaminant source. There are currently three types of septic tank systems, each with different nitrate concentrations in their effluent discharge:

- A standard septic tank releases a nitrate concentration of 45 mg/L.
- A 40 percent nitrate reducing system releases a nitrate concentration of 27 mg/L.
- A 65 percent nitrate reducing system releases a nitrate concentration of 16 mg/L.

2.2.3 Denitrification Rate And Nitrate In Natural Recharge Rate

In the mass-balance spreadsheets, the values for the denitrification rate and nitrate in natural recharge are preset default values established by IDEQ. BC&A used the default value of 0 for the denitrification rate and 0.3 mg/L for the nitrate in natural recharge in the mass-balance spreadsheets.

3.0 LEVEL 1 NITRATE MASS-BALANCE ANALYSIS

Nitrate is the most mobile constituent of concern in domestic wastewater and can impact public health when the maximum contaminant level (MCL) is exceeded (nitrate-N > 10.0 mg/L). Therefore, nitrate is typically the limiting factor in determining appropriate lot sizes and the design and placement of on-site wastewater treatment systems. According to the Nutrient-Pathogen Evaluation Program for On-Site Wastewater Treatment Systems (May 2002), IDEQ considers an increase of 1.0 mg/L nitrate, or less, at the down-gradient boundary of the overall subdivision as demonstrating a negligible impact.

To evaluate the impact of nitrate on the groundwater system in the vicinity of the proposed project, a mass-balance approach, recommended by SWDH and IDEQ, has been performed. Note that calculations for this approach do not consider the actual alignment of individual wastewater treatment systems.

The mass-balance spreadsheets for down-gradient nitrate concentration for all lots with widths perpendicular to groundwater flow are presented in Appendix G. A summary of the values used in the analysis is provided in Table 2.

Table 2
Parameters Used in the Level 1 Nitrate Mass-Balance Analysis

Water Budget	Values Used
Hydraulic Conductivity (ft/day)	17
Hydraulic Gradient (ft/ft)	0.01
Mixing Zone Thickness (ft)	15
Percent of Parcel that is Impervious (%)	6
Septic Tank Effluent (gpd/home)	300[1]
Natural Recharge Rate (in/yr)	0.6
Nitrogen Budget	**Values Used**
Upgradient Groundwater Concentration (mg/L)	2.1
Denitrification Rate (decimal fraction)	0[1]
Nitrate in Natural Recharge (mg/L)	0.3[1]
Point of Compliance Nitrate Concentration Goal (mg/L)	3.1[2]

[1] - Numbers represent the default values recommended by IDEQ and SWDH.
[2] - Upgradient groundwater concentration (mg/L) plus 1 mg/L equates to Point of Compliance Nitrate Concentration goal

Results of the mass-balance analysis for each individual lot are summarized in Table 3 below. Mass-balance spreadsheets for each lot were prepared for the standard, 40%, and 65% nitrate reducing septic systems. The standard septic system is shown to be a viable option for Lot 7 only, with the remaining lots requiring a 65% reducing system to be below the Point of Compliance Nitrate Concentration goal of 3.1 mg/L.

Table 3
Nitrate Concentration by Septic System Type for Each Lot

Lot	Width Perpendicular to Flow (feet)	Type of Nitrate Reducing System	Average Downgradient Nitrate Concentration (mg/L)
2	301	Standard	**4.2**
		40% Reducing System	**3.3**
		65% Reducing System	2.8
3	231	Standard	**4.8**
		40% Reducing System	**3.6**
		65% Reducing System	2.9
4	279	Standard	**4.3**
		40% Reducing System	**3.4**
		65% Reducing System	2.8
5	324	Standard	**4.0**
		40% Reducing System	**3.2**
		65% Reducing System	2.7
6	306	Standard	**4.2**
		40% Reducing System	**3.3**
		65% Reducing System	2.8
7	1,192	Standard	2.7
		40% Reducing System	2.4
		65% Reducing System	2.3

Bold – Indicates that the resulting downgradient nitrate concentration exceeds the Point of Compliance value of 3.1 mg/L.

4.0 CONCLUSIONS AND RECOMMENDATIONS

A total of seven (7) lots were evaluated by using the nitrate mass-balance analysis. Each lot was evaluated by using three spreadsheets for the standard, 40%, and 65% nitrate reducing system, respectively. Based on the estimated input parameters, the Point of Compliance Nitrate Concentration value of 3.1 mg/L was not exceeded when analyzing the 65 percent nitrate-reducing septic systems for lots 2-6. The Point of Compliance Nitrate Concentration value of 3.1 mg/L was not exceeded when analyzing the standard septic systems for lots 7. Therefore, the development meets the negligible impact criteria as defined by the IDEQ.

SWDH and the IDEQ will need to review and approve this Level 1 NP Study prior to the selection of the appropriate septic system and subdivision approval.

If changes in the number of lots are desired, a revised lot layout must be provided to BC&A, and this study must be resubmitted or amended.

This report must be submitted to SWDH along with a preliminary plat and the Subdivision Engineering Report (SER). Additionally, SWDH requires a preliminary development meeting to begin the SER process.

As of the completion of this report, these results have not been reviewed by IDEQ or SWDH. Therefore, a revision in the assumed hydraulic conductivity value or other parameters used in the mass-balance spreadsheet may be required following the SWDH and IDEQ review. In the event adjustments are required, the allowable number of lots may change for the subdivision. Additionally, SWDH and IDEQ will require this report be resubmitted or amended with revised values.

5.0 REFERENCES

Carlson, R., Bahr, G., & Boyle, L. (2001). Ground Water Quality Monitoring Results for Northwest Owyhee County, Idaho. Idaho State Department of Agricultural Technical Summary, 6.

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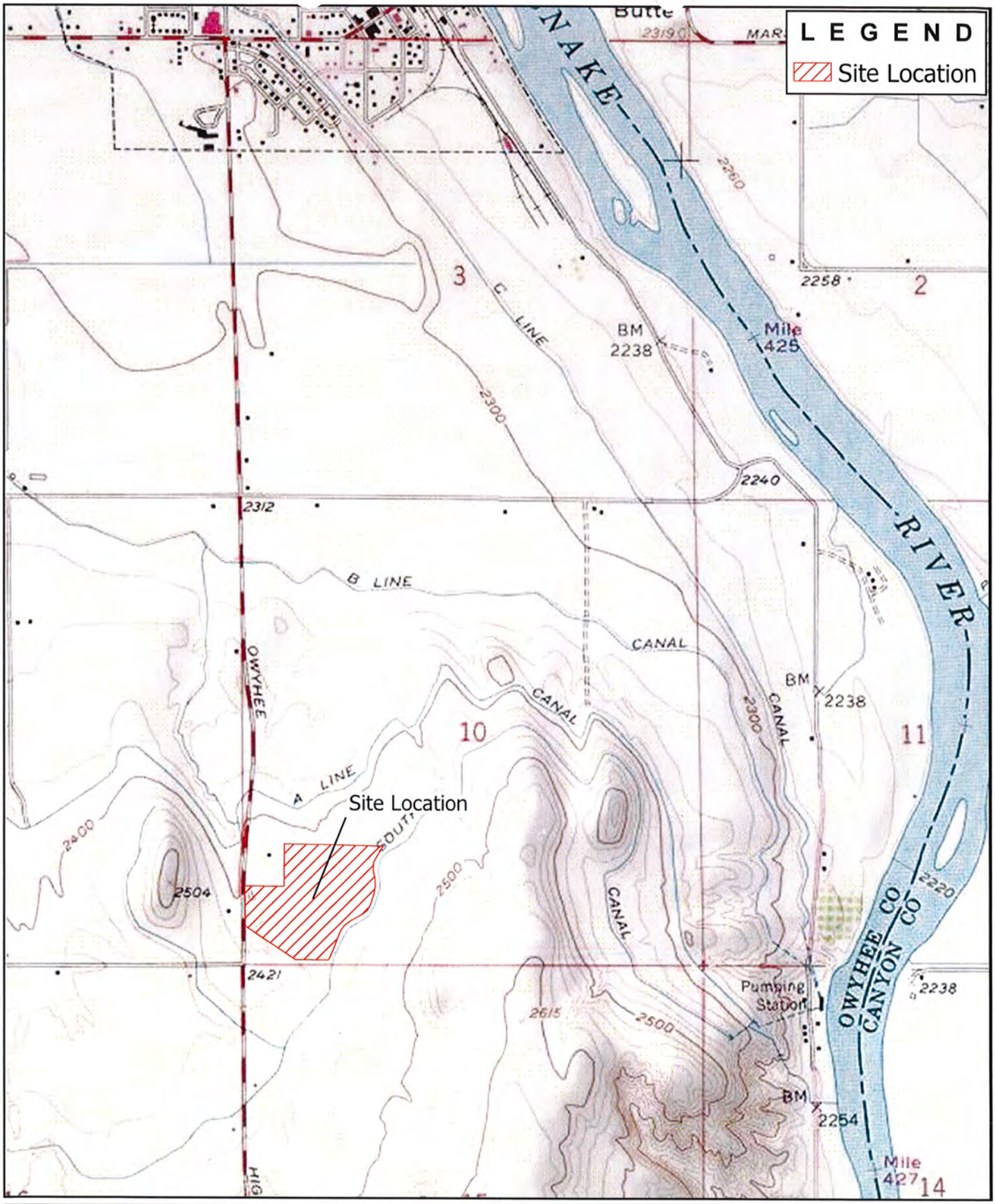
U.S. Department of Agriculture, Natural Resource Conservation Service. [Online] Web Soil Survey Available: <http://websoilsurvey.nrcs.usda.gov/app/> (2024).

FIGURES



BOWEN COLLINS & ASSOCIATES

TOPOGRAPHIC MAP

ORTON ENGINEERING

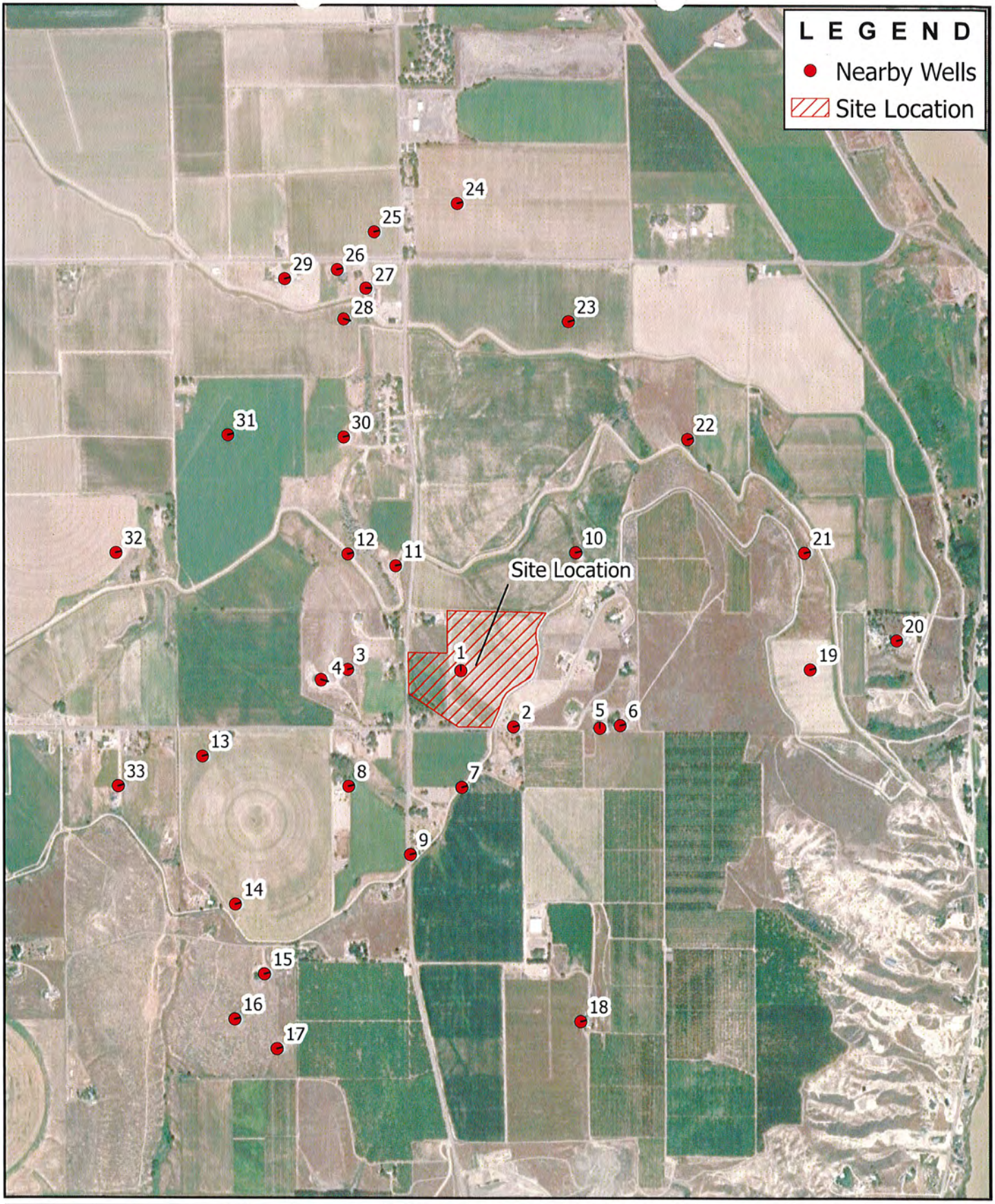
OWYHEE HEIGHTS NPE

NORTH:

SCALE: 0 500 1,000 Feet

FIGURE NO. 1

B:\Orton Engineering\833-24-01 Owyhee Heights NPE\4.0 GIS\4.4 APRX\Owyhee Heights NPE\Owyhee Heights NPE.aprx lgaichuk 8/27/2024



BOWEN COLLINS & ASSOCIATES

IDWR WELL LOCATIONS

ORTON ENGINEERING

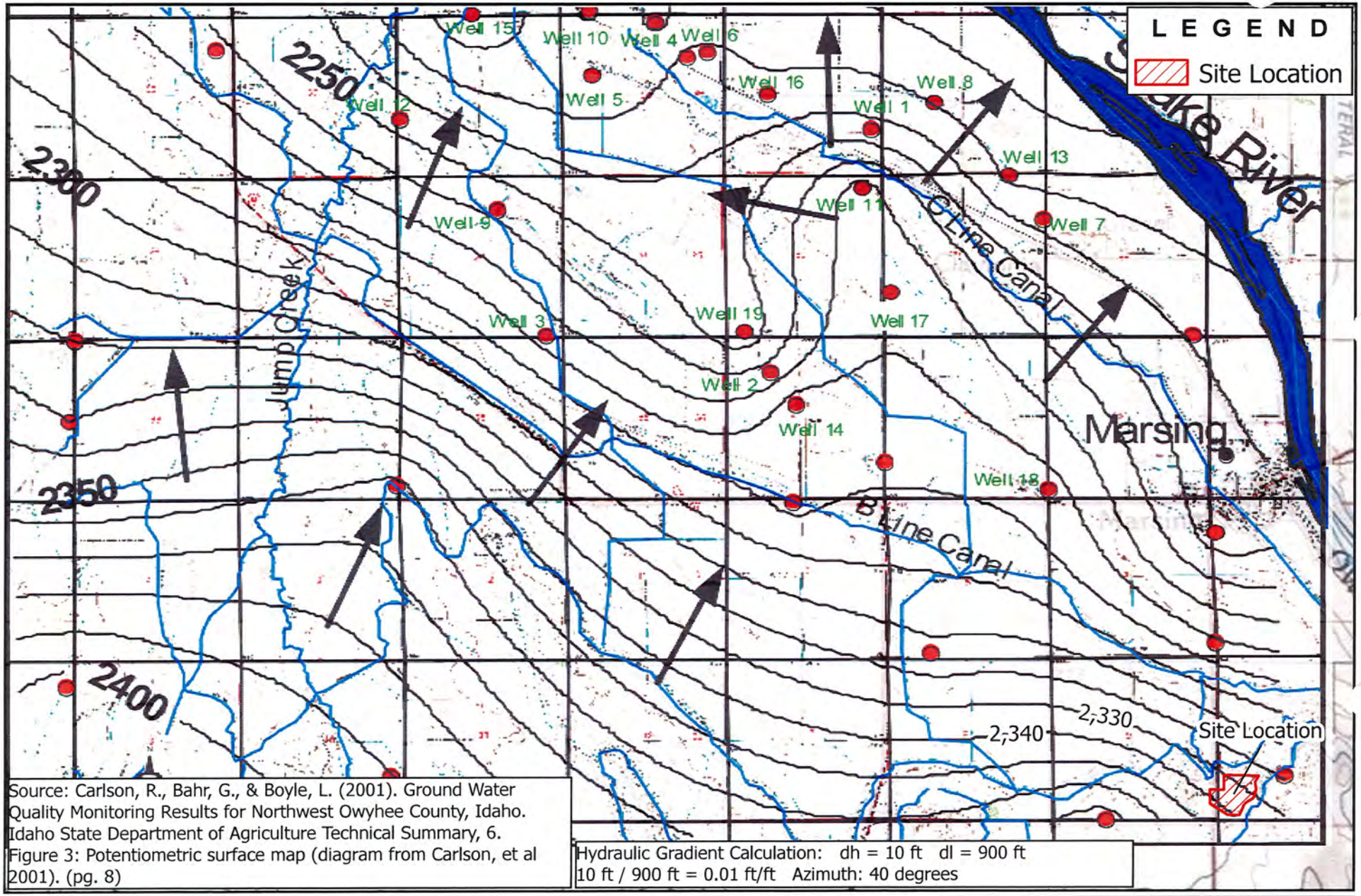
OWYHEE HEIGHTS NPE

NORTH:

SCALE: 0 1,000 Feet

FIGURE NO. 2

B:\Orton Engineering\833-24-01 Owyhee Heights NPE\4.0 GIS\4.4 APRX\Owyhee Heights NPE\Owyhee Heights NPE.aprx lgaichuk 8/27/2024



Source: Carlson, R., Bahr, G., & Boyle, L. (2001). Ground Water Quality Monitoring Results for Northwest Owyhee County, Idaho. Idaho State Department of Agriculture Technical Summary, 6. Figure 3: Potentiometric surface map (diagram from Carlson, et al 2001). (pg. 8)

Hydraulic Gradient Calculation: dh = 10 ft dl = 900 ft
10 ft / 900 ft = 0.01 ft/ft Azimuth: 40 degrees

BOWEN COLLINS & ASSOCIATES

ORTON ENGINEERING

OWYHEE HEIGHTS NPE

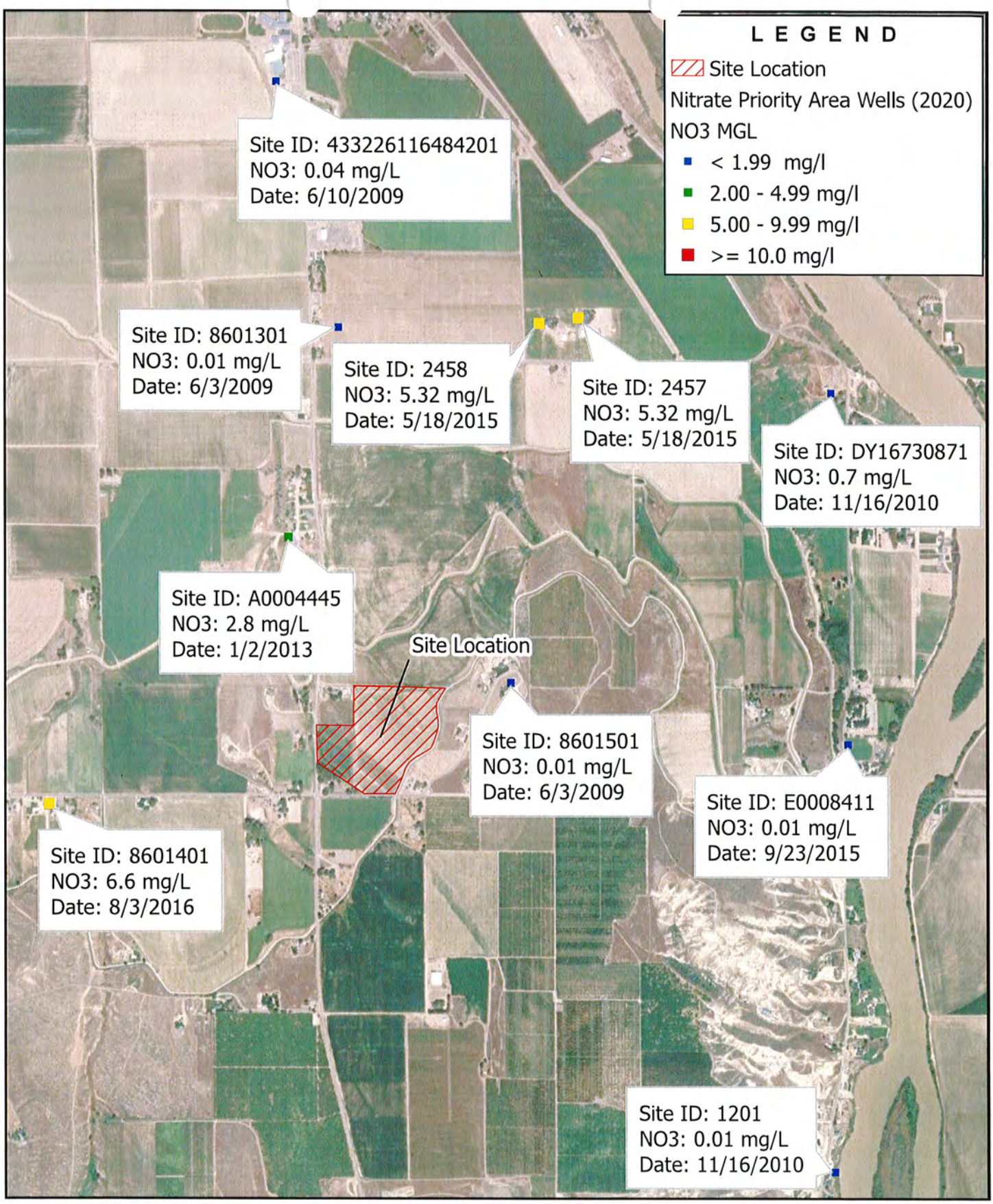
GROUNDWATER GRADIENT

NORTH:

SCALE: 0 2,000 4,000 Feet

FIGURE NO. 3

B:\Orton Engineering\833-24-01 Owyhee Heights NPE\4.0 GIS\4.4 APRX\Owyhee Heights NPE\Owyhee Heights NPE.aprx lgaichuk 8/27/2024



BOWEN COLLINS & ASSOCIATES

VICINITY WATER QUALITY NITRATE AS NO3

ORTON ENGINEERING

OWYHEE HEIGHTS NPE

NORTH:

SCALE: 0 1,000 Feet

FIGURE NO. 4

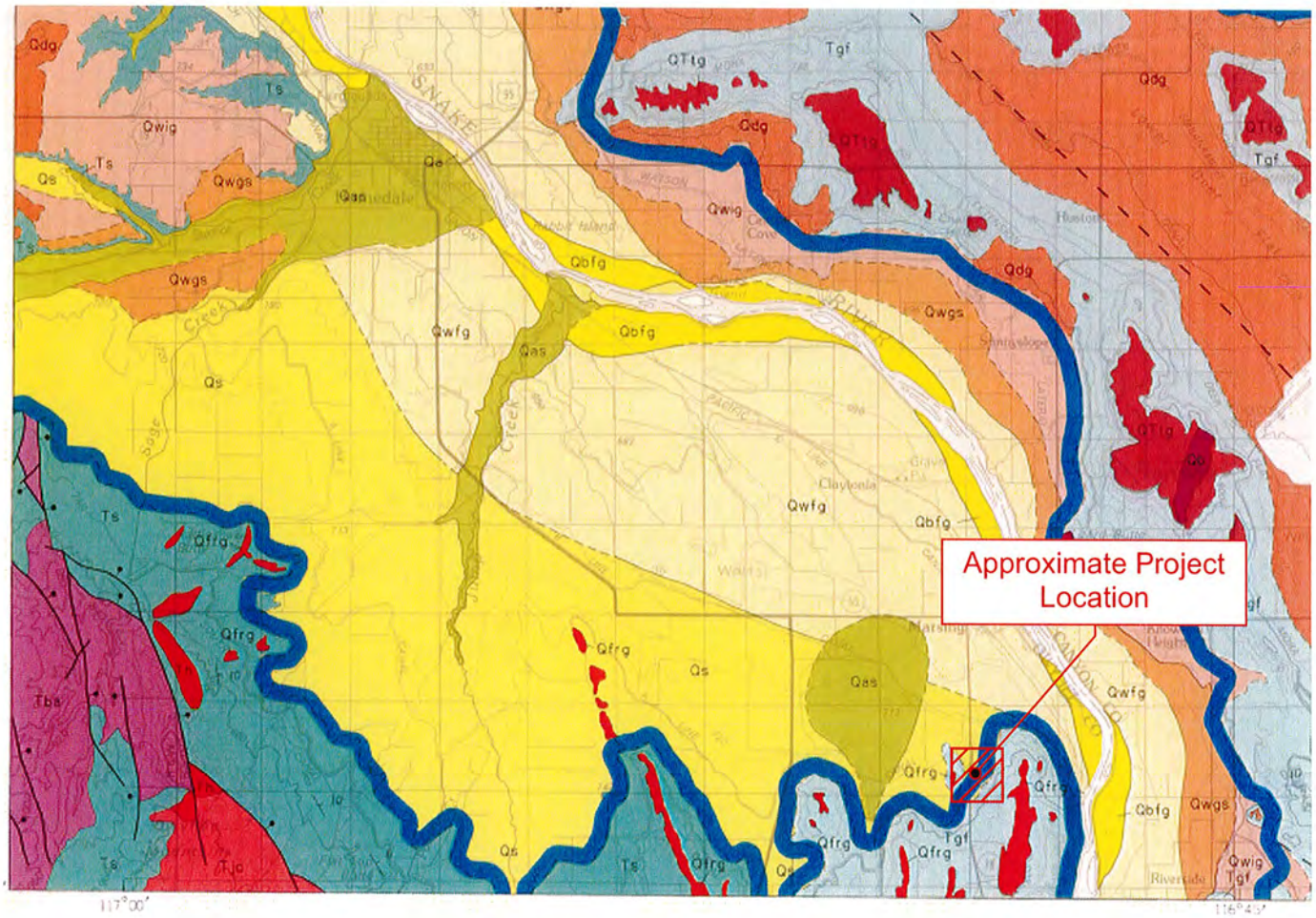
B:\Orton Engineering\833-24-01 Owyhee Heights NPE\4.0 GIS\4.4 APRX\Owyhee Heights NPE\Owyhee Heights NPE.aprx lgaichuk 8/27/2024

APPENDIX A

Geologic Map with Approximate Project Site Location

Appendix A - Geologic Map with Approx. Project Site Location

(Othberg, 1992)



GEOLOGIC MAP OF THE BOISE VALLEY AND ADJOINING AREA, WESTERN SNAKE RIVER PLAIN, IDAHO

BY KURT L. OTHBERG AND LOUDON R. STANFORD

1992

MAP UNITS

SEDIMENTARY

QUATERNARY SEDIMENTS

Alluvium and Colluvium

Deposits of floodplains, alluvial fans, side-stream terraces, and landslides.

Qa — ALLUVIUM OF BOISE AND SNAKE RIVER — Sandy cobble gravel upstream grading to sandy pebble gravel downstream. Mostly channel alluvium of the Boise and Snake rivers. Thickness 6-14 meters (20-46 feet). No pedogenic clay.

Ql — LANDSLIDE DEPOSITS — Highly variable rock and soil masses varying from transported coherent blocks to unsorted, unstratified colluvium. Includes scar area at the head of the landslide. Derived from slumps, slides, and debris flows. Most slides represent slope failures within basaltic tuff (Tbt) and surface soils of granitic rocks.

Qfg — ALLUVIAL FAN GRAVEL — Sandy pebble and cobble gravel where formed from reworked Tenmile Gravel (QTtg) and sand and granule gravel where formed from weathered granite (g). Primarily formed by Pleistocene debris flows and local high-energy streams during times of greater runoff (Pierce and Scott, 1982). Loess 1-2 meters thick discontinuously covers surface of gravel. Patterned ground present. Amount of pedogenic clay and presence of duripans varies.

Qas — SANDY ALLUVIUM OF SIDE-STREAM VALLEYS AND GULCHES — Medium to coarse sand interbedded with silty fine sand and silt. Sediment mostly derived from weathered granite and reworked Tertiary sediments. Thickness variable. Minor pedogenic clay and calcium carbonate.

Qfs — SAND OF INCISED ALLUVIAL FANS — Medium to coarse sand interbedded with silty fine sand and silt. Mostly reworked Tertiary sediments deposited in local alluvial fans. Thickness 1-15 meters (3-50 feet). Pedogenic clay 10-20%; duripans locally present.

Qds — SAND OF DRY CREEK TERRACE — Medium to coarse sand interbedded with silty fine sand and silt. Remnant of ancestral Dry Creek valley. Pedogenic clay 10-20%; duripans locally present.

Qffg — GRAVEL OF ALLUVIAL-FAN REMNANTS — Dark gray, poorly sorted, sandy pebble and cobble gravel. Gravel clasts subangular and subrounded. Thickness 3-6 meters (10-20 feet). Mapped only where channel deposits of ancestral Squaw Creek cap remnants of a large alluvial fan in southwest corner of map.

Bonneville Flood Deposits

Consists primarily of fine-grained sediments of the Bonneville Flood slack waters that inundated the Snake River Valley and the lower Boise Valley. Includes gravels deposited in high-energy flood channels. The surface of sediments deposited by the Bonneville Flood show minor accumulations of pedogenic clay and calcium carbonate. Slack-water sediments bury loess and soils of older surfaces.

Qbgc — CLAY OF BONNEVILLE FLOOD SLACK WATER — Light tan silty clay 1-2 meters (3-7 feet) thick. Deposited by slack water of Bonneville Flood upstream from Parma. Buries gravel of Boise terrace.

Qs — SANDY SILT OF BONNEVILLE FLOOD SLACK WATER OVERLYING TERTIARY SEDIMENTS — Thin-bedded tan silt, silty sand, and fine sand 3-6 meters (10-20 feet) thick. Deposited by Bonneville Flood slack water that flooded the valleys to 747 meters (2,450 feet) elevation (O'Connor, 1990). Buries erosion surface of fine-grained Tertiary sediments.

Qbfg — GRAVEL OF THE BONNEVILLE FLOOD-SCOURED BOISE TERRACE AND BOISE FLOODPLAIN COMPLEX — Sandy pebble gravel remnants of Boise terrace mostly scoured by late stages of Bonneville Flood. Includes areas of floodplain gravel indistinguishable from scoured Boise terrace.

Qwgs — SANDY SILT OF BONNEVILLE FLOOD SLACK WATER — Thin-bedded tan silt, silty sand, and fine sand 3-6 meters (10-20 feet) thick. Deposited by Bonneville Flood slack water that flooded valleys to 747 meters (2,450 feet) elevation (O'Connor, 1990). Buries gravel of Whitney terrace (Qwg).

Qwfg — GRAVEL OF THE BONNEVILLE FLOOD-SCOURED WHITNEY TERRACE — Sandy pebble gravel remnants of Whitney terrace scoured by late stages of Bonneville Flood. Includes abandoned flood channels. Loess mostly removed. Local remnants of duripans similar to those on Qwg.

Qwlg — SANDY SILT OF BONNEVILLE FLOOD SLACK WATER — Thin-bedded tan silt, silty sand, and fine sand 3-6 meters (10-20 feet) thick. Deposited by Bonneville Flood slack water that flooded valleys to 747 meters (2,450 feet) elevation (O'Connor, 1990). Extent of slack-water sediment not everwhere concordant with interpreted extent of flood waters. Buries thin loess, duripan, and sandy pebble gravel of Wilder terrace, the third terrace above the floodplain in the western Boise Valley. Gravel thickness 3-8 meters (10-25 feet).

TERRACE GRAVELS

These gravels compose a sequence of terraces of the ancestral Boise River. The characteristic coarse channel gravels were primarily deposited on fine-grained Tertiary sediments cut during valley deepening. The light gray gravel is composed mostly of granitic and felsitic clasts derived from the upper Boise River basin in the central Idaho mountains. Qgg and younger gravels have about a 10% component of Pleistocene basalt clasts mostly derived from the Boise River canyon. Boise Valley units are also used for terrace gravels of the Snake River, but Snake River gravels have a darker color due to a component of gravel clasts derived from the Owyhee Mountains and sources to the southeast. All gravel deposits have imbricated well-rounded clasts, poor sorting, and crude stratification of beds of gravel and lenses of cross-bedded sand. These features suggest deposition in braided channels.

Qbg GRAVEL OF THE BOISE TERRACE — Sandy pebble and cobble gravel. First terrace above the floodplain. Thickness 3-14 meters (10-45 feet). Mostly mantled with thin loess.

Qg GRAVEL OF BOISE FRONT TERRACES, UNDIVIDED — Sandy pebble and cobble gravel with subangular boulders. Thickness 1-6 meters (3-20 feet) thick. Forms terraces along canyons and gulches and on flat divides near the margin of the foothills.

Qwg GRAVEL OF WHITNEY TERRACE — Sandy pebble and cobble gravel. Second terrace above floodplain. Thickness 5-24 meters (16-80 feet); thickest to the east. Mantled with 1-2 meters of loess.

Qsg GRAVEL OF SUNRISE TERRACE — Sandy pebble and cobble gravel. Third terrace above the floodplain. Thickness about 13 meters (44 feet). Mostly mantled with 1-2 meters of loess.

Qgg GRAVEL OF GOWEN TERRACE — Sandy pebble and cobble gravel. Fourth terrace above the floodplain. Buried by basalt (Qgb) east of Interstate 84. Terrace gravel overlies the gravel and sand of Bonneville Point (Tbg) to the east and fine-grained Tertiary sediments to the west. Mostly mantled by 1-2 meters (3-7 feet) of loess.

Qag GRAVEL OF AMITY TERRACE — Sandy pebble and cobble gravel grading at depth to coarse pebbly sand. Seventh terrace above the floodplain. Gravel and sand is about 10 meters (33 feet) thick. Northwest-trending, gently sloping escarpments suggest faulting of the gravel. Mantled with loess 0.5-2 meters (2-7 feet) thick.

Qdg GRAVEL OF DEER FLAT TERRACE — Sandy pebble gravel grading at depth to coarse pebbly sand. Deposited on the fourth terrace above the floodplain in the western Boise Valley. North of Caldwell and Middleton Tertiary sediments are exposed between terrace remnants. Boise River gravels also interfinger with and are replaced northeastward by Willow Creek alluvial fan sand and gravel. Gravel and sand deposit is about 10 meters (33 feet) thick. Mantled with loess 1-4 meters (3-13 feet) thick.

Qpdg GRAVEL OF DEER FLAT AND PRE-DEER FLAT TERRACES, UNDIVIDED — Sandy pebble and cobble gravel. Alluvial fan deposits of the ancestral Willow Creek interfingering and mixing downstream with channel alluvium of the ancestral Boise River. Deposited on stream-cut surface of fourth and fifth terrace above the floodplain. Tertiary sediments are exposed between terrace remnants. Mostly mantled with loess 0.5-1 meter (2-3 feet) thick.

QTtg TENMILE GRAVEL — Sandy pebble and cobble gravel grading westward to sandy pebble gravel and pebbly sand at depth. Eighth terrace above the floodplain in the eastern Boise Valley. Remnants in the western Boise Valley form the fifth terrace above the floodplain. Side slopes of remnants expose underlying Glenns Ferry Formation. Thickness is about 15 meters (50 feet). Several normal faults exposed in gravel pits and road cuts. Surface of terrace shows prominent northwest-trending gulches and gently sloping fault-line escarpments. Mostly mantled with loess 1-2 meters (3-7 feet) thick. Patterned ground prominent. Named by Savage (1958); restricted by Wood and Anderson (1981); further restricted herein to exclude the gravel and sand of Bonneville Point formation (Tbg).

TERTIARY SEDIMENTS

Tps SAND OF THE PIERCE GULCH FORMATION — Pale yellow-gray arkosic sand overlain by pebble to cobble gravel. Sand includes cross-bedded and foreset-bedded sequences. Named by W.L. Burnham and S.H. Wood (written communication-unpublished manuscript, 1989).

Tgf GLENNS FERRY FORMATION — Greenish gray poorly consolidated siltstone and fine sandstone. Distinct thick beds; indistinct thin bedding. Includes tan sandstone in Dead Horse Canyon.

Tbg GRAVEL OF BONNEVILLE POINT — Interbedded pebble and cobble gravel, pebbly sand, sand and buried soils. Mostly oxidized to yellow-orange grading to red-brown near surface. Half of the clasts weathered. Mostly channel alluvium of ancestral Boise River deposited in former valley at mountain front. Thickness about 152 meters (500 feet). Soils have B horizons with 50% clay. The upper part of the gravel contains a highly oxidized, partly cemented zone. Several normal faults exposed in gravel pits and road cuts. Patterned ground present with mound relief of 1-2 meters.

Tf ALLUVIAL FAN DEPOSIT — Composed of poorly sorted, silty and sandy gravels with subangular cobbles and boulders in crudely stratified layers and lenses; mostly oxidized to a red-brown near the surface. Alluvial fan remnants deposited by debris flows and ephemeral streams from foothills. Up to 61 meters (200 feet) thick.

Ts SAND AND MUDSTONE OF STREAM AND LAKE SEDIMENTS — Medium- to coarse-grained arkosic sand, sandstone, and claystone. Includes interbeds of fine gravel, locally cemented, and sandy siltstone. Structures vary from large foreset beds of sand to thin-bedded claystone. Undifferentiated unit reflects a variety of stream and lake depositional environments along the northeastern and southwestern margin of the ancestral western Snake River Plain. Includes parts of the Payette, Poison Creek, and Succor Creek Formations, the tuffaceous sediments of Ferns (1989), and the Terteling Springs Formation of W.L. Burnham and S.H. Wood (written communication-unpublished manuscript).

IGNEOUS ROCKS

QUATERNARY BASALTS

Basalt lava flows primarily erupted from three sources during the Pleistocene: the northwest-southeast axis of the western Snake River Plain; Smith Prairie (Howard and others, 1982); and along the edge of the plain southeast of Boise. The basalts inundated ancestral valleys and plains. Their resistance to erosion helped preserve the terrace remnants they cap. The early Pleistocene basalt flows diverted the Boise River northward and the Snake River westward.

Qmc BASALT OF MORES CREEK — Single flow of dark gray olivine basalt about 6 meters (20 feet) thick. Fine-grained with abundant microphenocrysts of plagioclase and common microphenocrysts of olivine. Canyon-filling lava erupted from unknown vent in Mores Creek valley (Howard and others, 1982). Identified in ledges, normally submerged in reservoirs near Lucky Peak Dam.

Qgb — BASALT OF GOWEN TERRACE — Four flows of medium gray olivine basalt. Hand samples and thin sections show sparse phenocrysts of olivine up 1-3 millimeters in diameter. Canyon-filling lava probably erupted in Smith Prairie (Howard and others, 1982). Buries gravel of Gowen terrace; basalt surface capped with about 3 meters (10 feet) of terrace gravel at distal end. Thickness of basalt ranges from about 3 meters (10 feet) near Boise to about 61 meters (200 feet) near Lucky Peak Dam. Mostly mantled with loess 1-2 meters (3-7 feet) thick. Pedogenic clay 35%; duripan (caliche) 0.5-1 meter thick.

Qlb — BASALT OF LUCKY PEAK — Single flow of dark gray to black aphyric very fine-grained basalt. Canyon-filling lava probably erupted in Smith Prairie (Howard and others, 1982). Basalt buries gravel composing fifth terrace above the floodplain. Thickness of basalt about 37 meters (121 feet). Upper surface mostly buried by alluvial fan deposits (Qfg).

Qkb — BASALT OF KUNA BUTTE — Dark gray olivine basalt flow forming irregular topography southeast of Nampa. Common phenocrysts of olivine 1-5 millimeters in diameter. Thickness unknown. Erupted from northwest end of Kuna Butte. Pedogenic clay 10-20%; duripans locally present.

Qfb — BASALT OF FIVEMILE CREEK — One to three flows of medium gray olivine basalt. Thin sections show a cumulophyric texture of a few percent small interlocking olivine grains. Erupted from small vent near headwaters of Fivemile Creek. Basalt buries gravel composing sixth terrace above the floodplain. Thickness ranges from about 3 meters at the west edge of the flow to about 55 meters (180 feet) at the east. Mostly mantled with loess 1-2 meters thick. Pedogenic clay 35%; duripan (caliche) 0.5-1 meter thick. Patterned ground present.

Qib — BASALT FLOWS OF INDIAN CREEK, UNDIVIDED — Multiple flows of medium to dark gray olivine basalt. Undivided basalts generally aphyric but include flows with small olivine and plagioclase phenocrysts. Erupted from vents south and southeast of the map. Both normal and reversed magnetic polarities. Lavas flowed into and down ancestral Indian Creek and Boise River valleys. Northwest-trending, gently sloping escarpments suggest faulting of the basalt. Mantled with loess 0.5-4 meters thick. Pedogenic clay 35%; duripan (caliche) 1 meter thick.

Qibs — BASALT FLOWS OF INDIAN CREEK BURIED BY LOESS AND STREAM SEDIMENTS — Tan massive silt, light brown stratified clay, silt, and sand, and basalt 6-15 meters (20-50 feet) deep. Location of basalt based on water well logs and subcrop mapping by Wood and Anderson (1981). Pedogenic clay 10-20%; duripans locally present.

Qudb — BASALT FLOWS OF UPPER DEER FLAT, UNDIVIDED — Multiple flows of dark gray aphyric olivine basalt. Reversed magnetic polarities. Probably erupted from one or more vents south of the map. Mantled with loess 1-4 meters (3-13 feet) thick. Pedogenic clay in loess 10-20%; calcium carbonate in B horizon. Loess buries duripan (caliche) 1 meter thick formed in the top of the basalt.

Qb — BASALTIC VENTS, UNDIVIDED — Olivine basalt and basaltic tephra forming dissected cones and volcanic necks near the Snake River.

TERTIARY BASALTS

Tpb — BASALT OF PICKET PIN CANYON — Dark gray basalt flow with a cumulophyric texture of distinctive rosettes of white plagioclase. Position suggests inverted topography of a canyon-filling lava. Maximum thickness is 9 meters (30 feet).

Tbt — TUFF AND VOLCANICLASTIC SEDIMENTS — Brown basaltic tuff and volcaniclastic sediments. Minor beds of arkosic sand, pumice, and rhyolitic ash. Up to 107 meters (350 feet) thick.

Tbv — BASALT VOLCANIC ASSEMBLAGE — Contains several undivided lithologies: (1) thin subaerial lava flows, (2) thin subaqueous and other water-affected subaerial lava flows, and (3) tuff and volcaniclastic sediments. Lava up to 73 meters (240 feet) thick; overlying tuff and volcaniclastic sediments up to 61 meters (200 feet) thick.

Tba — BASALT AND ANDESITE OF GRAVEYARD POINT AREA — Olivine basalt near Graveyard Point and pyroxene andesite breccia south of Graveyard Point (Ferns, 1989).

TERTIARY RHYOLITES

Tr — RHYOLITE OF THE BOISE FRONT — Pinkish gray porphyritic rhyolite, dark gray vitrophyre, and gray perlite.

Tjo — JUMP CREEK RHYOLITE — Mostly gray porphyritic rhyolite and quartz latite. Plagioclase phenocrysts up to 15 millimeters. Lava flow or remobilized welded tuff.

Thr — HORNBLENDE-BIOTITE RHYOLITE — Black glassy rhyolite; light gray where devitrified.

CRETACEOUS GRANITIC ROCKS

g — GRANITIC ROCKS OF THE IDAHO BATHOLITH — Light gray biotite granite and granodiorite. Medium to coarse grained and equigranular to porphyritic. Includes pegmatite zones and dikes of rhyolite and basalt.

MAP SYMBOLS

Contact: approximately located; dashed where inferred

Fault: approximately located; dashed where inferred; dotted where concealed; ball and bar on downthrown side

Strike and dip of bedding

Approximate upper limit of Bonneville Flood slack water

Sand dune fields

▲ Basalt sampling site

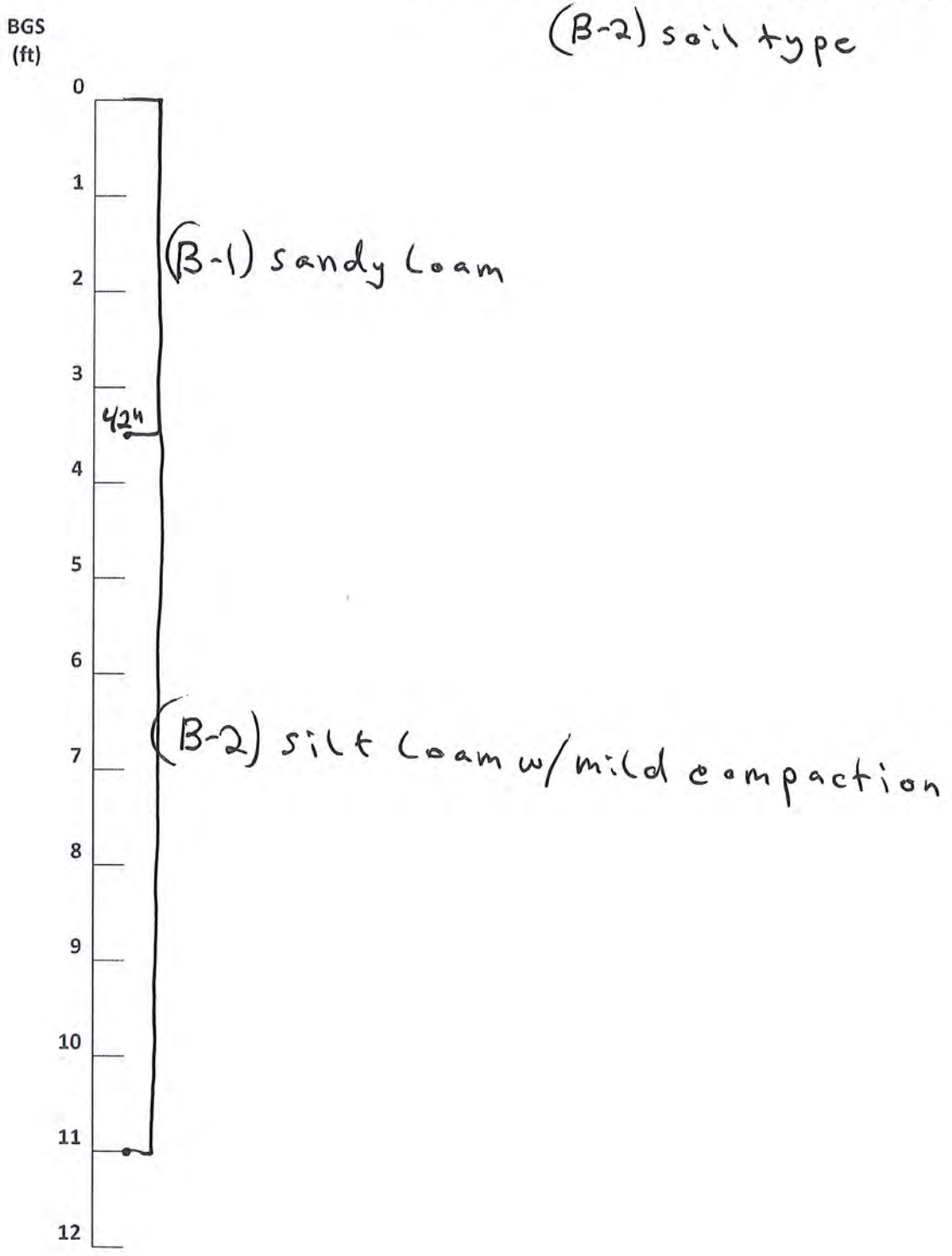
APPENDIX B

Test Pit Data

04/08/2024

Project Name: Owyhee Heights Subdivision
Test Hole Number: 1
Lot Number: 2 & 3

Observations Standard Drainfield (B-2) soil type

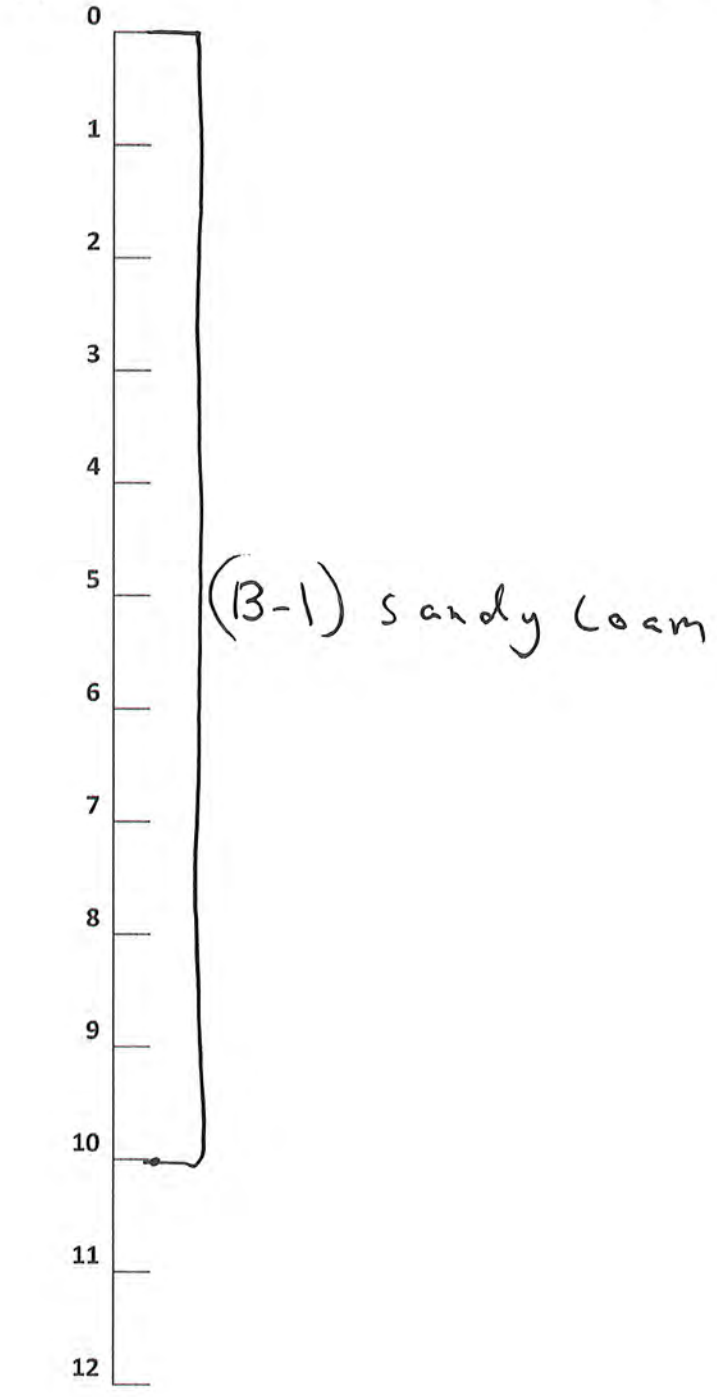


GPS Coordinates: 43.5172813, -116.8099240

04/08/2024

Project Name: Owyhee Heights Subdivision
Test Hole Number: 2
Lot Number: ~~6 & 7~~ 425

Observations Standard Drainfield (B-1) soil type

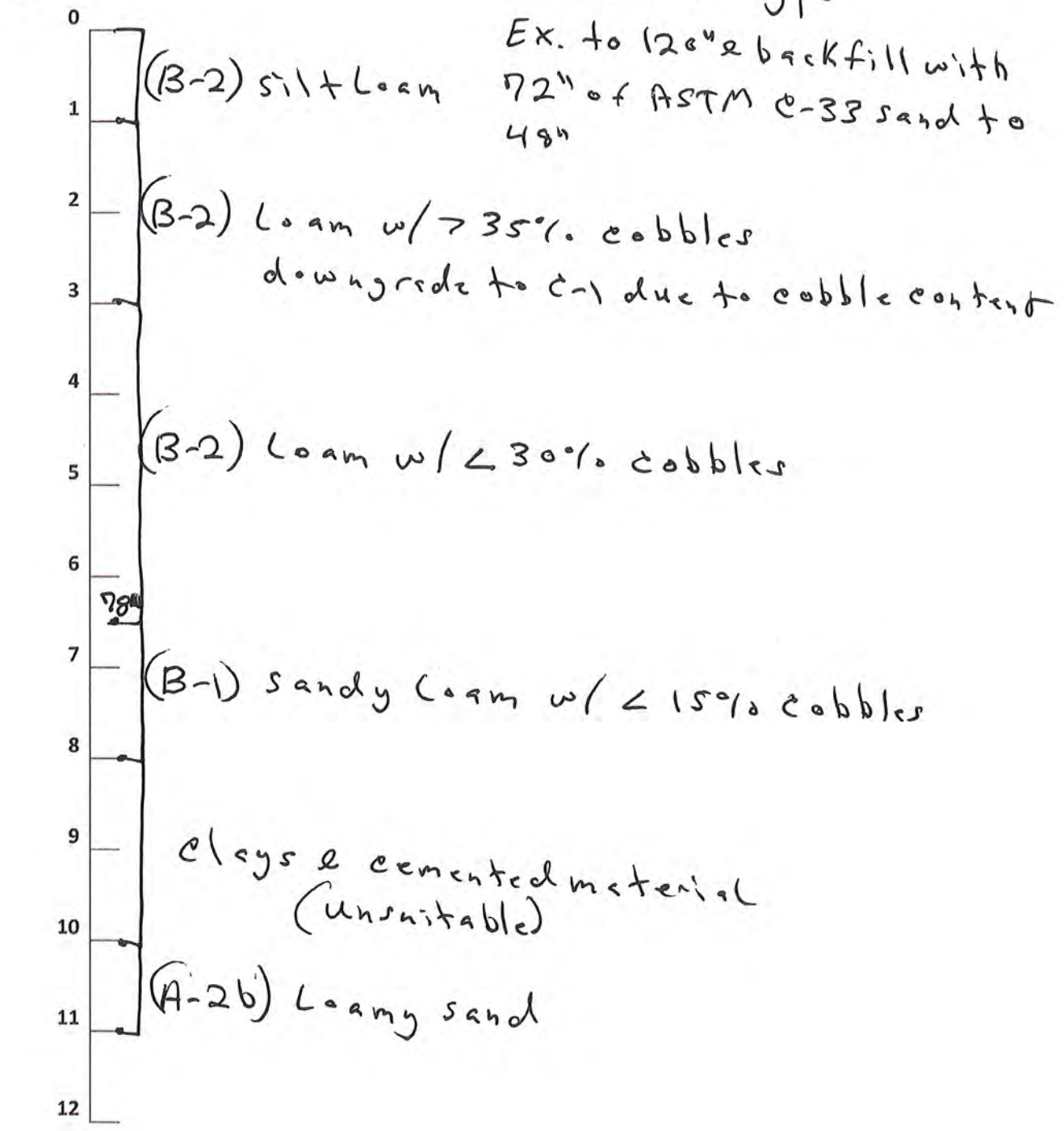


GPS Coordinates: 43.5181376, -116.~~8093684~~ 8109053

04/08/2024

Project Name: Owyhee Heights Subdivision
Test Hole Number: ~~2~~ 3
Lot Number: ~~4 & 5~~ 627

Observations Intrench sand Filter (A-2b) soil type Ex. to 120" & backfill with 72" of ASTM C-33 sand to 48"



GPS Coordinates: 43.5181736, -116.~~8109053~~ 8093684

OWYHEE HEIGHTS SUBDIVISION
SUBDIVISION ENGINEERING REPORT
SEPTIC PLACEMENT MAP

A PARCEL OF LAND BEING A PORTION OF THE SW1/4 SW1/4
AND A PORTION OF THE SE1/4 SW1/4 OF SECTION 10,
T. 2 N., R. 4 W., B.M.,
OWYHEE COUNTY IDAHO, 2024

OWNER/DEVELOPER
WHITNEE HUNGATE
18595 WEITZ ROAD
CALDWELL, ID 83607
(208) 720-3301

ENGINEER/SURVEYOR
MASON & ASSOCIATES, INC.
924 3rd ST. SOUTH
NAMPA, ID 83651
(208) 454-0256

PROJECT BENCHMARKS

TBM #1
CHISELED "X" SOUTH END CONCRETE DITCH NORTH SIDE OF HOWARD ROAD
ELEVATION= 2355.95'

TBM #2
CHISELED "X" SOUTH END OF WEIR STRUCTURE
ELEVATION= 2353.43'

TBM #3
FOUND 5/8" IRON PIN NO CAP NORTHWEST PROPERTY CORNER
ELEVATION= 2358.57'

TBM #4
FOUND 5/8" IRON PIN "MARKS LS 7045" SOUTH EAST CORNER OF WIRE FENCE
PROPERTY CORNER
ELEVATION= 2357.72'

Scale: 1"=100'

PROJECT NARRATIVE

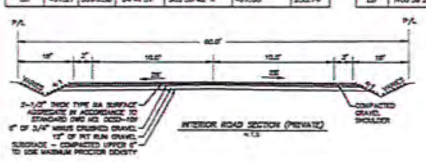
1. PROJECT DATA:
   ZONE DESIGNATION: MULTI-USE, OWYHEE COUNTY
   AREA: ±33.45 ACRES
   NO. OF RESIDENTIAL LOTS: 6
   NO. OF COMMON LOTS: 1
   MINIMUM BUILDABLE LOT SIZE: 1.51 ACRE
2. BUILDING SETBACKS AND DIMENSIONAL STANDARDS IN THIS SUBDIVISION SHALL BE IN COMPLIANCE WITH THE OWYHEE COUNTY STANDARDS FOR THE APPLICABLE ZONE.
3. ANY RE-SUBDIVISION OF THIS PLAT SHALL COMPLY WITH THE APPLICABLE ZONING REGULATIONS IN EFFECT TO THE TIME OF THE RE-SUBDIVISION.
4. IRRIGATION WATER HAS BEEN PROVIDED FROM GEM IRRIGATION DISTRICT, IN COMPLIANCE WITH IDAHO CODE 31-3805 1.(B). ALL BUILDABLE LOTS WILL BE ENTITLED TO IRRIGATION WATER RIGHTS AND WILL BE OBLIGATED FOR ASSESSMENTS FROM GEM IRRIGATION DISTRICT. WATER TO BE DELIVERED VIA A PRESSURIZED IRRIGATION SYSTEM. IRRIGATION SYSTEM SHALL BE MAINTAINED BY WATER USER'S AGREEMENT.
5. THIS DEVELOPMENT RECOGNIZES SECTION 22-4503 OF IDAHO CODE, RIGHT TO FARM ACT, WHICH STATES: AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF NOT A NUISANCE — EXCEPTION. NO AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF SHALL BE OR BECOME A NUISANCE, PRIVATE OR PUBLIC, BY ANY CHANGED CONDITIONS IN OR ABOUT THE SURROUNDING NONAGRICULTURAL ACTIVITIES AFTER IT HAS BEEN IN OPERATION FOR MORE THAN ON (1) YEAR, WHEN THE OPERATION, FACILITY OR EXPANSION WAS NOT A NUISANCE AT THE TIME IT BEGAN OR WAS CONSTRUCTED. THE PROVISIONS OF THIS SECTION SHALL NOT APPLY WHEN A NUISANCE RESULTS FROM THE IMPROPER OR NEGLIGENT OPERATION OF AN AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF.
6. INDIVIDUAL PRIVATE WELLS WILL BE INSTALLED.
7. INDIVIDUAL SEPTIC SYSTEMS WILL BE INSTALLED.
8. STORM DRAINAGE SHALL BE RETAINED IN ROADSIDE BARROW DITCHES.
9. EASEMENTS TO BE PROVIDED UNLESS OTHERWISE SHOWN:
   SUBDIVISION BOUNDARY: 12 FEET
   STREET FRONTAGE: 12 FEET
   REAR LOTS: 6 FEET
   SIDE LOTS: 6 FEET
10. RESIDENTIAL LOTS WILL BE FOR SINGLE FAMILY RESIDENTIAL USE.
11. ALL POWER AND JOINT TRENCH UTILITIES WILL BE LOCATED UNDERGROUND.

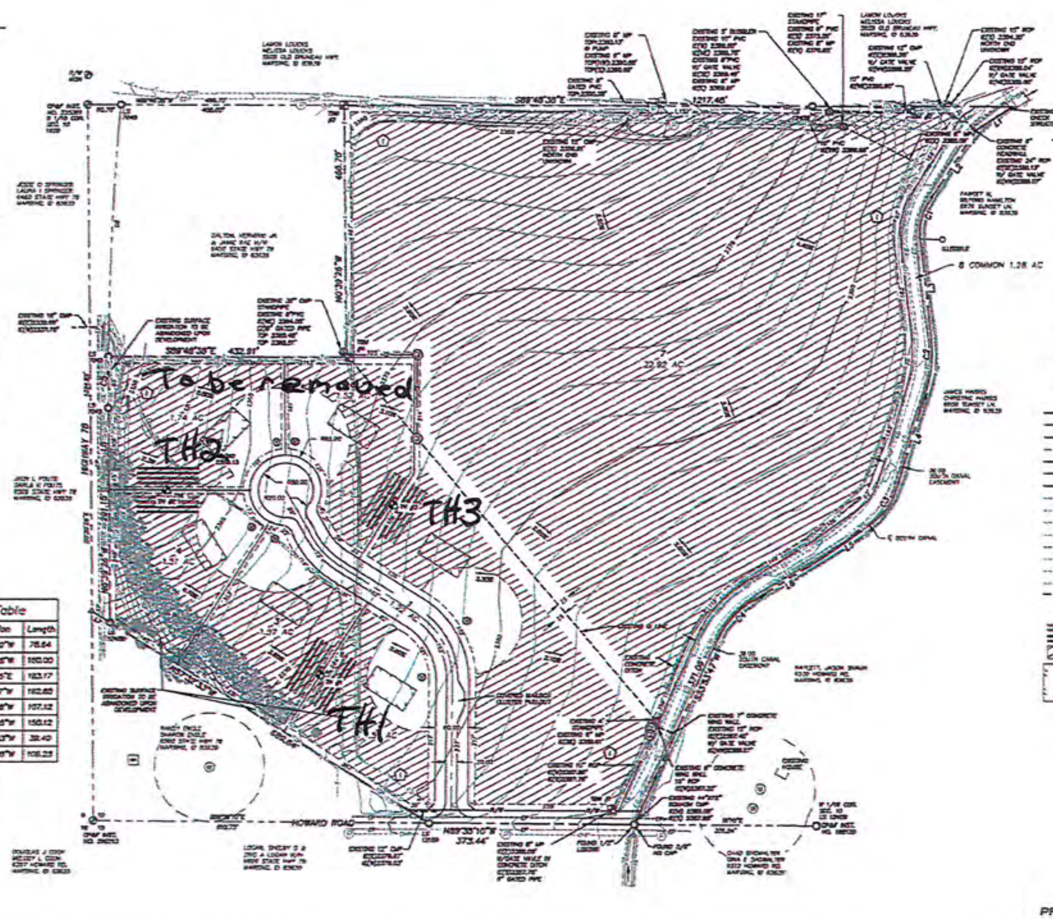
Curve Table

Curve #	Length	Radius	Delta	Chord Direction	Chord Length	Tangent
C1	73.09	108.24	38°41'23"	S12°56'26"W	71.71	38.00
C2	88.63	225.43	22°34'42"	N04°53'08"E	88.25	45.00
C3	86.59	128.87	38°29'51"	N33°25'23"E	84.97	45.00
C4	87.08	164.29	33°53'18"	S40°48'28"W	85.67	50.00
C5	94.72	5696.58	00°57'10"	S00°10'51"E	94.72	47.36
C6	457.21	5595.58	04°41'57"	S03°35'42"W	457.08	233.74

Line Table

Line #	Direction	Length
L1	S57°06'10"W	76.64
L2	S32°17'08"W	100.00
L3	S09°24'15"E	183.17
L4	S16°10'27"W	192.65
L5	S34°40'18"W	107.12
L6	S57°40'05"W	150.12
L7	N57°32'33"W	38.40
L8	N00°39'26"W	108.23





LEGEND

Benchmark
Found Brass Cap Monument
Found 5/8" Iron Pin
Found 1/2" Iron Pin
Gravity Irrigation Manhole
Pressure Irrigation Pump Out
Existing Power Pole
Existing Telephone Riser
Existing Standpipe
Existing Sign
Deciduous Tree
Existing Well
Existing Septic Tank
Existing Electric Meter
Existing Electric Box
Existing Guy Anchor
Existing Irrigation Pump
Block Number
Natural Ground Contour Line
Property Boundary Line
Section Line
Lot Line
Easement Line
Right-of-Way Line
Pressure Irrigation
Gravity Irrigation
Existing Top of Bank
Existing Edge Dirt Road
Existing Top of Slope
Existing Toe
Existing Edge of Pavement
Existing Edge of Gravel
Existing Fence
Existing Overhead Power
Existing Pipe
Test Pit
Proposed Well
Primary Septic System
Replacement Septic System
Available Septic System Area
Potential Home Site (45'x65')

PRELIMINARY FOR REVIEW

DRAWING TITLE: OWYHEE HEIGHTS SUBDIVISION HIGHWAY 78 MARSING IDAHO SEPTIC PLACEMENT MAP	JOB NO. OC1420	CLIENT: WHITNEE HUNGATE 18595 WEITZ ROAD CALDWELL, ID 83607	Mason & Associates — Professional Engineers, Land Surveyors & Planners
SHEET NO. 1 OF 1 SHEETS Rev.	DWG NO. OC1420SEPTIC; SCALE: Vert. N/A, Horz. 1"=100'; FIELD BOOK NO.	(208) 720-3301	

			NO.	BY	DATE	DESCRIPTION
DESIGNED BY:						
DRAWN BY:	DL	4/23				
CHECKED BY:						
APP'VD BY:						

APPENDIX C

Soil Survey Review


Soil Map—Canyon Area, Idaho
116° 48' 47" W
116° 48' 14" W
515120
515200
515280
515360
515440
515520
515600
515680
515760
515840
43° 31' 13" N
43° 30' 58" N
4818600
4818520
4818440
4818360
4818280
4818200
4-Line Canal
87
South Canal
GaC
GaB
GaC
NsB
GaC
NsD2
GaC
Soil Map may not be valid at this scale.
Map Scale: 1:3,390 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 150 300 600 900
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 20, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 9, 2023—Sep 14, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GaB	Garbutt silt loam, 1 to 3 percent slopes	11.3	35.6%
GaC	Garbutt silt loam, 3 to 7 percent slopes	1.3	4.1%
NsB	Nyssaton silt loam, 1 to 3 percent slopes	16.1	50.7%
NsD2	Nyssaton silt loam, 7 to 12 percent slopes, eroded	3.0	9.6%
Totals for Area of Interest		**31.7**	**100.0%**

Canyon Area, Idaho

GaB—Garbutt silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q15
Elevation: 2,000 to 5,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 165 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Garbutt and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Garbutt

Setting

Landform: Terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or lacustrine deposits and/or loess

Typical profile

A - 0 to 5 inches: silt loam
C - 5 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: R011XY009ID - Silty 7-10 PZ KRLA2/ACHY

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 20, Aug 31, 2023

Canyon Area, Idaho

GaC—Garbutt silt loam, 3 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2q16
Elevation: 2,000 to 5,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 165 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Garbutt and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Garbutt

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or lacustrine deposits and/or loess

Typical profile

A - 0 to 5 inches: silt loam
C - 5 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: R011XY009ID - Silty 7-10 PZ KRLA2/ACHY

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 20, Aug 31, 2023

Canyon Area, Idaho

NsB—Nyssaton silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q30
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nyssaton and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 11 inches: silt loam
Bk - 11 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: R011XY009ID - Silty 7-10 PZ KRLA2/ACHY

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 20, Aug 31, 2023

Canyon Area, Idaho

NsD2—Nyssaton silt loam, 7 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2q32
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Nyssaton, eroded, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton, Eroded

Setting

Landform: Drainageways, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bk - 8 to 60 inches: silt loam

Properties and qualities

Slope: 7 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: R010XY001ID - North Slope Loamy 12-16 PZ FEID-PSSPS

Hydric soil rating: No

Data Source Information

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 20, Aug 31, 2023

APPENDIX D

IDWR Driller Well Logs and Well Summary Table

APPENDIX D
WELL LOG SUMMARY TABLE
OWYHEE HEIGHTS

Well #	Owner	Total Depth (feet)	Depth to Static Water (feet)	Depth to First Encountered Water (feet)	Aquifer Sediment Top (feet)	Aquifer Sediment Bottom (feet)	Aquifer Thickness (feet)	Discharge (GPM)	Discharge (ft^3/day)	Drawdown (feet)	Transmissivity ($feet^2$/day)	Hydraulic Conductivity (feet/day)	Notes
1	Jack Thompson	210	95	45	45	265	220	15	2887	105	310	1	Aquifer thickness greater than 100 ft
2	Joan M. Lee	302	168	228	228	346	118	60	11550	112	750	6	Aquifer thickness greater than 100 ft
3	Steven Faust	97	26	23	23	97	74	35	6737	60	794	**11**	
4	Cody Hendrickson	150	85	120	120	142	22	25	4812	**94**	469	**21**	
5	Jack Thompson Sr.	364	225	232	232	344	112	22.5	4331	119	373	3	Aquifer thickness greater than 100 ft
6	Jack Thompson	495	360	282	282	490	208	40	7700	460	222	1	Aquifer thickness greater than 100 ft
7	Chad Showalter	198	151	12	12	263	251	20	3850	10	1814	7	Aquifer thickness greater than 100 ft
8	Dean Treasure	105	41	110	110	120	NA	20	3850	10	1814	NA	Well log missing aquifer sediment bottom
9	Cody R. Allison	197	130	132	132	240	108	25	4812	50	717	7	Aquifer thickness greater than 100 ft
10	Jack Thompson	412	NA	NA	NA	NA	NA	50	9625	NA	NA	NA	Drawdown not possible
11	Michael R. Simmons	168	41	41	41	173	132	40	7700	NA	NA	NA	Aquifer thickness greater than 100 ft
12	Herb Callaham	239	134	161	161	250	89	50	9625	220	422	**5**	
13	John Reina	170	40	190	190	NA	NA	25	4812	10	2106	NA	Impossible to determine aquifer thickness
14	Willis Werre	249	150	270	270	NA	NA	10	1925	10	1140	NA	Impossible to determine aquifer thickness
15	Russ and Ashley Bowers	199	117	146	146	216	70	25	4812	16	1537	**22**	
16	Abe Morison	211	160	160	160	220	60	20	3850	10	1814	**30**	
17	Robert Hall	197	39	50	50	138	88	35	6737	56	832	**9**	
18	Stephen E. Webb	322	245	298	298	405	107	12	2310	NA	NA	NA	Aquifer thickness greater than 100 ft
19	Les Milburn	340	196	200	200	380	180	50	9625	164	514	3	Aquifer thickness greater than 100 ft
20	Tom Irwin	374	120	167	167	384	217	25	4812	180	304	1	Aquifer thickness greater than 100 ft
21	Sam Ashe	161	90	295	295	NA	NA	15	2887	20	940	NA	Impossible to determine aquifer thickness
22	Gary Tuttle Construction	395	200	38	38	500	462	100	19250	480	399	1	Aquifer thickness greater than 100 ft
23	Jack Thompson	440	220	360	360	480	120	60	11550	460	291	2	Aquifer thickness greater than 100 ft
24	Kelly Ackerman	NA	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	Incomplete well log
25	John Paine	175	26	45	45	185	140	80	15400	149	752	5	Aquifer thickness greater than 100 ft
26	Loucks Homes	80	42	30	30	80	50	15	2887	53	489	**10**	
27	Loucks Homes	88	41	60	60	90	30	30	5775	53	779	**26**	
28	Ray Pershall	117	26	54	54	182	128	60	11550	NA	NA	NA	Aquifer thickness greater than 100 ft
29	Charles E. Jones	80	42	60	60	80	20	15	2887	53	489	**24**	
30	Donald W. Holloway	280	28	NA	NA	NA	NA	NA	NA	12	NA	NA	Incomplete well log
31	Abe Morris	235	130	180	180	240	60	50	9625	220	422	**7**	
32	Ray Pershall	200	NA	20	20	222	202	NA	NA	NA	NA	NA	Incomplete well log
33	William F. Gigray	142	46	120	120	164	44	NA	NA	38	NA	NA	Discharge not possible
											Average:	**17**	

NA- Data not available

Bold - Used in Average

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name JACK THOMPSON

Address MARSING IDAHO

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches	+ 1 feet	210 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 18 Material used in seal: ☐ Cement grout ☐ Bentonite ☒ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL MICROFILMED

Sketch map location must agree with written location.

N / W / E / S

Subdivision Name _____
Lot No. _____ Block No. _____

County OWYHEE

SW ¼ SW ¼ Sec. 10, T. 2 N, R. 4 W.

7. WATER LEVEL

Static water level 95 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality 40 GRNS.
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
15	105	2

9. LITHOLOGIC LOG 85178

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	3	BROWN CLAY		✓
	3	8	GRAVEL		✓
	8	45	BROWN CLAY		✓
	45	50	SANDY BROWN CLAY	✓	
	50	70	BROWN CLAY		✓
	70	105	BROWN SAND	✓	
	105	145	BROWN CLAY		✓
	145	175	BROWN SAND	✓	
	175	190	BLUE CLAY		✓
	190	205	BROWN SAND		✓
	205	265	BLUE CLAY		✓
	265		BLACK SAND	✓	

RECEIVED
OCT 20 1983
Department of Water Resources
Western Regional Office

10. Work started 6-28-83 finished 7-5-83

11. DRILLERS CERTIFICATION

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

Firm Name KENNE HETZER DRL. Firm No. 93
Address RT-2 HOMEDALE IDA Date 7-9-83
Signed by (Firm Official) Kenneth M. Hetzer
and
(Operator) _____

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

57

847363

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Location Corrected by IDWR To:
T02N R04W Sec. 15 NENWNW
By: mciscell 2013-10-18

1. WELL TAG NO. D 0047955
DRILLING PERMIT NO.
Water Right or Injection Well No.

2. OWNER:
Name Joan M Lee
Address 6532 HOWARD ROAD
City MARSING State ID Zip 83639

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 2 North X or South ☐
Rge. 4 East ☐ or West X
Sec. 10, SW 1/4 SW 1/4 SW 1/4
Gov't Lot County OWYHEE
Lat: 43:30:994 Long: 116:48:414
Address of Well Site 6532 HOWARD ROAD
City MARSING
(Give at least name of road + Distance to Road or Landmark)
Lt. Blk. Sub. Name

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

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD:
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
Dry Gran Bent + Well Cuttings	0	18	600 lb.	Overburd

Was drive shoe used? X Y ☐ N Shoe Depth(s) 302
Was drive shoe seal tested? ☐ Y X N How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	302	1/4	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method
Screen Type & Method of Installation No Screen

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
168 ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices:
Sanitary well Cap

12. WELL TESTS: Lat: : : Long: : :
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
60	NM	280	1 Hr

Water Temp. 59° Bottom hole temp. N/A
Water Quality test or comments:
Depth first Water Encountered 228

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	5	Soil		X
10	5	8	Hardpan / Gravel		X
10	8	18	Brn Clay		X
6	18	117	Brn Clay		X
6	117	160	Sandy Brn Clay		X
6	160	165	Hard Brn Clay		X
6	165	181	Sandy Brn Clay		X
6	181	185	Gray Clay		X
6	185	228	Blue Clay		X
6	228	258	Blue Shale Thin Blk Sand	X	
6	258	293	Blue Clay		X
6	293	302	Blue Clay Shale Thin Blk Sand	X	
6	302	304	Blue Clay		X
6	304	346	Blue Clay Shale Thin Blk Sand	X	
6	346	350	Blue Clay		X

RECEIVED
JUL 26 2007
WATER RESOURCES
WESTERN REGION

Completed Depth 350 (Measurable)
Date: Started 6/25/07 Completed 7/2/07

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed. SYLVAN ADAMSON
Company Name DOMESTIC PUMP + WELL Lic. No. 483
Principal Driller DRILLING Date 7/16/07
and
Driller or Operator II Date
Operator I Date
Principal Driller and Rig Operator *Required.*
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
11/97 JGE

788803

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: : : Long: : :

1. WELL TAG NO. D D0025852
DRILLING PERMIT NO.
Other IDWR No:

2. OWNER:
Name Steve Faust
Address Hwy 78 Rt 1 Box 467
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 9 1/4 (10 acres) SE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't Lot County Owyhee
Lat: Long:
Address of Well Site Hwy 78, 2 miles So. of Marsing
(Give at least name of road + Distance to Road or Landmark)
City Marsing
Lt. Blk. T Sub. Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	500 lbs	overbore

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 58
Was drive shoe seal tested? [X] Y [ ] N How? Air

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	58	.250	steel	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS:
[X] Perforations Method skill saw
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
57	97	6x1/4		4 1/2	pvc	[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
26 ft. below ground Artesian pressure lb.
Depth flow encountered 60-97 ft. Describe access port or control devices: cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
35	60	95	1/2 hr

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encounter 23

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	2	TOP SOIL		
10	2	3	HARD PAN		
10	3	17	SANDY CLAY		
10	17	18	GRAVLE		
6	18	23	GRAVLE		
6	23	54	TAN CLAY, SAND STRIPS	X	
6	54	60	TAN CLAY		
6	60	97	CRACKED TAN CLAY	X	

RECEIVED
NOV 25 2002
WATER RESOURCES
WESTERN REGION

Completed Depth 97 (Measurable)
Date: Started 11/15/2002 Completed 11/18/2002

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official Date 11/21/2002
and
Driller or Operator Date 11/21/2002
(Sign once if Firm Official & Operator)

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4

Form 238-7
6/07

57

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 00956639
Drilling Permit No. 903797
Water right or injection well #

2. OWNER:
Name Cody HENDRICKSON
Address PO Box 785
City MARSING State ID Zip 83639

3. WELL LOCATION:
Twp. 02 North ☒ or South ☐ Rge. 04 East ☐ or West ☒
Sec. 15 10 acres 1/4 NE 40 acres 1/4 NW 160 acres 1/4
Gov't Lot ____ County OWYHEE
Lat. N 43 ° 31 : 081 (Deg. and Decimal minutes)
Long. W116 ° 48 : 916 (Deg. and Decimal minutes)
Address of Well Site 6342 HOWARD Rd
(Give at least name of road + Distance to Road or Landmark) City MARSING
Lot. ____ Blk. ____ Sub. Name NO SUB

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/8 BENT	0	40	20 SACKS	Hydrated

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
10	+2	120	250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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

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

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
130	150	14	80	4½	PVC	40

Length of Headpipe 20 Length of Tailpipe 0
Packer ☐ Y ☒ N Type

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
8-12 Silica	125	150	10 SACKS	Poured

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) 120 Static water level (ft) 85
Water temp. (°F) 48 Bottom hole temp. (°F)
Describe access port

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
94	25	3 HRS

Test method: Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	5	SANDY CLAY BROWN		X
10	5	30	SANDY CLAY BROWN		X
10	30	40	SANDY CLAY BROWN		X
6	40	60	SANDY CLAY BROWN		X
6	60	90	SANDY CLAY BROWN		X
6	90	110	GRAY CLAY		X
6	110	120	GRAY CLAY		X
6	120	125	LAYERED SAND STONE	X	
6	125	130	GRAY CLAY LAYERED HARD		X
6	130	140	GRAY CLAY		X
6	140	142	LAYERED SAND STONE	X	
	142	150	BROWN CLAY		X

RECEIVED
MAR 18 2022
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 150
Date Started: 2-15-22 Date Completed: 3-14-22

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 GARY'S WELL DRILLING Co. No. 317
*Principal Driller Gary Wilson Date 3-14-22
*Driller Date
*Operator II Date
Operator I Date

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

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0074718

Drilling Permit No. _____

Water right or injection well # _____

2. OWNER:

Name Jack Thompson Sr.

Address 927 W. Hackamore Ct.

City Nampa State ID Zip 83686

3.WELL LOCATION:

Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒

Sec. 10 ____ 1/4 (10 acres) SE 1/4 (40 acres) SW 1/4 (160 acres)

Gov't Lot _____ County Owyhee

Lat. 43 ° 30.992 (Deg and Decimal minutes)

Long 116 ° 48.191 (Deg. and Decimal minutes)

Address of Well Site .1 miles up Our Lane - private lane .5 miles off Aurora (Give at least name of road + Distance to Road or Landmark) City Marsing

Lot. _____ Blk. _____ Sub. Name _____

4. USE:

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

5. TYPE OF WORK:

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

6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/4 Bent. Chips	0'	44'	23 bags	10" Overbore
3/4 Bent. Chips	278'	284'	5 bags	Under Reamer

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	296'	.250	SS	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 296'

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N Method _____

Manufactured screen ☒ Y ☐ N Type Certalock

Method of installation Set with Sandline

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
304'	364'	20		4.5"	PVC	SDR17

Length of Headpipe 20' Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	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) 232' Static water level (ft) 225'

Water temp. (°F) 60° Bottom hole temp. (°F) _____

Describe access port Well Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Test method: Pump	Bailer	Air	Flowing artesian
119'	20-25 GPM	30 minutes	☐	☐	☒	☐
			☐	☐	☐	☐

Water quality test or comments: Iron 3.5 PH 7.75 Hardness 38

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	Water N
10"	0'	8'	Gravel & Silt		X
10"	8'	44'	Tan Clay		X
6"	44'	232'	Tan Clay		X
6"	232'	276'	Hard Tan Clay w/Sand Strips	X	
6"	276'	278'	Blue Clay		X
10"	278'	284'	Blue Clay		X
6"	284'	296'	Blue Clay w/Sand Strips	X	
6"	296'	344'	Blue Clay w/Sand Strips	X	
6"	344'	364'	Blue Clay		X

RECEIVED
JUN 22 2017
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 364'

Date Started: Jun 5, 2017 Date Completed Jun 8, 2017

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 Adamson Pump & Drilling Co. No. 457

*Principal Driller Dave Adamson Date Jun 13, 2017

*Driller _____ Date Jun 13, 2017

*Operator II _____ Date _____

Operator I _____ Date Jun 13, 2017

* Signature of Principal Driller and rig operator are required.

Ammended Log

Form 238-7
11/97 JGE 57

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0031404
DRILLING PERMIT NO.
Other IDWR No.

2. OWNER:
Name Jack Thompson
Address Rt. 1 Box 470
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 10 ____ 1/4 (10 acres) SE 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot ____ County Owyhee
Lat: Long:
Address of Well Site 6525 Sunset Lane
City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[ ] New Well [X] Modify [ ] Abandonment [ ] Other
Deepen

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	38	1200 lbs	overbore

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 457
Was drive shoe seal tested? [X] Y [ ] N How? Air

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+3	457	.250	steel	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS:
[X] Perforations Method Skill Saw
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
455	495	1/4x6	30	4 1/2	PVC	[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
360 ft. below ground Artesian pressure ____ lb.
Depth flow encountered 454-482 ft. Describe access port or control devices: cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
40	460	460	3 hr
60	480	480	1/2 hr
40	440	440	1 hr

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encounter 282

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	6	Brown Sand		
10	6	19	Cemented Gravel		
10	19	27	Gravel & Boulders		
10	27	33	Brown Sand w/ Gravel		
10	33	38	Sandy Tan Clay		
8	38	223	Sandy Tan Clay		
8	223	245	Brown Sand		
8	245	282	Baked Tan Clay		
8	282	289	Baked Tan Clay w/ Cracks	X	
8	289	340	Blue Clay		
6	340	417	Blue Clay		
6	417	454	Fractured Sand Stone	X	
6	454	482	Blue Clay w/ Cracks	X	
6	482	490	Blue Clay w/ Cracks	X	
6	490	495	Blue Clay		

RECEIVED
SEP 27 2004
WATER RESOURCES
WESTERN REGION

Completed Depth 495 (Measurable)
Date: Started 8/24/2004 Completed 8/24/2004

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official and Driller or Operator Marti Pool Date 9/22/2004
(Sign once if Firm Official & Operator) Date 9/22/2004

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
11/97 JGE

786535

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D0025385
DRILLING PERMIT NO.
Other IDWR No.

2. OWNER:
Name CHAD SHOWALTER
Address HOWARD LANE
City MARSING State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 15
10 acres 1/4 40 acres NW 1/4 160 acres NW 1/4
Gov't Lot Lat:
County OWYHEE Long:
Address of Well Site HOWARD LANE E OF HWY
78, S SIDE OF HOWARD (Give at least name of road + Distance to Road or Landmark) City
Lt. Blk. Sub. Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	18	600#	POUR

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 198
Was drive shoe seal tested? [X] Y [ ] N How? AIR

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	198	250	STEEL	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS:
[ ] Perforations Method
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
151 ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices:

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
20	10	200	2 HR

Water Temp. Bottom hole temp.
Water Quality test or comments:
Depth first Water Encounter

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	12	TOP SOIL		
	12	16	SABD/ GRAVEL	X	
	16	18	BROWN CLAY		
8	18	100	BROWN CLAY/ YELLOW SHALE		
6	100	170	BROWN CLAY / YELLOW SHALE		
	170	200	BLUE CLAY		
	200	230	BLE SHALE/ CLAY	X	
	230	235	BLUE SAND	X	
	235	263	BLUE SHALE/ CLAY	X	

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NOV 13 2002
WATER RESOURCES
WESTERN REGION

Completed Depth 263 (Measurable)
Date: Started 10/1/2002 Completed 10/2/2002

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

Company Name DAVIS WELL & PUMP Firm No. 101
Firm Official Chuck Davis Date 10/3/2002
and
Driller or Operator Date 10/3/2002
(Sign once if Firm Official & Operator)

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Form 238-7
3/95

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

60516

Office Use Only
Inspected by _____
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 57-96 C 0021 . 000
Other IDWR No. _____

2. OWNER:
Name Dean Treasure
Address Howard
City Marsing State Ida Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North ☑ or South ☐
Rge. 4 East ☐ or West ☑
Sec. 16, ____ 10 acres 1/4 NE 40 acres 1/4 NE 160 acres 1/4
Gov't Lot ____ County _____
Lat: : : Long: : :
Address of Well Site Howard
City Marsing
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☑ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☑ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☐ Air Rotary ☑ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
10 X 20 Aluc.	0	50	300	over Bore

Was drive shoe used? ☑ Y ☐ N Shoe Depth(s) 105
Was drive shoe seal tested? ☑ Y ☐ N How? Baled Dry

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+1	105	250	STEEL	☐	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

MICROFILMED
MAR 03 1999

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
41 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
20	10	100	4 hr

Water Temp. 60 Bottom hole temp. _____
Water Quality test or comments: Good
Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	2	Top Soil		
8	2	41	Brown Clay		
6	41	49	Brown Sand Stone		
6	49	110	Blue Clay		
6	110	120	Broken Shell	✓	

RECEIVED
JUN 22 1998
Department of Water Resources

Completed Depth 4-25-96 (Measurable)
Date: Started 4-22-96 Completed 4-25-96

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

Firm Name Rodger Mount Drilling Firm No. 211
Firm Official Dan E Sullivan Date 4-26-96
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No. 805794
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0029805
DRILLING PERMIT NO. 878558 - 805794
Water Right or Injection Well No.

2. OWNER:
Name Cody R Allison
Address 7161 Birch Ln
City Nampa State ID Zip 83687

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 7 North ☒ or South ☐
Rge. 4 East ☐ or West ☒
Sec. 15, NW 1/4 (10 acres) SW 1/4 (40 acres) NW 1/4 (160 acres)
Gov't Lot ____ County Owyhee
Lat: : : Long: :
Address of Well Site 6706 Hwy 78
City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

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

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
Dry granular bentonite + cuttings	0	18	350	Overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 197'
Was drive shoe seal tested? ☐ Y ☒ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	197	250	steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe ____
Packer ☐ Y ☐ N Type ____

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method ____
Screen Type & Method of Installation ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
130 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: ____
Sanitary well cap

12. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
25	NA	180	1/2 Hr
12	NA	160	1/2 Hr

Water Temp. 59 C Bottom hole temp. NA
Water Quality test or comments: Clear Lt Brn Blu Clay Wash
Depth first Water Encounter 176

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	4	Sandy Clay		X
10	4	18	Brn Clay		X
6	18	32	Brn Clay		X
6	32	38	Fine Sand		X
6	38	76	Sandy Brn Clay		X
6	76	132	Brn Clay		X
6	132	176	Brn Clay Thin Sandy Clay	X	
6	176	180	Fine Sand	X	
6	180	196	Brn Clay		X
6	196	212	Blu Clay		X
6	212	240	Blu Clay Thin Blu Sand layers	X	

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NOV 10 2003
WATER RESOURCES
WESTERN REGION

Completed Depth 240 (Measurable)
Date: Started 10/15/03 Completed 10/22/03

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
SYLVAN ADAMSON
Company Name Domestic Pump & Drill Firm No. 483
Principal Driller S Adamson Date 11/7/03
and
Driller or Operator II ____ Date ____
Operator I ____ Date 11/7/03
Principal Driller and Rig Operator *Required*.
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
7/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

63660

1. DRILLING PERMIT NO. 57-95-W-0056-000 (200)
Other IDWR No.

2. OWNER:
Name Jack Thompson
Address RT 1 Box 470
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North ☒ or South ☐
Rge. 4 East ☐ or West ☒
Sec. 10, 1/4 NE 1/4 SW 1/4
(10 acres / 40 acres / 160 acres)
Gov't Lot ____ County Owyhee

Address of Well Site RT 1 Box 470
Howard Road City Marsing
(Give at least name of road + Distance to Road or Landmark)

Lt. ____ Blk. ____ Sub. Name ____

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

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☒ Replacement ☐ Abandonment

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

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentite	0	1001	600 lbs	Pour

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 417
Was drive shoe seal tested? Y ☒ N ☐ How? Air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+2	417	280	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe 1'

9. PERFORATIONS/SCREENS
☐ Perforations Method
☐ Screens Screen Type

MAR 07 1996

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
200 ft. below ground Artesian pressure ____ lb.
Depth flow encountered 480-520 ft. Describe access port or control devices: CAP

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
50 Gal	520	520	3 Hr.
30 Gal	400	400	2 Hr.

Water Temp. 75 Bottom hole temp. 75
Water Quality test or comments: 14 Hard 3. Iron

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8"	0	2	Top Soil		
	2	18	Sandy CLAY Brn.		
	18	195	Brn CLAY		
	195	205	Blue CLAY		
	205	241	Brn. CLAY		
	241	360	Blue Shale		
	360	380	Pea Gravel & Blue Shale		
			Fine Sand mixed in Pea Gravel		X
6"	380	390	Blue Shale		
	390	400	Fine Sand & CLAY Layers		X
	400	421	Blue Shale		
	421	422	SAND Fine 5 Gal		X
	422	480	Blue Shale		
	480	520	Blue Shale & Shale & Sand		
			Layers Fine Sand 50 Gal		X
	520	545	Blue Shale		
	545	550	Blue Shale Soft		

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DEC 11 1995
WATER RESOURCES
WESTERN REGION

RECEIVED
DEC 15 1995
Department of Water Resources

Completed Depth 550 (Measurable)
Date: Started 10-19-95 Completed 10-23-95

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

Firm Name Treasure Valley Drilling Firm No. 566
Firm Official [signature] Date 10-25-95
and
Supervisor or Operator [signature] Date 10-25-95
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0071654
Drilling Permit No. 971798-577855
Water right or injection well #

2. OWNER: Michael R Simmons
Name
Address PO Box 633
City Marsing State ID Zip 83639

3. WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒
Sec. 9 ____ 1/4 (10 acres) NE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't Lot ____ County Owhee
Lat. 43 ° 31.295 (Deg. and Decimal minutes)
Long. 116 ° 48.720 (Deg. and Decimal minutes)
Address of Well Site 1 Mile outside of Marsing on Hwy 78 right side of Hwy 78 City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lot ____ Blk. ____ Sub. Name

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/4" Bentonite	0	40'	1150lbs	pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	47	250	steel	☒	☐	☐	☒
4 1/2	8	128	sdr-17	pvc	☐	☒	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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

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

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
128	168'	.020	—	4 1/2"	pvc	sdr-17

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

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
6-9 silica sand	168'	8'	1050 lbs	pour

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) 41' Static water level (ft) 41'
Water temp. (°F) 62.5 Bottom hole temp. (°F)
Describe access port well cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Test method: Pump	Bailer	Air	Flowing artesian
	40 gpm	120	☐	☐	☒	☐
			☐	☐	☐	☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	2	topsoil		
	2	25	tan clay		
	25	39	tan clay with gravel		
	39	40	tan clay		
6	40	41	tan clay		
	41	43	gravel	X	
	43	100	tan clay		
	100	119	tan clay with sand streaks	X	
	119	146	gray clay		
	146	173	gray clay sand streaks	X	
	173	180	gray clay		

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WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 168'
Date Started: Feb 3, 2016 Date Completed: Feb 9, 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 Treasure Valley Well Drilling Co. No. 560
*Principal Driller [signature] Date Feb 9, 2016
*Driller Jason Wilson Date Feb 9, 2016
*Operator II Date
Operator I Date

* Signature of Principal Driller and rig operator are required.

811799

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: : : Long: : :

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. D0031057
Other IDWR No

2. OWNER:
Name Herb Callaham
Address 609 N. Midland Blvd.
City Nampa State ID Zip 83651

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp 2 North x or South ☐
Rge 4 East or West x
Sec 9 1/4 (10 acres) NE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't lot County Owyhee
Lat: : : Long: : :
Address of Well Site 6468 Morris Hill Rd.
City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt Blk. Sub. Name

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

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD
X Air Rotary ☐ Cable Mud Rotary ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	800 lbs.	overbore

Was drive shoe used? X Y N Shoe Depth(s) 239
Was drive shoe seal tested? X Y N How? air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	239	.250	steel	X	☐	X	☐

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS
Perforations Method
Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
134 ft. below ground Artesian Pressure lb
Depth flow encountered 245 Describe access port or control devices: cap

11. WELL TESTS:
Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
50	220	220	1 hr
15	180	180	½ hr

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encountered 160

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	2	Top soil		X
10	2	4	Hard pan		X
10	4	18	Embedded rock in sandy clay		X
6	18	23	Embedded rock in sandy clay		X
6	23	160	Brown clay		X
6	160	161	Sand stone		X
6	161	178	Baked brown clay with cracks	X	
6	178	218	Baked brown clay		X
6	218	228	Baked brown clay with cracks	X	
6	228	232	Baked brown clay		X
6	232	240	Blue clay		X
6	240	245	Baked blue clay with baked brown clay		X
6	245	250	Fine blue sand	X	

Completed Depth: 245 (Measurable)
Date: Started 03/19/04 Completed 03/22/04

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

Firm Name Treasure Valley Drilling Firm No. 560
Firm Official Date 03/25/04
Supervisor or Operator Date 03/25/04
(Sign once if Firm Official & Operator)

Date: 3/25/2004 Time:1:42 PM

Form 238-7
3/95

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

060841

Office Use Only
Inspected by _____
Twp ___ Rge ___ Sec ___
___1/4 ___1/4 ___1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 62-96-C-0048-000
Other IDWR No. _____

2. OWNER: John Reina
Name _____
Address Howard
City Marsing State Idaho Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North ☒ or South ☐
Rge. 4 East ☐ or West ☒
Sec. 16, NW 1/4 (10 acres) NW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ___ County Owyhee
Lat: : : Long: : :
Address of Well Site Howard
City Marsing
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

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

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
INVRO Plug	0	40	600	OVER BORE

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 170
Was drive shoe seal tested? ☒ Y ☐ N How? Bored

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+10	170	.05	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

MICROFILMED

9. PERFORATIONS/SCREENS
☐ Perforations Method: _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
40 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
25	10	150	6 hr

Water Temp. 59 Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	6	TOP SOIL		
	6	35	BROWN CLAY		
	35	40	BLUE SHALE		
	40	180	BLUE SHALE		
	180		OATS SAND	☒	

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MAR 12 1998 MAR 16 1998
WATER RESOURCES WESTERN REGION Department of Water Resources
RECEIVED
RECEIVED OCT 29 1997
JAN 20 1998 Department of Water Resources
Department of Water Resources

Completed Depth _____ (Measurable)
Date: Started 8-20-96 Completed 8-22-96

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

Firm Name Rodeo Mountain Drilling Firm No. 211
Firm Official Steven L Durling Date 8-22-96
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
1/78

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name WILLIS WERRE

Address MARSING IDAHO

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness		Diameter		From	To
.250	inches	6	inches +	1 feet	249 feet
_____	inches	_____	inches	_____ feet	_____ feet
_____	inches	_____	inches	_____ feet	_____ feet
_____	inches	_____	inches	_____ feet	_____ feet

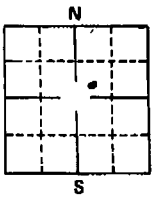
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number		From	To
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 18 Material used in seal: ☐ Cement grout ☒ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. _____ Block No. _____

County OWYHEE

SW ¼ NE ¼ Sec. 16, T. 2 N, R. 4 W.

7. WATER LEVEL

Static water level 150 feet below land surface.
Flowing? ☐ Yes ☐ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ____ °F. Quality 32 GRNS.

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
10	160	2

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	4	TOPSOIL		
	4	8	GRAVEL		
	8	90	SANDY BROWN CLAY		
	90	95	BROWN SAND		
	95	135	BROWN CLAY SANDY		
	135	140	BROWN CLAY STICKY		
	140	202	BROWN CLAY SANDY		
	202	210	BLACK SAND		
	210	235	BLUE CLAY		
	235	245	BLACK SAND		
	245	270	BLUE CLAY		
	270		BLACK SAND	✓	

001943

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JUL 7 1980
Department of Water Resources
Western Regional Office

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JUL 8 1980
Department of Water Resources

10.

Work started OCT-7-79 finished OCT-16-79

11. DRILLERS CERTIFICATION

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

Firm Name KENNE METZER DRL, RT-1 Firm No. 93

Address HOMEDALE IDAHO Date NOV-1-79

Signed by (Firm Official) Kenneth Metzer

and

(Operator) _____

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0077081
Drilling Permit No. 883815 - App ID 977758
Water right or injection well #

2. OWNER:
Name Russ+Ashley Bowers
Address 6537 Morris Hill Rd.
City Marsing State ID Zip 83639

3. WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒
Sec. 16 10 acres 1/4 NW 40 acres 1/4 SE 160 acres 1/4
Gov't Lot ____ County Owyhee
Lat. 43° 30.531' (Deg. and Decimal minutes)
Long. 116° 49.063' (Deg. and Decimal minutes)
Address of Well Site 6537 Morris Hill Rd
(Give at least name of road + Distance to Road or Landmark) City Marsing ID 83639
Lot. ____ Blk. ____ Sub. Name

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/8 chips	0	40	2400	dry pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6	+2	199	.250	steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 199'

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

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule

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

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	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) 146 Static water level (ft) 117
Water temp. (°F) 64 Bottom hole temp. (°F) 64
Describe access port well cap - top of casing

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
16'	25	120

Test method: Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10"	0	2	top soil		X
10"	2	3	hard pan		X
10"	3	14	brown clay - sandy - some gravel		X
10"	14	40	brown clay		X
6"	40	128	brown clay		X
6"	128	146	brown clay - sand		X
6"	146	148	brown sand - Sand	X	
6"	148	121	brown clay - sandy		X
6"	121	182	brown clay		X
6"	182	190	brown clay - sandy		X
6"	190	202	brown clay		X
6"	202	204	brown clay thinly banded	X	
6"	204	210	blue clay		X
6"	210	216	brown clay & Gravel layers	X	

RECEIVED
OCT 24 2017
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 216'
Date Started: 9-7-2017 Date Completed: 9-29-2017

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 Dustoe Well Drilling Co. No. 399
*Principal Driller Tim Dustoe Date 9-29-17
*Driller Date 9-29-17
*Operator II Date
Operator I Date

* Signature of Principal Driller and rig operator are required.

Form 238-7
/78

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name ABE MORISON

Address MARCING

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
250 inches	6 inches +	1 feet	211.10 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

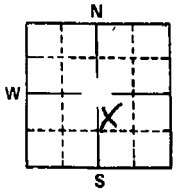
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number		From	To
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: ☐ Cement grout ☐ Puddling clay ☒ Well cuttings
Sealing procedure used: ☒ Slurry pit ☐ Temp. surface casing ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL 63

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County OWHEE
NW ¼ SE ¼ Sec. 16, T. 2 ☐N ☒S, R. 1 ☐W ☒E

7. WATER LEVEL

Static water level 160' feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality Hard Blue

8. WELL TEST DATA

☒ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
20	170	100

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	1	40	Sandy Soil		X
6	40	60	Sandy Clay		X
6	60	100	Brown Sandy Clay Strips		X
6	100	130	Gra Clay & Sand Strips		X
6	130	160	Sandy Clay & Gravel		X
6	160	180	Sand	X	
6	180	200	Sand & Clay Strips	X	
6	200	220	Blue Clay into Sand Fine Black Sand	X	

RECEIVED
JUL 10 1978
Department of Water Resources

JUL 10 1978
Department of Water Resources
Western Regional Office

10.

Work started 10-28-77 Finished 12-10-77

11. DRILLERS CERTIFICATION

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

Firm Name D & D Drilling Firm No. 254
Address 309 Madison Date 6-19-78
Signed by (Firm Official) _____
and
(Operator) _____

FILED

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

831979

63

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 0 -0 -3 -8689 - ____
Other IDWR No. _____

2. OWNER:
Name Robert Hall
Address 21314 Hoskins Rd.
City Caldwell State ID Zip 83605

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S

Twp. 3 North ☒ or South ☐
Rge. 4 East ☐ or West ☒
Sec. 9 1/4 (10 acres) NW 1/4 (40 acres) SE 1/4 (160 acres)

Gov't lot _____ County Canyon
Lat: : : Long: : :
Address of Well Site 21314 Hoskins Rd.
City Caldwell
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

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

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	650Lbs	Dry Pour

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 197ft
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+2	197	.250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☒ Perforations Method perforator
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
95	100	.2x1	70	6"	Steel	☒	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
39ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
35GPM	----	95ft	2hours

Water Temp. 59DegF Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 50ft

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10"	0	2	Top Soil		☒
"	2	6	Sandy Brown Clay		☒
"	6	20	Tan Clay		☒
6"	20	50	Tan Clay		☒
"	50	53	Sand	☒	
"	53	63	Tan Clay		☒
"	63	97	Blue Clay		☒
"	97	100	Sand	☒	
"	100	137	Blue Clay		☒
"	137	138	Fine Black Sand	☒	
"	138	200	Blue Clay		☒

RECEIVED
APR 07 2005
WATER RESOURCES
WESTERN REGION

Completed Depth: 200 (Measurable)
Date: Started 4-1-05 Completed 4-4-05

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

Firm Name Coonse Well Drilling Firm No. 409
Firm Official _____ Date 4-4-05
Supervisor or Operator _____ Date 4-4-05
(Sign once if Firm Official & Operator)

Date: 4/4/2005 Time: 4:06:44 PM

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Reclamation

WELL DRILLER'S REPORT

RECEIVED

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Stephen L. Webb

Address Nampa, Idaho Box 319

Owner's Permit No.

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test

☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 405 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
.250 inches	6 inches	+1 feet	322 feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet

Was a packer or seal used? ☐ Yes ☒ No

Perforated? ☐ Yes ☒ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation ____ inches by ____ inches

Number	From	To
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name

Type Model No.

Diameter ___ Slot size ___ Set from ___ feet to ___ feet

Diameter ___ Slot size ___ Set from ___ feet to ___ feet

Gravel packed? ☐ Yes ☒ No Size of gravel

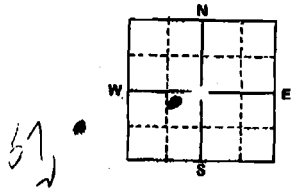
Placed from feet to feet

Surface seal? ☒ Yes ☐ No To what depth 250 feet

Material used in seal ☐ Cement grout ☒ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.



51

County Owyhee

NE ¼ SW ¼ Sec. 15, T. 2 N, R. 4 W

7. WATER LEVEL

Static water level 245 feet below land surface

Flowing? ☐ Yes ☒ No G.P.M. flow

Temperature ____ ° F. Quality GOOD

Artesian closed-in pressure ____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☒ Pump ☐ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
12	0	72

9. LITHOLOGIC LOG 045088

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	235	BROWN CLAY		✓
	235	270	SANDY BROWN CLAY		✓
	270	298	BROWN SAND		
			SMALL AMOUNT WATER	✓	
	298	330	SANDY BLUE CLAY		✓
	330	355	BLUE CLAY		✓
	355	370	SANDY BLUE CLAY	✓	
	370	380	BLUE CLAY		✓
	380	385	SANDY BLUE CLAY	✓	
	385	400	BLUE CLAY		✓
	400	405	SANDY BLUE CLAY	✓	

10.

Work started 23-MAY-70 finished 15-JUNE-70

11. DRILLER'S CERTIFICATION

J. P.

This well was drilled under my supervision and this report is true to the best of my knowledge.

METZER WELL DRILLING 93
Driller's or Firm's Name Number

Box 511 HOMEDALE IDAHO
Address

Kenneth Metzer 29 June 70
Signed By Date

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE, BLUE, AND PINK COPIES TO THE DEPARTMENT

57

830532

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. _ - _ - -388 -32 _____
Other IDWR No. _____

2. OWNER:
Name LES MILBURN
Address 18081 LOCUST LN
City CALDWELL State ID Zip 83607

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp. 2 North ☒ or South ☐
Rge. 4 East ☐ or West ☒
Sec. 10 1/4 (10 acres) SE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't lot _____ County OWYHEE
Lat: : : Long: : :
Address of Well Site HOWARD LANE & SUNSET RIM
City MARSING
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

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

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	70	900	POUR

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 340
Was drive shoe seal tested? ☒ Y ☐ N How? air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+2	340	250	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
196ft. below ground Artesian Pressure _____ lb
Depth flow encountered 350 ft. Describe access port or control devices: WELL CAP

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
50		360	2 HR

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 200

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	8	TOP SOIL		☒
10	8	18	BROWN CLAY		☒
8	18	200	BROWN CLAY		☒
6	200	225	BROWNC LAY W/ CRACKS	☒	
6	225	330	BROWN CLAY		☒
6	330	336	BLUE SAND	☒	
6	336	350	BLUE CLAY		☒
6	350	380	BLUE CLAY W/ CRACKS	☒	

ORIGINAL

RECEIVED
MAY 12 2005
WATER RESOURCES
WESTERN REGION

Completed Depth: 380 (Measurable)
Date: Started 4/18/2005 Completed 4/21/2005

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

Firm Name GeorgePostWellDrillingInc. Firm No. 563
Firm Official _____ Date 4/22/2005
Supervisor or Operator Ronald A. Post Date 4/22/2005
(Sign once if Firm Official & Operator)

Date: 4/21/2005 Time:5:00:40 PM

57

Form 238-7
6/07

851254

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0052751

Drilling Permit No.

Water right or injection well #

2. OWNER: Tom Irwin

Name Tom Irwin

Address 6953 Coyote Run Ln

City Marsing State ID Zip 83639

3. WELL LOCATION:

Twp. 2 [✓ North] or South ☐ Rge. 4 East ☐ or [✓ West]

Sec. 11 NW 1/4 (10 acres) SE 1/4 (40 acres) SW 1/4 (160 acres)

Gov't Lot — County Owyhee

Lat. 43 ° 31.156 N (Deg. and Decimal minutes)

Long. 116 ° 47.418 W (Deg. and Decimal minutes)

Address of Well Site 6953 Coyote Run Ln

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

Lot. — Blk. — Sub. Name None

4. USE:

[✓ Domestic] ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK:

[✓ New well] ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other

6. DRILL METHOD:

[✓ Air Rotary] ☐ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
Bentonite	0	20	650 lbs	Bore hole

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6	+2	318	.250	Steel	✓	☐	☐	✓
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? [✓ Y] ☐ N Shoe Depth(s) 318 ft

9. PERFORATIONS/SCREENS:

Perforations [✓ Y] ☐ N Method Factory

Manufactured screen [✓ Y] ☐ N Type PVC

Method of installation Sand Line Setter

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
294	374	20	80	4	PVC	Schedule 40

Length of Headpipe — Length of Tailpipe —

Packer ☐ Y [✓ N] Type —

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
Silica Sand	300	384	700 lbs	Slow pour

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y [✓ N] Artesian Pressure (PSIG) —

Describe control device ~~[illegible]~~

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 240 Static water level (ft) 120

Water temp. (°F) 58° Bottom hole temp. (°F) —

Describe access port Well Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
180	25	60 min

Test method: [✓ Pump] ☐ Bailer ☐ Air ☐ Flowing artesian

Water quality test or comments: NO TEST

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	Water N
10	0	5			X
10	5	20	Gravel Basalt		X
6	20	27	Gravel Basalt		X
6	27	28	Sandy Clay		X
6	28	55	Tan Clay		X
6	55	82	Brown Sandy Clay		X
	82	87	Sand		X
	87	103	Sandy Clay		X
	103	105	Tan Clay		X
	105	115	Sandy Clay		X
	115	167	Blue Clay		X
	167	171	Fine Blue Sand w/ thin Blue Clay	X	
	171	191	Blue Sandy Clay		X
	191	221	Blue Clay		X
	221	223	Sand Blue	X	
	223	227	Clay Blue		X
	227	228	Sand Blue	X	X
	228	240	Clay Blue		X
	240	295	Sandy Blue Clay w/ Fractures	X	
	295	298	Grey Clay w/ Fractures		X
	298	302	Tanish Clay	X	
	302	305	Clay Rock	X	
	305	318	Fractured Grey Clay	X	
	318	319	Thin layer of Blue Sand Fine	X	
	319	322	Hard Blue Clay Rock	X	
	322	335	Sandy Blue Clay w/ Fractures	X	
	335	341	Blue Clay Rock	X	
	341	356	Fractured Blue Clay Hard	X	
	356	384	Fractured Blue Clay [illegible]	X	

RECEIVED
MAY 15 2008
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 374

Date Started: 4-22-08 Date Completed: [illegible]

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 Adamson Pump + Well Drilling Co. No. 457

*Principal Driller Dave Adamson Date

*Driller Greg Nelson Date 5-6-08

*Operator II [illegible] Date

Operator I [illegible] Date 5-6-08

Shane [illegible]

* Signature of Principal Driller and rig operator are required.

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

W

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

gm

1. WELL OWNER

Name SAM ASHE

Address MARSING IDAHO

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness		Diameter		From		To	
.250	inches	6	inches	+ 1	feet	161	feet
_____	inches	_____	inches	_____	feet	_____	feet
_____	inches	_____	inches	_____	feet	_____	feet
_____	inches	_____	inches	_____	feet	_____	feet

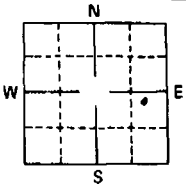
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number		From		To	
_____	perforations	_____	feet	_____	feet
_____	perforations	_____	feet	_____	feet
_____	perforations	_____	feet	_____	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 18 Material used in seal: ☐ Cement grout
☐ Bentonite ☒ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County OWYHEE
NE ¼ SE ¼ Sec. 10, T. 2 N/S, R. 4 E/W.

7. WATER LEVEL

Static water level 90 feet below land surface.
Flowing? ☐ Yes ☐ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality GRNS.
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
15	116	2

9. LITHOLOGIC LOG 88347

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	2	BROWN CLAY		✓
	2	18	GRAVEL		✓
	18	74	SANDY BROWN CLAY		✓
	74	85	GRAVEL		✓
	85	120	BROWN CLAY		✓
	120	150	BLUE CLAY		✓
	150	155	BLACK SAND		✓
	155	295	BLUE CLAY		✓
	295		BLACK SAND	✓	

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FEB 5 1986
Department of Water Resources
Western Regional Office

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FEB 4 1986
Department of Water Resources

MICROFILMED

10.

Work started NOV-15-85 finished NOV-26-85

11. DRILLERS CERTIFICATION DR

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

Firm Name METZER DRL. Firm No. 93
RT-2

Address HAGERMAN IDA. Date DEC-6-85

Signed by (Firm Official) Kenneth Metzer

and

(Operator) _____

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
11/97 JGE

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

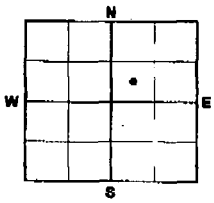
054696

Office Use Only
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 9899
DRILLING PERMIT NO. 57-99-w-0078-000
Other IDWR No.

2. OWNER:
Name Gary Tuttle Construction
Address 2203 N. Montana
City Caldwell State ID Zip 83605

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.



Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 10 ____ 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ____ County Owyhee
Lat: Long:
Address of Well Site Sunset Subdivision,
Parcel #5 (Give at least name of road + Distance to Road or Landmark) City Marsing
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	200	30 Sacks	Pour

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 395
Was drive shoe seal tested? [X] Y [ ] N How? Pressure

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	395	250	Steel	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS:
[ ] Perforations Method
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
200 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: Cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
100	480	480	4 hours

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encounter 200

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	15	Sand		
10	15	33	Tan clay		
10	33	38	Sandstone		
10	38	192	Tan clay & sandstone	X	
6	192		Blue clay & bake sand		
		500	strips	X	

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SEP 15 1999
Department of Water Resources

RECEIVED
SEP 07 1999
WATER RESOURCES
WESTERN REGION

MICROFILMED
NOV 30 1999

Completed Depth 500 (Measurable)
Date: Started 8/3/99 Completed 8/11/99

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official ____ Date 8/24/99
and
Driller or Operator ____ Date 8/24/99
(Sign once if Firm Official & Operator)

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Form 238-7
11/97 JGE

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

76219

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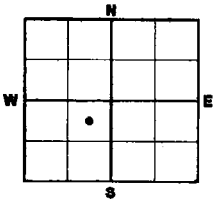
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: : : Long: : :

WELL TAG NO. D 0018291
DRILLING PERMIT NO.
Other IDWR No.

2. OWNER:
Name Jack Thompson
Address Rt. 1, Box 470
City Marsing State ID Zip 836

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.



Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 10 1/4 (10 acres) NE 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot County Owyhee
Lat: Long:
Address of Well Site Off Howard Road City Marsing
(Give at least name of road + Distance to Road or Landmark)
Lt. Blk. Sub. Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18+	600 lbs	Pour

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 440
Was drive shoe seal tested? [X] Y [ ] N How? Air

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	440	250	Steel	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS:
[ ] Perforations Method
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
20 ft. below ground Artesian pressure lb.
Depth flow encountered 460 ft. Describe access port or control devices: Cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
60	460	460	3 hours

Water Temp. 60 Bottom hole temp. 60
Water Quality test or comments:
Depth first Water Encounter 320

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	2	Top Soil		
10	2	4	Hard Pan		
10	4	16	Brown Clay and Gravel		
8	16	18	Brown Clay		
8	18	215	Brown Clay		
8	215	360	Blue Clay		
8	360	420	Fine sand and Clay mix	X	
8	420	440	Blue Clay		
6	440	480	Blue clay and broken clay	X	

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MAY 31 2001
WATER RESOURCES
WESTERN REGION

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JUN - 4 2001
Department of Water Resources

Completed Depth 480 (Measurable)
Date: Started 5/8/2001 Completed 5/10/2001

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official Date 5/15/2001
and
Driller or Operator Date 5/15/2001
(Sign once if Firm Official & Operator)

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Abandonment. 24

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT 085439

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D _____
DRILLING PERMIT NO. 57-98 ld-0044-300
Other IDWR No. _____

2. OWNER:
Name Kelly Ackerman
Address R#1 Box 728
City Marsing State Id Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 02 North ☒ or South ☐
Rge. 04 East ☐ or West ☒
Sec: 03, ____ 1/4 SW 1/4 SW 1/4 (10 acres / 40 acres / 160 acres)
Gov't Lot ____ County Owyhee
Lat: : : Long: : :
Address of Well Site Corner of Pershall and Hwy 78 City _____
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☐ New Well ☐ Modify ☒ Abandonment ☐ Other _____

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

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD

Was drive shoe used? ☐Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☐ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
Perforations Method _____
Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
28 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encounter _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
4	-5½	307	1350 pounds of Perma plug 5/8 Bentonite		
4	-5½	112	550 pounds of Perma plug 5/8 Bentonite		
4	-5½	92	250 pounds of Perma plug 5/8 Bentonite		
			Place in Well at 3 to 5 minutes per 50 pound bag through a funnel with a 1 3/8" opening on bottom Bottom of pit covered with 4 50# bags		

RECEIVED
JUL 29 1998
WATER RESOURCES
WESTERN REGION

RECEIVED
AUG 04 1998
Department of Water Resources

MICROFILMED
SEP 23 1998

Completed Depth – 4½' (Measurable)
Date: Started 25 June 1998 Completed 25 June 98

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

Company Name Gary Duspiva Well Drilling Development Firm No. 395

Firm Official Gary Duspiva Date 26 July 98
and
Driller or Operator _____ Date _____
(Sign once if Firm Official & Operator)

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Form 238-7
6/93

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

092622

1. DRILLING PERMIT NO. 87 -94 -W -0013 -000
Other IDWR No.

2. OWNER:
Name John Paine
Address 16488 S. Montana
City Caldwell State Id Zip 83605

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 2 North ☒ or South ☐
R. 4 East ☐ or West ☒
Sec. 4 , s/e 1/4 s/e 1/4 s/e 1/4
(10 acres / 40 acres / 160 acres)
Gov't Lot ____ County Owyhee

Address of Well Site 1 mile west and 1.5 miles south of Marsing
(Give at least Direction + Distance to Road or Landmark)

Lot No. ____ Block No. ____ Subd. Name ____

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

5. TYPE OF WORK
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

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

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	6 sacks slurry	

Was drive shoe seal tested? YES ☐ NO ☐ How?

8. CASING/LINER:

Diameter	From	To	Gauge	Casing	Liner	Steel	Plastic	Welded	Threaded
6"	+2	130	.025			☒	☐	☒	☐
5"	110	175	.025			☐	☒	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes 130'
Top Packer or Headpipe ____ Bottom Tailpipe ____

9. PERFORATIONS/SCREENS
☒ Perforations Method saw cuts in PVC
☐ Screens Type ____ Material ____

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casing	Liner
110	175	.025		5"	tele	☐	☒
						☐	☐
						☐	☐
						☐	☐

10. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time
80+	5'	175	4 hr.

Temperature of water 62° Was a water analysis done? Yes ☐ No ☒
By whom?
Water Quality (odor, etc.)
Bottom Hole Temperature

11. STATIC WATER LEVEL:
26' ft. below surface Depth artesian flow found
Artesian pressure ____ lb. Describe access port
Describe Controlling Devices:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
10"	0	10	Top Soil		
6"	10	15	Top Soil		
6"	15	35	~~Sandy Clay~~ Gravel		
6"	35	45	Sandy Clay		
6"	45	72	Coarse Gravel some water		
6"	72	100	Sandy Clay		
6"	100	104	Blue Clay		
6"	104	127	Brown Sticky Clay		
6"	127	138	Blue Clay		
6"	138	185	Clay With Black Sand Stringers		
				80+	

RECEIVED
APR 29 1994
WATER RESOURCES WESTERN REGION

RECEIVED
MAY 24 1994
Department of Water Resources

FEB 08 1995

Date: Started 3/25/94 Completed 4/12/94

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

Firm Name Sherm Couch Well Drilling Firm No. 161
Firm Official Sherman Couch Date 4-23-94
and
Supervisor or Operator Ken Warner Date 4/26/94
(Sign once if Firm Official & Operator)

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Form 238-7
6/07

63

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0071659
Drilling Permit No. 971588-8771145
Water right or injection well #

2. OWNER:
Name Loucks Homes
Address 5628 Old Bruneau Hwy
City Marsing State Id Zip 83639

3. WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒
Sec. 9 SE 1/4 SE 1/4 1/4
Gov't Lot County Owyhee
Lat. N 43 ° 31.845 (Deg. and Decimal minutes)
Long. W116 ° 48.873 (Deg. and Decimal minutes)
Address of Well Site 6253 Peeshall Rd
(Give at least name of road + Distance to Road or Landmark) City Marsing
Lot. 2 Blk. 1 Sub. Name Flying Horse Ranchettes

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/8 Bent	0	47	41 Sacks	Hydrated

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6	+2	80	250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 80

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

From (ft)	To (ft)	Slot size	Number	Diameter (nominal)	Material	Gauge or Schedule

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

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	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) 35 Static water level (ft) 42
Water temp. (°F) 53 Bottom hole temp. (°F)
Describe access port 4"

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
53	15	3 Hrs

Test method: ☒ Pump ☐ Bailer ☐ Air ☐ Flowing artesian

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	10	Sandy Clay Brown		X
10	10	20	Sandy Clay Brown		X
10	20	30	Sandy Clay Brown		X
10	30	35	Sand, Clay & Rock	X	
10	35	40	Sandy Clay		X
10	40	48	Sandy Clay		X
6	48	60	Rock & Sand		X
6	60	70	Rock & Sand		X
6	70	73	Rock & Sand		X
6	73	75	Brown Sand	X	
6	75	80	Brown Sand	X	

RECEIVED
JAN 21 2016
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 80
Date Started: 1-8-16 Date Completed: 1-19-16

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 Gary's Well Drilling Co. No. 317
*Principal Driller Gary Wilson Jr. Date 1-19-16
*Driller Date
*Operator II Date
Operator I Wade Wilson Date 1-19-16

* Signature of Principal Driller and rig operator are required.

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 00677557
Drilling Permit No. 967772-873831
Water right or injection well #

2. OWNER:
Name Loucks Homes
Address 5628 - Bruno Hwy
City Marsing State Id Zip 83639

3.WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒
Sec. 09 SE 1/4 (10 acres) NE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot County
Lat. N 43 • 31: 811 (Deg. and Decimal minutes)
Long. W116 • 48: 798 (Deg. and Decimal minutes)
Address of Well Site 6337 Pershall Rd
(Give at least name of road + Distance to Road or Landmark) City Marsing
Lot. 1 Blk. Sub. Name Flying H Ranchets

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/8 Bent	0	40		Dry (Hydrated)

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6	+2	88	250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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

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

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule

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

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	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) 70 Static water level (ft) 41
Water temp. (°F) 53 Bottom hole temp. (°F)
Describe access port 6"

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
53 FT	30	3 HRS

Test method: Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	10	Sandy Clay Brown		X
10	10	20	Rocky & Black Sand		X
10	20	30	Sandy Clay		X
10	30	40	Brown Clay		X
6	40	60	Brown Clay		
6	60	75	Sand & Rock	X	
6	75	80	Rock & Clay		X
6	80	90	Course Sand	X	

RECEIVED
OCT 31 2014
WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 88 FT
Date Started: 10-21-14 Date Completed: 10-21-27

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 Gary's Well Drilling Co. No. 317
*Principal Driller Gary Wilkerson Date 10-21-14
*Driller Date
*Operator II Date
Operator I Date

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

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE TYPEWRITER OR BALLPOINT PEN

RECEIVED
DEC 5 1983
Department of Water Resources

1. WELL OWNER

Name RAY PERSHALL

Address Marsing, ID.

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches	+ 3'6" feet	117'3" feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

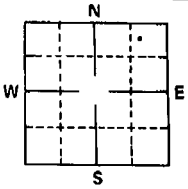
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 40' Material used in seal: ☐ Cement grout
☐ Bentonite ☒ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County OWYHEE
NE ¼ NE ¼ Sec. 9, T. 2 N/S R. 4 E/W.

7. WATER LEVEL

Static water level 26 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
60		2

9. LITHOLOGIC LOG

#23932

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	20	top soil		x
8	20	40	sand & gravel/clay stringers		x
6	40	54	sand & gravel/clay stringers		x
6	54	60	sand & gravel	x	
6	60	115	sand & clay layers	x	
6	115	120	blue clay		x
6	120	182	clay/sand layers	x	

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10.

Work started 11-12-83 finished 11-14-83

11. DRILLERS CERTIFICATION

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

Firm Name BILL DOTY WELL DRILLING Firm No. 42
Address RT.7 BX.311 Caldwell, ID 83605 Date 10-16-83
Signed by (Firm Official) Bill Doty
and
(Operator) Bob Doty

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0068964
Drilling Permit No. 96Revise - 874723
Water right or injection well #

2. OWNER:
Name Charles E Jones
Address 6251 Pershall Rd
City Marsing State Id Zip 83639

3.WELL LOCATION:
Twp. 2 North ☒ or South ☐ Rge. 4 East ☐ or West ☒
Sec. 9 SE (10 acres) 1/4 (40 acres) 1/4 (160 acres) 1/4
Gov't Lot County Owyhee
Lat. N43 ° 31.830 (Deg. and Decimal minutes)
Long. W116 ° 49.007 (Deg. and Decimal minutes)
Address of Well Site 6251 Pershall Rd
(Give at least name of road + Distance to Road or Landmark) City Marsing
Lot. 3 Blk. — Sub. Name Flying Horse Ranchett

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

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

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

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/8 Bent	0	40	32 Bag's	Hydrated

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6	+2	80	250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 80

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

From (ft)	To (ft)	Slot size	Number	Diameter (nominal)	Material	Gauge or Schedule

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

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method

11. FLOWING ARTESIAN:
Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG)
Describe control device 6"

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 70 Static water level (ft) 42
Water temp. (°F) 53 Bottom hole temp. (°F)
Describe access port 6"

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
53	15	3 HRS

Test method: Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
10	0	10	Brown Sandy Clay		X
10	10	30	Brown Sandy Clay		X
10	30	40	Brown Clay		X
6	40	60	Brown Clay		X
6	60	70	Rocky & Sand	X	
6	70	80	Coase Gravel & Sand	X	
6	80	—	Clay		X

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WATER RESOURCES
WESTERN REGION

Completed Depth (Measurable): 80
Date Started: 3-19-15 Date Completed: 3-24-15

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 Gary's Well Drilling Co. No. 317
*Principal Driller Gary Wilson Sr Date 3-24-15
*Driller Date
*Operator II Date
Operator I Date

* Signature of Principal Driller and rig operator are required.

Form 238-7
6/93

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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APR 2 6 1994
Department of Water Resources

Use Typewriter or Ball Point Pen

092623

1. DRILLING PERMIT NO. 57-93-C-0034-000
Other IDWR No. 57-25775

2. OWNER:
Name Donald+LouANN Holloway
Address 42 011 Sierra Hwy
City Lancaster State CA Zip 93534

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 02N North ☒ or South ☐
R. 04W East ☐ or West ☒
Sec. 9, SE 1/4 (10 acres) SE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ____ County ____

Address of Well Site Shari Hill Estates
PH I 1½ Miles So. of Mussing Hwy 78
(Give at least Direction + Distance to Road or Landmark)

Lot No. 1 Block No. 6 Subd. Name Shari Hill Est.

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

5. TYPE OF WORK
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☒ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Cement+Sand	0	21	30-5	pumped
Bentite	105	115	6-5	pumped

Was drive shoe seal tested? YES NO How? ____

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
8	+18"	280	SDR 17	✓		☐	☒	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes ____
Top Packer or Headpipe ____ Bottom Tailpipe ____

9. PERFORATIONS/SCREENS
☒ Perforations Method SAW CUT
☐ Screens Type ____ Material ____

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casting	Liner
130	280	5/32	16	4	None	☒	☐
						☐	☐
						☐	☐
						☐	☐

10. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time
500	12'	40'	8 Hrs

Temperature of water ____ Was a water analysis done? Yes ☒ No ☐
By whom? ____
Water Quality (odor, etc.) ____
Bottom Hole Temperature ____

11. STATIC WATER LEVEL:
28 ft. below surface Depth artesian flow found ____
Artesian pressure ____ lb. Describe access port ____
Describe Controlling Devices: ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
15½	0	280			
	0	12	Sandy Loamy Soil		
	12	23	Boulders, Sand + Gravel		
	23	28	Gravel in Beded in Brown Clay		
	28	80	Brown Clay		
	80	94	Brown Clay wit. STRK OF Blue Clay		
	94	112	Blue clay wit. STRKS OF Brow Clay		
	112	123	Blue Clay wit. STRKS OF Coarse Gravel		
	123	280	Blue Clay with STRKS OF Sand + Gravel		

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APR 28 1994
WATER RESOURCES
WESTERN REGION

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MAY 24 1994
Department of Water Resources

FEB 08 1995

Date: Started 12/10/93 Completed 3/28/94

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

Firm Name Bryant Pump + Drilling Firm No. 534
Firm Official George W. Bryant Sr. Date 3/29/94
and
Supervisor or Operator Geo Bryant Jr. Date 3/30/94
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

779269

Form 238-7
11/97 JGE

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0025128
DRILLING PERMIT NO.
Other IDWR No.

2. OWNER:
Name Abe Morris
Address Rte 1 Box 484
City Marsing State ID Zip 83639

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 2 North [X] or South [ ]
Rge. 4 East [ ] or West [X]
Sec. 9 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot County Owyhee
Lat: Long:
Address of Well Site Hwy 78 About 2 1/2
Miles South Marsing (Give at least name of road + Distance to Road or Landmark) City Marsing
Lt. Blk. Sub. Name

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

Seal/Filter Pack			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonite	0	18	500	overbore

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 218
Was drive shoe seal tested? [X] Y [ ] N How? Air

8. CASING/LINER:

Diameter	From	To	Guage	Material	Casing	Liner	Welded	Threaded
6	+2	218	.250	steel	[X]	[ ]	[X]	[ ]
4 1/2	195	215	.188	PVC	[ ]	[X]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS:
[X] Perforations Method Saw
[ ] Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
215	235	6x1/4		4 1/2	PVC	[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
130 ft. below ground Artesian pressure lb.
Depth flow encountered 231-240 ft. Describe access port or control devices: cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
50	220	220	1 hr

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments:
Depth first Water Encounter 180

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	2	Top Soil		
10	2	4	Hard Pan		
10	4	18	Sand		
6	18	25	Sand		
6	25	75	Clay		
6	75	77	Sand Stone		
6	77	180	Clay		
6	180	195	Baked Brown Clay w/ Cracks	X	
6	195	203	Clay		
6	203	218	Baked Brown Clay w/ Cracks	X	
6	218	230	Blue Clay		
6	230	240	Baked Brown Clay w/ Cracks	X	

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WATER RESOURCES
WESTERN REGION

Completed Depth 235 (Measurable)
Date: Started 6/24/2002 Completed 6/25/2023

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

Company Name Treasure Valley Drilling Firm No. 560
Firm Official Date 7/3/2002
and
Driller or Operator Monte Pool Date 7/3/2002
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

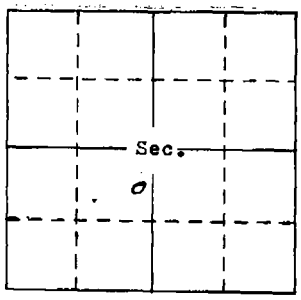
REPORT OF WELL DRILLER
State of Idaho

State law requires that this report shall be filed with the State Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:
Name Ray Pershall
Address Route #1 Marsing Idaho

Owner's Permit No.
NATURE OF WORK (check): Replacement well ☐ New well ☐ Deepened ☐ Abandoned ☐
Water is to be used for: Domestic
METHOD OF CONSTRUCTION: Rotary ☐ Cable ☐ Dug ☐ Other (explain)
CASING SCHEDULE: Threaded ☐ Welded ☐
6 "Diam. from 0 ft. to 200 ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
Thickness of casing: .250 Material:
Steel ☒ concrete ☐ wood ☐ other ☐
(explain)
PERFORATED? Yes ☐ No ☒ Type of perforator used:
Size of perforations: " by "
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
WAS SCREEN INSTALLED? Yes ☐ No ☐
Manufacturer's name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.
CONSTRUCTION: Well gravel packed? Yes ☐ No. ☒ size of gravel Gravel placed from ft. to ft. Surface seal provided? Yes ☐ No ☐ To what depth? ft. Material used in seal:
Did any strata contain unusable water? Yes ☐ No. ☒ Type of water:
Depth of strata ft. Method of sealing strata off:
Clay
Surface casing used? Yes ☐ No. ☒
Cemented in place? Yes ☐ No ☒

Locate well in section



LOCATION OF WELL: County Owyhee
NE¼ SW¼ Sec. 9 T. 2 N. R. 4 E/W

Size of drilled hole: 6" Total depth of well: 225' Standing water level below ground: Temp. Fahr. ° Test delivery: gpm or cfs Pump? ☐ Bail ☐
Size of pump and motor used to make test: Air Compressor
Length of time of test: 8 Hrs. Min.
Drawdown: ft. Artesian pressure: ft. above land surface Give flow cfs or gpm. Shutoff pressure:
Controlled by: Valve ☐ Cap ☐ Plug ☐
No control ☐ Does well leak around casing? Yes ☐ No ☒

045093

DEPTH FROM FEET	DEPTH TO FEET	MATERIAL	WATER YES OR NO
0	20	Top Soil	
20	30	Fine Sand	yes
30	65	Yellow Clay	
65	75	Fine Sand	yes
75	97	Yellow Clay	
97	115	Sandy Clay	
115	120	Yellow Clay	
120	125	Brown Sand	
125	132	yellow sandy clay	
132	155	Blue shale	
155	167	Fine blue sand	yes
167	190	sandy shale	
190	197	Fine blue sand	yes
197	215	Blue shale	
215	222	Blue sand	yes
222	225	Blue shale	
		open Bottom.	

Work started: 5/13/69
Work finished: 5/22/69
Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.
Name: Started 5/13/69
Address: Finished 5/22/69
Signed by: Kenneth Witt
License No. 55 Date: 6/30/69

Use other side for additional remarks

57

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Resources

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WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, **Department of Water Resources within 30** days after the completion or abandonment of the well.

1. WELL OWNER

Name WILLIAM F. & GRAY

Address CALDWELL, IDAHO

Owner's Permit No. _____

2. NATURE OF WORK

☑ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☑ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)

☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED

☑ Cable ☐ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 165 feet

Casing schedule: ☑ Steel ☐ Concrete

Thickness	Diameter	From	To
_____ inches	_____ inches	+ 2 feet	142' 6" feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☑ Yes ☐ No

Was a packer or seal used? ☑ Yes ☐ No

Perforated? ☐ Yes ☑ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☑ No

Manufacturer's name _____

Type _____ Model No. _____

Diameter ___ Slot size ___ Set from _____ feet to _____ feet

Diameter ___ Slot size ___ Set from _____ feet to _____ feet

Gravel packed? ☐ Yes ☑ No Size of gravel _____

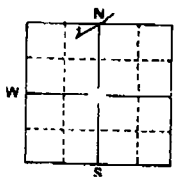
Placed from _____ feet to _____ feet

Surface seal depth 20 Material used in seal ☐ Cement grout ☑ Puddling clay ☐ Well cuttings

Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☑ Overbore to seal depth

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. _____ Block No. _____

County Owyhee,

NE ¼ NW ¼ Sec. 16, T. 2 N/S, R. 4 E/W

7. WATER LEVEL

Static water level 46 feet below land surface

Flowing? ☐ Yes ☐ No G.P.M. flow _____

Temperature _____ ° F. Quality _____

Artesian closed-in pressure _____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☐ Bailer ☑ Other AIR

Discharge G.P.M.	Draw Down	Hours Pumped
300 GPH	38 FT	3 Hours

47360

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	3	Top Soil		
8	3	20	SANDY CLAY		
6	20	55	YELLOW CLAY		
6	55	70	SANDY		
6	70	112	YELLOW CLAY		
6	112	120	BROWN SAND CLAY		
	120	139	SAND FINE (BROWN)	✓	
	139	148	YELLOW CLAY, STICKY		
	148	150	SANDY		
	150	164	SAND FINE (DIRTY)	✓	
	164	165	BLUE CLAY		

10.

Work started 10/28/76 finished 11/5/76

11. DRILLERS CERTIFICATION

Firm Name WITT Drilling Firm No. 55

Address CALDWELL Date 11/6/76

Signed by (Firm Official) Kenneth Witt

and

(Operator) Claude DeFoe

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT

APPENDIX E

Site Plan with Aquifer Width Map for Individual Lots

Appendix E - Site Plan With Aquifer Width Map for Individual Lots

OWYHEE HEIGHTS SUBDIVISION
SUBDIVISION ENGINEERING REPORT
SEPTIC PLACEMENT MAP

A PARCEL OF LAND BEING A PORTION OF THE SW1/4 SW1/4 AND A PORTION OF THE SE1/4 SW1/4 OF SECTION 10, T. 2 N., R. 4 W., B.M., OWYHEE COUNTY IDAHO, 2024

OWNER/DEVELOPER
WHITNEE HUNGATE
18895 METZ ROAD
CALDWELL, ID 83607
(208) 720-3301

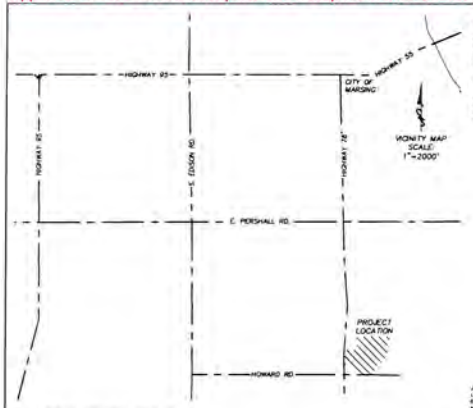
ENGINEER/SURVEYOR
MASON & ASSOCIATES, INC.
924 3rd ST. SOUTH
NAMPA, ID 83651
(208) 454-0256

PROJECT BENCHMARKS
TBM #1
CHISELED "X" SOUTH END CONCRETE DITCH NORTH SIDE OF HOWARD ROAD
ELEVATION= 2388.98'

TBM #2
CHISELED "X" SOUTH END OF WEIR STRUCTURE
ELEVATION= 2383.43'

TBM #3
FOUND 5/8" IRON PIN NO CAP NORTHWEST PROPERTY CORNER
ELEVATION= 2358.37'

TBM #4
FOUND 5/8' IRON PIN "MARKS LS 7045" SOUTH EAST CORNER OF WIRE FENCE PROPERTY CORNER
ELEVATION= 2367.72'



0 50 100 200
Scale: 1"=100'

LEGEND
- Benchmark
- Found Brass Cap Monument
- Found 5/8" Iron Pin
- Found 1/2" Iron Pin
- Gravity Irrigation Manhole
- Pressure Irrigation Pump Out
- Existing Power Pole
- Existing Telephone Riser
- Existing Standpipe
- Existing Sign
- Deciduous Tree
- Existing Well
- Existing Septic Tank
- Existing Electric Meter
- Existing Electric Box
- Existing Guy Anchor
- Existing Irrigation Pump
- Block Number
- Natural Ground Contour Line
- Property Boundary Line
- Section Line
- Lot Line
- Easement Line
- Right-of-Way Line
- Pressure Irrigation
- Gravity Irrigation
- Existing Top of Bank
- Existing Edge Dirt Road
- Existing Top of Slope
- Existing Toe
- Existing Edge of Pavement
- Existing Edge of Gravel
- Existing Fence
- Existing Overhead Power
- Existing Pipe
- Test Pit
- Proposed Well
- Primary Septic System
- Replacement Septic System
- Available Septic System Area
- Potential Home Site (45'x85')
- Groundwater Flow Direction
- Lot Width Perpendicular to Groundwater Flow

PROJECT NARRATIVE

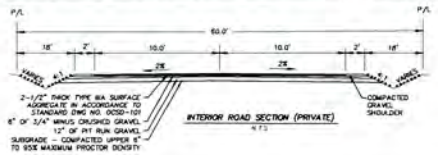
1. PROJECT DATA:
   ZONE DESIGNATION: MULTI-USE, OWYHEE COUNTY
   AREA: ± 33.49 ACRES
   NO. OF RESIDENTIAL LOTS: 6
   NO. OF COMMON LOTS: 1
   MINIMUM BUILDABLE LOT SIZE: 1.50 ACRE
2. BUILDING SETBACKS AND DIMENSIONAL STANDARDS IN THIS SUBDIVISION SHALL BE IN COMPLIANCE WITH THE OWYHEE COUNTY STANDARDS FOR THE APPLICABLE ZONE.
3. ANY RE-SUBDIVISION OF THIS PLAT SHALL COMPLY WITH THE APPLICABLE ZONING REGULATIONS IN EFFECT TO THE TIME OF THE RE-SUBDIVISION.
4. IRRIGATION WATER HAS BEEN PROVIDED FROM GEM IRRIGATION DISTRICT, IN COMPLIANCE WITH IDAHO CODE 31-3805 1.(B). ALL BUILDABLE LOTS WILL BE ENTITLED TO IRRIGATION WATER RIGHTS AND WILL BE OBLIGATED FOR ASSESSMENTS FROM GEM IRRIGATION DISTRICT. WATER TO BE DELIVERED VIA A PRESSURIZED IRRIGATION SYSTEM. IRRIGATION SYSTEM SHALL BE MAINTAINED BY WATER USER'S AGREEMENT.
5. THIS DEVELOPMENT RECOGNIZES SECTION 22-4503 OF IDAHO CODE, RIGHT TO FARM ACT, WHICH STATES: AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF NOT A NUISANCE — EXCEPTION. NO AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF SHALL BE OR BECOME A NUISANCE, PRIVATE OR PUBLIC, BY ANY CHANGED CONDITIONS IN OR ABOUT THE SURROUNDING NONAGRICULTURAL ACTIVITIES AFTER IT HAS BEEN IN OPERATION FOR MORE THAN ON (1) YEAR, WHEN THE OPERATION, FACILITY OR EXPANSION WAS NOT A NUISANCE AT THE TIME IT BEGAN OR WAS CONSTRUCTED. THE PROVISIONS OF THIS SECTION SHALL NOT APPLY WHEN A NUISANCE RESULTS FROM THE IMPROPER OR NEGLIGENT OPERATION OF AN AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF.
6. INDIVIDUAL PRIVATE WELLS WILL BE INSTALLED.
7. INDIVIDUAL SEPTIC SYSTEMS WILL BE INSTALLED.
8. STORM DRAINAGE SHALL BE RETAINED IN ROADSIDE BARROW DITCHES.
9. EASEMENTS TO BE PROVIDED UNLESS OTHERWISE SHOWN:
   SUBDIVISION BOUNDARY: 12 FEET
   STREET FRONTAGE: 12 FEET
   REAR LOTS: 6 FEET
   SIDE LOTS: 6 FEET
10. RESIDENTIAL LOTS WILL BE FOR SINGLE FAMILY RESIDENTIAL USE.
11. ALL POWER AND JOINT TRENCH UTILITIES WILL BE LOCATED UNDERGROUND.

Curve Table

Curve #	Length	Radius	Delta	Chord Direction	Chord Length	Tangent
C1	73.09	108.24	38°41'23"	S12°56'26"W	71.71	38.00
C2	88.83	225.43	22°34'42"	N04°53'06"E	88.26	45.00
C3	86.59	128.87	38°29'51"	N35°25'23"E	84.97	45.00
C4	97.08	164.29	33°51'18"	S40°49'26"W	95.67	50.00
C5	94.72	5696.58	00°57'10"	S00°10'51"E	94.72	47.36
C6	467.21	5696.58	04°41'57"	S02°38'42"W	467.08	233.74

Line Table

Line #	Direction	Length
L1	S57°06'10"W	78.64
L2	S32°17'08"W	160.00
L3	S06°24'15"E	183.17
L4	S16°10'27"W	192.85
L5	S54°40'18"W	107.12
L6	S57°45'05"W	150.12
L7	N57°32'33"W	59.40
L8	N00°39'26"W	106.23



INTERIOR ROAD SECTION (PRIVATE)
N.T.S.

PRELIMINARY FOR REVIEW

NO	BY	DATE	DESCRIPTION
			ORIGINAL

DESIGNED BY: JH 4/23
DRAWN BY:
CHECKED BY:
APPROVED BY:

Professional Engineers
Land Surveyors
& Planners
Mason & Associates

CLIENT: WHITNEE HUNGATE
18895 METZ ROAD
CALDWELL, ID 83607
(208) 720-3301

JOB NO: 0C1420
DWG NO: 0C1420SUB
SCALE: 1"=100'
DATE: N/A
FIELD BOOK NO:

DRAWING TITLE: OWYHEE HEIGHTS SUBDIVISION
HIGHWAY 78 MARSING IDAHO
SEPTIC PLACEMENT MAP
Rev:
SHEET NO: 1 OF 1 SHEETS

APPENDIX F

Historic Precipitation and Climate Data

US Climate Data

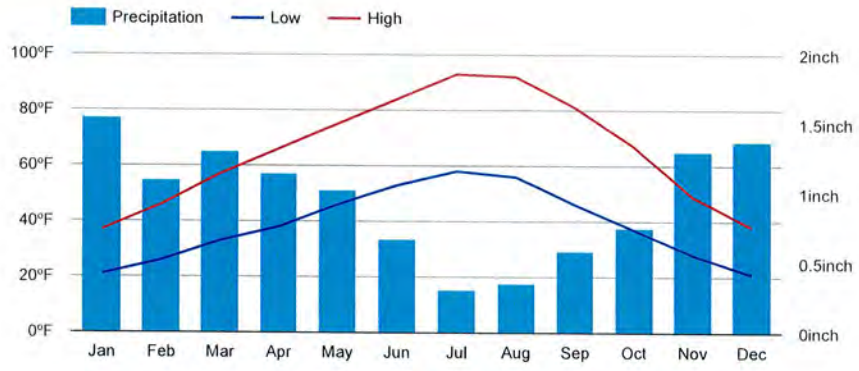
Appendix F - Historic Precipitation and Climate Data

Climate Caldwell - Idaho

	Jan (January)	Feb (February)	Mar (March)	Apr (April)	May (May)	Jun (June)
Av. high	37	46	57	66	75	84
Av. low	21	26	33	38	46	53
Av. precip.	1.54	1.10	1.30	1.14	1.02	0.67

	Jul (July)	Aug (August)	Sep (September)	Oct (October)	Nov (November)	Dec (December)
Av. high	93	92	81	67	49	38
Av. low	58	56	46	37	28	21
Av. precip.	0.31	0.35	0.59	0.75	1.30	1.38

Caldwell Climate Graph - Idaho Climate Chart



Caldwell weather averages

Annual high temperature	65°F
Annual low temperature	39°F
Average annual precip.	11.45 inch

Share

Station Data

Monthly averages Caldwell
Longitude: -116.636, Latitude: 43.6419
Average weather Caldwell, ID - 83605

Monthly: 1981-2010 normals

Abbreviations

Jan (January): January, Feb (February): February, ...

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APPENDIX G

Nitrate Mass-Balance Spreadsheets for Individual Lots

Appendix G - Lot 2 Standard Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	301	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	45.0	45.0	Default
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	7.94E+03	94.0
Effluent	4.14E+02	4.9
Recharge	9.10E+01	1.1
Total Water Volume	**8.44E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	4.2
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.67E+07	47.2
Septic Tank Effluent Nitrate Mass	1.87E+07	52.8
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**3.54E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

Disclaimer: Considerable care was exercised in developing this software. However, the Idaho Department of Environmental Quality makes no warranty regarding its accuracy and shall not be held liable for any damages resulting from its use.

Appendix G - Lot 2 40 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	301	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	
Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	27.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	7.94E+03	94.0
Effluent	4.14E+02	4.9
Recharge	9.10E+01	1.1
Total Water Volume	**8.44E+03**	
Point of Compliance Nitrate Concentration Goal (mg/l)	**3.1**	
Avg. Downgradient Nitrate Concentration in GW (mg/l)	**3.3**	
Current/Acceptable Lot Size (Acres)	**1.6**	

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.67E+07	59.8
Septic Tank Effluent Nitrate Mass	1.12E+07	40.1
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.79E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

Disclaimer: Considerable care was exercised in developing this software. However, the Idaho Department of Environmental Quality makes no warranty regarding its accuracy and shall not be held liable for any damages resulting from its use.

Appendix G - Lot 2 65 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	301	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	16.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	7.94E+03	94.0
Effluent	4.14E+02	4.9
Recharge	9.10E+01	1.1
Total Water Volume	**8.44E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.8
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.67E+07	71.5
Septic Tank Effluent Nitrate Mass	6.63E+06	28.4
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.33E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 3 Standard Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	231	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	45.0	45.0	Default
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	6.09E+03	92.3
Effluent	4.14E+02	6.3
Recharge	9.10E+01	1.4
Total Water Volume	**6.60E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	**3.1**
Avg. Downgradient Nitrate Concentration in GW (mg/l)	**4.8**
Current/Acceptable Lot Size (Acres)	**1.6**

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.28E+07	40.7
Septic Tank Effluent Nitrate Mass	1.87E+07	59.3
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**3.15E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 3 40 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	231	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	27.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	6.09E+03	92.3
Effluent	4.14E+02	6.3
Recharge	9.10E+01	1.4
Total Water Volume	**6.60E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	3.6
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.28E+07	53.3
Septic Tank Effluent Nitrate Mass	1.12E+07	46.6
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.40E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

Disclaimer: Considerable care was exercised in developing this software. However, the Idaho Department of Environmental Quality makes no warranty regarding its accuracy and shall not be held liable for any damages resulting from its use.

Appendix G - Lot 3 65 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	231	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	
Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	16.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	6.09E+03	92.3
Effluent	4.14E+02	6.3
Recharge	9.10E+01	1.4
Total Water Volume	**6.60E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.9
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.28E+07	65.8
Septic Tank Effluent Nitrate Mass	6.63E+06	34.1
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**1.95E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 4 Standard Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	279	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	45.0	45.0	Default
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	7.36E+03	93.6
Effluent	4.14E+02	5.3
Recharge	9.10E+01	1.2
Total Water Volume	**7.86E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	4.3
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.55E+07	45.3
Septic Tank Effluent Nitrate Mass	1.87E+07	54.6
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**3.41E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 4 40 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	279	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	27.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	7.36E+03	93.6
Effluent	4.14E+02	5.3
Recharge	9.10E+01	1.2
Total Water Volume	**7.86E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	3.4
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.55E+07	57.9
Septic Tank Effluent Nitrate Mass	1.12E+07	42.0
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.67E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 4 65 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	279	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	16.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	7.36E+03	93.6
Effluent	4.14E+02	5.3
Recharge	9.10E+01	1.2
Total Water Volume	**7.86E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.8
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.55E+07	69.9
Septic Tank Effluent Nitrate Mass	6.63E+06	30.0
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.21E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 5 Standard Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	324	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	45.0	45.0	Default
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	8.55E+03	94.4
Effluent	4.14E+02	4.6
Recharge	9.10E+01	1.0
Total Water Volume	**9.05E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	**3.1**
Avg. Downgradient Nitrate Concentration in GW (mg/l)	**4.0**
Current/Acceptable Lot Size (Acres)	**1.6**

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.79E+07	49.0
Septic Tank Effluent Nitrate Mass	1.87E+07	50.9
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**3.66E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 5 40 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	324	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	27.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	8.55E+03	94.4
Effluent	4.14E+02	4.6
Recharge	9.10E+01	1.0
Total Water Volume	**9.05E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	3.2
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.79E+07	61.5
Septic Tank Effluent Nitrate Mass	1.12E+07	38.4
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.92E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 5 65 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	324	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	16.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	8.55E+03	94.4
Effluent	4.14E+02	4.6
Recharge	9.10E+01	1.0
Total Water Volume	**9.05E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	**3.1**
Avg. Downgradient Nitrate Concentration in GW (mg/l)	**2.7**
Current/Acceptable Lot Size (Acres)	**1.6**

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.79E+07	72.9
Septic Tank Effluent Nitrate Mass	6.63E+06	27.0
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.46E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

Disclaimer: Considerable care was exercised in developing this software. However, the Idaho Department of Environmental Quality makes no warranty regarding its accuracy and shall not be held liable for any damages resulting from its use.

Appendix G - Lot 6 Standard Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	306	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	45.0	45.0	Default
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	8.07E+03	94.1
Effluent	4.14E+02	4.8
Recharge	9.10E+01	1.1
Total Water Volume	**8.58E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	4.2
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.69E+07	47.6
Septic Tank Effluent Nitrate Mass	1.87E+07	52.3
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**3.56E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 6 40 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	306	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	27.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	8.07E+03	94.1
Effluent	4.14E+02	4.8
Recharge	9.10E+01	1.1
Total Water Volume	**8.58E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	3.3
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.69E+07	60.2
Septic Tank Effluent Nitrate Mass	1.12E+07	39.7
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.82E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

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Appendix G - Lot 6 65 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	306	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	16.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	8.07E+03	94.1
Effluent	4.14E+02	4.8
Recharge	9.10E+01	1.1
Total Water Volume	**8.58E+03**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.8
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	1.69E+07	71.8
Septic Tank Effluent Nitrate Mass	6.63E+06	28.1
Recharge Nitrate Mass	2.73E+04	0.1
Total Nitrate Mass	**2.36E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
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	Date
	Prepared By

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Appendix G - Lot 7 Standard Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	1192	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	45.0	45.0	Default
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	3.14E+04	98.4
Effluent	4.14E+02	1.3
Recharge	9.10E+01	0.3
Total Water Volume	**3.19E+04**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.7
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	6.60E+07	77.9
Septic Tank Effluent Nitrate Mass	1.87E+07	22.0
Recharge Nitrate Mass	2.73E+04	0.0
Total Nitrate Mass	**8.47E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
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Appendix G - Lot 7 40 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	1192	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	27.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	3.14E+04	98.4
Effluent	4.14E+02	1.3
Recharge	9.10E+01	0.3
Total Water Volume	**3.19E+04**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.4
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	6.60E+07	85.5
Septic Tank Effluent Nitrate Mass	1.12E+07	14.5
Recharge Nitrate Mass	2.73E+04	0.0
Total Nitrate Mass	**7.72E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

SITE INFORMATION

	Site Name
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	Date
	Prepared By

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Appendix G - Lot 7 65 Percent Reducing Septic System Nitrate Mass Balance Spreadsheet

IDEQ LEVEL 1 NUTRIENT-PATHOGEN EVALUATION NITROGEN MASS-BALANCE SPREADSHEET

V. 1.3 5/2/2002

This spreadsheet is based on the mass balance approach documented in: 1985.Bauman, B.J. and W.M. Schaefer.Estimating Ground-Water Quality Impacts From On-Site Sewage Treatment Systems. In Proceedings of 5th Northwest On-Site Wastewater Treatment Shortcourse, September 10-11, 1985. University of Washington, Seattle, WA. Pages 23-41. See **Instructions for Use** below.

INPUT

Water Budget	Input Value	Default Value	
Hydraulic Conductivity (ft/day)	17.000	Site-specific	
Hydraulic Gradient	0.01	Site-specific	
Mixing Zone Thickness (ft)	15	15	Default
Aquifer Width Perpendicular to Flow (ft)	1192	Site-specific	
Parcel Area (acres)	1.57	Site-specific	
Percent of Parcel That Is Impervious (Percent)	6	Site-specific	
Current/Acceptable Number of Homes in Parcel	1.0	Site-specific	
Septic Tank Effluent (gallons/d/home)	300	300	Default
Natural Recharge rate (inches/yr)	0.6	Site-specific	

Nitrogen Budget (all concentrations represent nitrate nitrogen)			
Upgradient Ground Water Concentration (mg/l)	2.1	Site-specific	
Septic Tank Effluent Concentration (mg/l)	16.0	45.0	Provide Justification
Denitrification Rate (decimal fraction)	0	0	Default
Nitrate in Natural Recharge (mg/l)	0.3	0.3	Default

OUTPUT

Yearly Water Budget	Volume (m^3)	% of Total
Ground Water	3.14E+04	98.4
Effluent	4.14E+02	1.3
Recharge	9.10E+01	0.3
Total Water Volume	**3.19E+04**	

Point of Compliance Nitrate Concentration Goal (mg/l)	3.1
Avg. Downgradient Nitrate Concentration in GW (mg/l)	2.3
Current/Acceptable Lot Size (Acres)	1.6

Yearly Nitrogen Budget	Mass (mg)	% of Total
Background GW Nitrate Mass	6.60E+07	90.8
Septic Tank Effluent Nitrate Mass	6.63E+06	9.1
Recharge Nitrate Mass	2.73E+04	0.0
Total Nitrate Mass	**7.27E+07**	

Instructions for Use

Input parameter values appropriate to conditions at the site under consideration are entered in the blue shaded cells on the *INPUT* side of the spreadsheet. These input values form the basis for calculating yearly water and nitrogen budgets. Default values for selected parameters are provided, as described in the accompanying N-P guidance. Selecting values other than these defaults will require providing adequate justification. Sources of water and nitrogen include ground water inflow from upgradient, natural recharge on pervious portions of the site, and from septic tank effluent. The total yearly nitrogen mass input is then divided by the total yearly volume of water available to recharge groundwater to arrive at an estimated **Average Downgradient Nitrate Concentration in GW** (shown in the *OUTPUT* side of the spreadsheet).

As values are input into the blue shaded cells the totals and percent of total for various components of the water and nitrogen budgets are calculated and shown on the *OUTPUT* side of the spreadsheet. The **Avg. Downgradient Nitrate Concentration in GW** is also calculated. The Density button allows the calculation of both the Acceptable Number of Homes in the Parcel (shown in the *INPUT* area) as well as the acceptable lot size. Clicking the Density button opens an input box that allows the input of the **Point of Compliance Nitrate Concentration Goal**. The number of homes in the parcel is then adjusted to meet the specified goal.This calculation can be redone iteratively along with changing other site input parameters to examine the resultant impact on nitrate concentrations.

Aquifer Width Perpendicular to Flow: For land development projects not completely oriented perpendicular to ground water flow, the site specific aquifer width value is determined using the average property width that is perpendicular to flow.

Ranges of Hydraulic Conductivity (K) for Unconsolidated Sediments (feet/day)	
Silt and sandy silt	0.003 to 0.3
Silty sands and fine sands	0.03 to 3
Well-sorted sands and glacial outwash	3 to 300
Well-sorted gravel	30 to 3000
Typical Range of Hydraulic Gradient	0.0001 to 0.1

Natural Recharge Rate (NRR) can be estimated from total annual precipitation (TAP) using the equation: NRR (inches/yr) = $(TAP)^2 * 0.0046$ TAP is input in inches/yr.

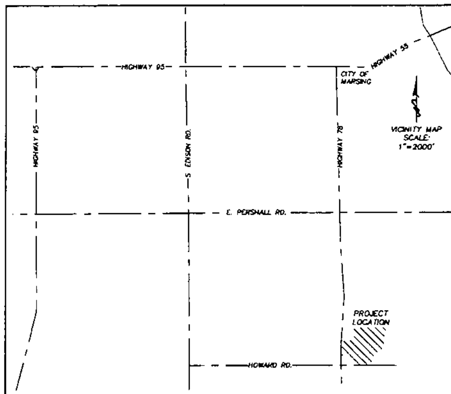
SITE INFORMATION

	Site Name
	Parcel Identification
	Date
	Prepared By

Disclaimer: Considerable care was exercised in developing this software. However, the Idaho Department of Environmental Quality makes no warranty regarding its accuracy and shall not be held liable for any damages resulting from its use.

OWYHEE HEIGHTS SUBDIVISION
PRELIMINARY PLAT

A PARCEL OF LAND BEING A PORTION OF THE SW1/4 SW1/4 AND A PORTION OF THE SE1/4 SW1/4 OF SECTION 10, T. 2 N., R. 4 W., B.M., OWYHEE COUNTY IDAHO, 2025



VICINITY MAP
SCALE: 1"=2000'

OWNER/DEVELOPER
WHITNEE HUNGATE
18895 WEITZ ROAD
CALDWELL, ID 83607
(208) 720-3301

ENGINEER/SURVEYOR
MASON & ASSOCIATES, INC.
924 3rd ST. SOUTH
NAMPA, ID 83651
(208) 454-0256

PROJECT NARRATIVE

1. PROJECT DATA:
   ZONE DESIGNATION: MULTI-USE, OWYHEE COUNTY
   AREA: ±33.49 ACRES
   RESIDENTIAL AREA: 10.57 ACRES
   AGRICULTURAL AREA: 22.92 ACRES
   NO. OF RESIDENTIAL LOTS: 6
   NO. OF COMMON LOTS: 1 ROADWAY LOT 1 REMAINING AGRICULTURAL LOT
   MINIMUM BUILDABLE LOT SIZE: 1.50 ACRE
2. BUILDING SETBACKS AND DIMENSIONAL STANDARDS IN THIS SUBDIVISION SHALL BE IN COMPLIANCE WITH THE OWYHEE COUNTY STANDARDS FOR THE APPLICABLE ZONE.
3. ANY RE-SUBDIVISION OF THIS PLAT SHALL COMPLY WITH THE APPLICABLE ZONING REGULATIONS IN EFFECT TO THE TIME OF THE RE-SUBDIVISION.
4. IRRIGATION WATER HAS BEEN PROVIDED FROM GEM IRRIGATION DISTRICT, IN COMPLIANCE WITH IDAHO CODE 31-3805 1.(B). ALL BUILDABLE LOTS WILL BE ENTITLED TO IRRIGATION WATER RIGHTS AND WILL BE OBLIGATED FOR ASSESSMENTS FROM GEM IRRIGATION DISTRICT. WATER TO BE DELIVERED VIA A PRESSURIZED IRRIGATION SYSTEM. IRRIGATION SYSTEM SHALL BE MAINTAINED BY WATER USER'S AGREEMENT.
5. THE DEVELOPMENT IS SUBJECT TO TERMS AND CONDITIONS OF CONDITIONAL USE PERMIT NO. 223-02, INSTRUMENT NO. 314563.
6. THIS DEVELOPMENT RECOGNIZES SECTION 22-4503 OF IDAHO CODE. RIGHT TO FARM ACT, WHICH STATES: AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF NOT A NUISANCE -- EXCEPTION. NO AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF SHALL BE OR BECOME A NUISANCE, PRIVATE OR PUBLIC, BY ANY CHANGED CONDITIONS IN OR ABOUT THE SURROUNDING NONAGRICULTURAL ACTIVITIES AFTER IT HAS BEEN IN OPERATION FOR MORE THAN ON (1) YEAR, WHEN THE OPERATION, FACILITY OR EXPANSION WAS NOT A NUISANCE AT THE TIME IT BEGAN OR WAS CONSTRUCTED. THE PROVISIONS OF THIS SECTION SHALL NOT APPLY WHEN A NUISANCE RESULTS FROM THE IMPROPER OR NEGLIGENT OPERATION OF AN AGRICULTURAL OPERATION, AGRICULTURAL FACILITY OR EXPANSION THEREOF.
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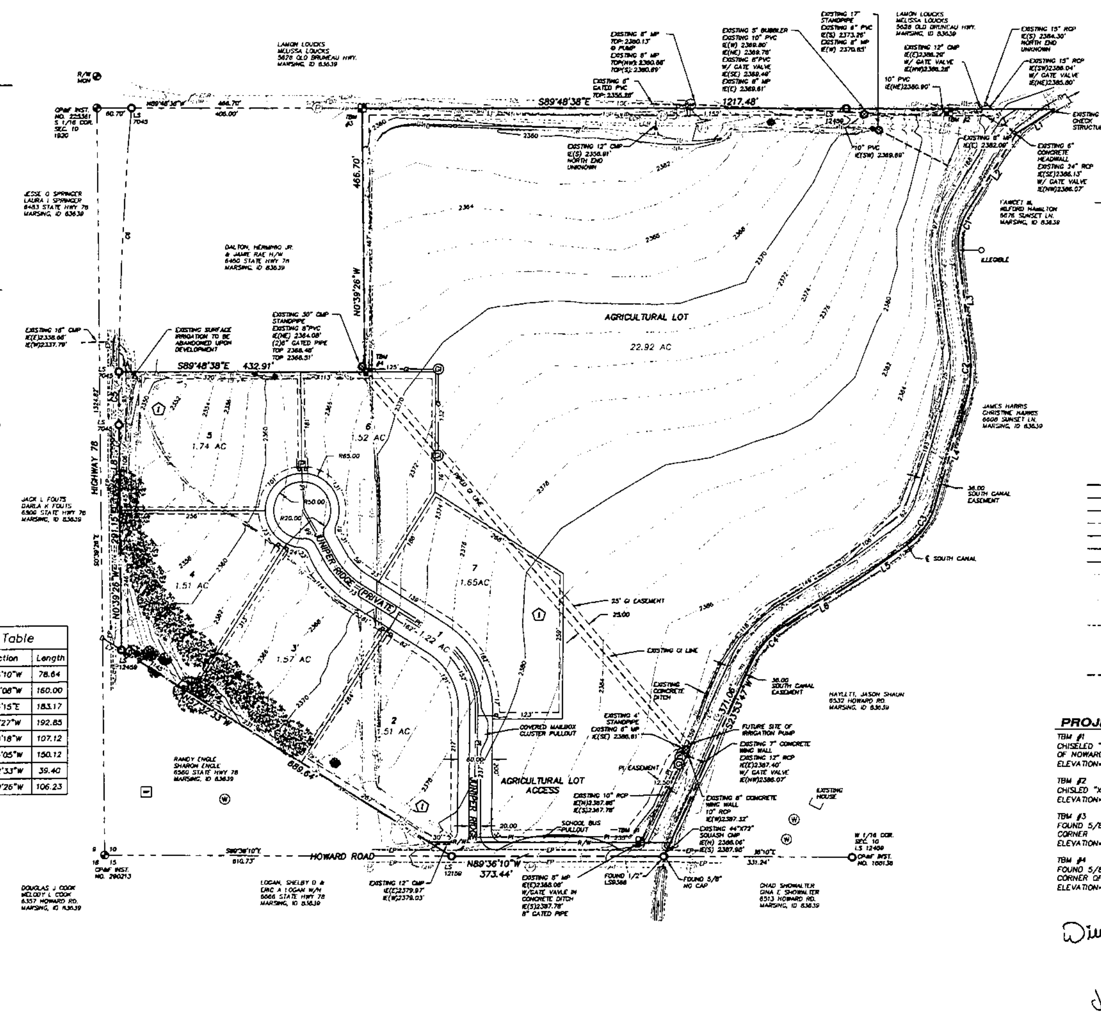
12. ALL POWER AND JOINT TRENCH UTILITIES WILL BE LOCATED UNDERGROUND.

Curve Table

Curve #	Length	Radius	Delta	Chord Direction	Chord Length	Tangent
C1	73.09	108.24	38°41'23"	S12°56'26"W	71.71	38.00
C2	88.83	225.43	22°34'42"	N04°53'06"E	88.26	45.00
C3	86.59	128.87	38°29'51"	N35°25'23"E	84.97	45.00
C4	97.08	164.29	33°51'18"	S40°49'26"W	95.67	50.00
C5	94.72	5696.58	00°57'10"	S00°10'51"E	94.72	47.36
C6	467.21	5696.58	04°41'57"	S02°38'42"W	467.08	233.74

Line Table

Line #	Direction	Length
L1	S57°06'10"W	78.64
L2	S32°17'08"W	160.00
L3	S06°24'15"E	183.17
L4	S16°10'27"W	192.85
L5	S54°40'18"W	107.12
L6	S57°45'05"W	150.12
L7	N57°32'33"W	39.40
L8	N00°39'26"W	106.23



Scale: 1"=100'

LEGEND

- Benchmark
- Found Brass Cap Monument
- Found 5/8" Iron Pin
- Found 1/2" Iron Pin
- Gravity Irrigation Manhole
- Pressure Irrigation Pump Out
- Existing Power Pole
- Existing Telephone Riser
- Existing Standpipe
- Existing Sign
- Deciduous Tree
- Existing Well
- Existing Septic Tank
- Existing Electric Meter
- Existing Electric Box
- Existing Guy Anchor
- Existing Irrigation Pump
- Block Number
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- Property Boundary Line
- Section Line
- Lot Line
- Easement Line
- Right-of-Way Line
- Pressure Irrigation
- Gravity Irrigation
- Existing Top of Bank
- Existing Edge Dirt Road
- Existing Top of Slope
- Existing Toe
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- Existing Edge of Gravel
- Existing Fence
- Existing Overhead Power
- Existing Pipe

PROJECT BENCHMARKS

TBM #1
CHISELED "X" SOUTH END CONCRETE DITCH NORTH SIDE OF HOWARD ROAD
ELEVATION= 2388.98'

TBM #2
CHISLED "X" SOUTH END OF WEIR STRUCTURE
ELEVATION= 2383.43'

TBM #3
FOUND 5/8" IRON PIN NO CAP NORTHWEST PROPERTY CORNER
ELEVATION= 2358.37'

TBM #4
FOUND 5/8' IRON PIN "MARKS LS 7045" SOUTH EAST CORNER OF WIRE FENCE PROPERTY CORNER
ELEVATION= 2367.72'

PROFESSIONAL ENGINEER 9212 STATE OF IDAHO WILLIAM J. MASON
January 30, 2025

Mason & Associates — Professional Engineers, Land Surveyors & Planners

DESIGNED BY:	
DRAWN BY:	AMC 01/25
CHECKED BY:	
APP'VD BY:	

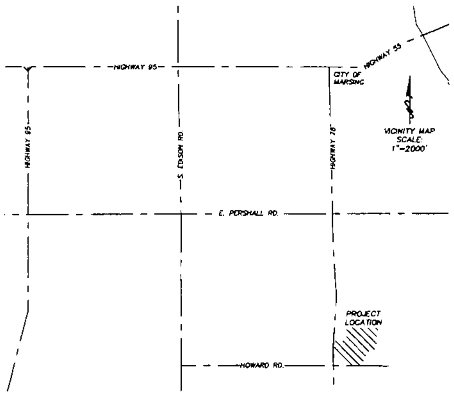
CLIENT: WHITNEE HUNGATE, 18895 WEITZ ROAD, CALDWELL, ID 83607, (208) 720-3301

JOB NO. OC1420 | DWG NO. OC1420CUP | SCALE: Vert. N/A, Horz. 1"=100' | FIELD BOOK NO.

DRAWING TITLE: OWYHEE HEIGHTS SUBDIVISION HIGHWAY 78 MARSING IDAHO PRELIMINARY PLAT

Rev

SHEET NO. 1 OF 1 SHEETS



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SCALE:
1"=2000'

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924 3rd ST. SOUTH
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OWYHEE HEIGHTS SUBDIVISION
SUBDIVISION ENGINEERING REPORT
SEPTIC PLACEMENT MAP

A PARCEL OF LAND BEING A PORTION OF THE SW1/4 SW1/4
AND A PORTION OF THE SE1/4 SW1/4 OF SECTION 10,
T. 2 N., R. 4 W., B.M.,
OWYHEE COUNTY IDAHO, 2025

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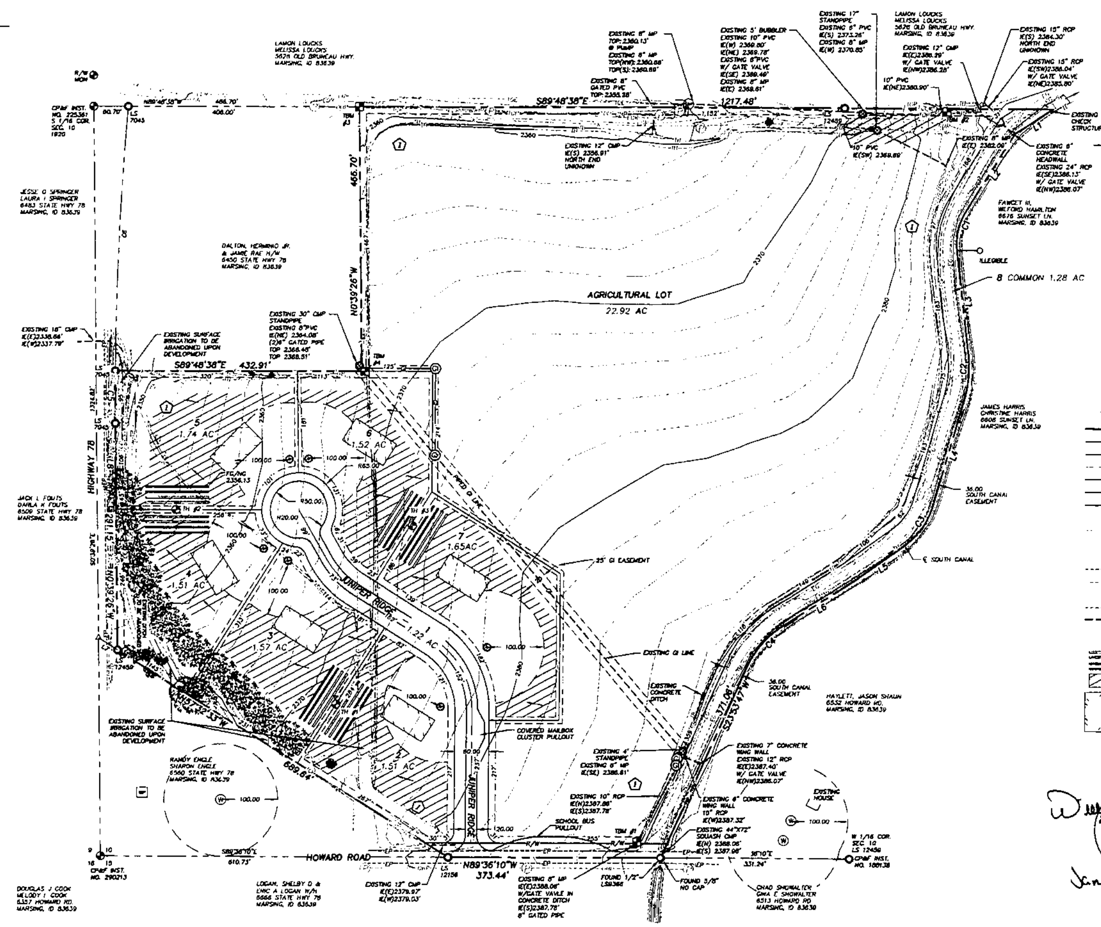

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- Existing Edge Dirt Road
- Existing Top of Slope
- Existing Toe
- Existing Edge of Pavement
- Existing Edge of Gravel
- Existing Fence
- Existing Overhead Power
- Existing Pipe
- Test Pit
- Proposed Well
- Primary Septic System
- Replacement Septic System
- Available Septic System Area
- Potential Home Site (45'x85')

PROFESSIONAL ENGINEER 9212 STATE OF IDAHO WILLIAM J. MASON

January 30, 2025

NO	BY	DATE	DESCRIPTION

REVISIONS

DESIGNED BY:
DRAWN BY: AMC 01/25
CHECKED BY:
APPVD BY:

Mason & Associates
Professional Engineers, Land Surveyors & Planners

JOB NO: OC1420
DWG NO: OC1420SEPTIC
SCALE: Vert N/A, Horz 1"=100'
FIELD BOOK NO.

CLIENT:
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HIGHWAY 78 MARSING IDAHO
SEPTIC PLACEMENT MAP

SHEET NO. 1 OF 1 SHEETS
Rev