

APPLICANT'S EXHIBIT ROSTER FOR HEARING

IN THE MATTER OF APPLICATION FOR PERMIT
IN THE NAME OF THE CITY OF EAGLE NO. 63-12448

November 13-14, 2003

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	STATUS OF EVIDENCE	
		INTRODUCED	ADMITTED
Chase Estate Exhibit 103*	Idaho Department of Water Resources Open File Report: Ground-Water Conditions in the Dry Creek Area, Eagle, Idaho, dated June 1991 (Bound Report)		
Chase Estate Exhibit 104*	Results of the 30-Day Pumping Test and Aquifer Analysis, dated June 1991 (Bound Report)		
Chase Estate Exhibit 102*	Summary of Groundwater Conditions in the Vicinity of Proposed Brookwood Subdivision Well Site, dated August 17, 2001 (Bound Report)		
Chase Estate Exhibit 106*	City of Eagle Municipally-Owned Water System Master Plan and Budget Study (Bound Report)		
Chase Estate Exhibit 105*	Aquifer Test at Floating Feather Well, Scanlan Engineering correspondence and attachments, dated August 9, 1995 (50 pages)		
1	Application for Amendment of a Permit in the name of City of Eagle, filed on June 8, 2001 (4 pages)	✓	✓
2	Brookwood Public Water Supply Well, Design/Proposal Plans and Specifications, City of Eagle, Idaho, dated May 2000 (Bound Report)	✓	✓
3	City of Eagle Water System illustration (1 page)	✓	✓
4	Protestants & City of Eagle Wells illustration (1 page)	✓	✓
5	City of Eagle Water System illustration (1	✓	✓

* The Applicant, Protestant Eagle Water Company and Protestant Chase Estate agreed to share in the cost of reproducing certain reports each intended to identify as exhibits in this matter and to reference the Chase Estate's designated exhibit number(s).

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	STATUS OF EVIDENCE	
		INTRODUCED	ADMITTED
	page)		
6	Resume of Terry Scanlan, P.E., P.G. (4 pages)	✓	✓
7	Municipal Production Bar Graph (1 page)	✓	✓
8	United Water Idaho Floating Feather & Redwood Creek Monthly Well Production (1 page)	✓	✓
9	Eagle Water Company Annual Well Production (3 pages)	✓	✓
10	City of Eagle Annual Well Production (2 pages)	✓	✓
11	Water Level Monitoring of Delmar Vail and Marvin Miller Wells, Scanlan Engineering correspondence and attachments, dated October 22, 1999 (9 pages)	✓	✓
12	June 2, 2003 and June 3, 2003 letters regarding water level monitoring results for Delmar Vail and Marvin Miller Wells (2 pages)	✓	✓
13	September 26, 2003 letter regarding water level monitoring results for Delmar Vail and Marvin Miller Wells (1 page)	✓	✓
14	June 3, 2003 letter regarding Burton Group Well Measurements (2 pages)	✓	✓
15	Photo log and photographs of May 13, 2003 site inspection of Chase Dairy site (7 pages)	✓	✓
16	Agreement to Provide Supplemental Fire Flows (3 pages)	✓	✓
17	Water Line Agreement (8 pages)	✓	✓
18	Agreement (4 pages)	✓	✓
19	Water Service Contract and First Amendment to Water Service Contract (17 pages)	✓	✓
20	Claim to a Water Right, Claim No. 63-5227 (7 pages)	✓	✓
21	Claim to a Water Right, Claim No. 63-5229 (7 pages)	✓	✓

* The Applicant, Protestant Eagle Water Company and Protestant Chase Estate agreed to share in the cost of reproducing certain reports each intended to identify as exhibits in this matter and to reference the Chase Estate's designated exhibit number(s).

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	STATUS OF EVIDENCE	
		INTRODUCED	ADMITTED
22	Approved Application for a Permit No. 63-8663 (4 pages)	✓	✓
Exhibits identified by other parties	Applicant reserves the right to use as an Exhibit any Exhibit identified by any party in this case.		

APPLICANT'S WITNESS LIST FOR HEARING

IN THE MATTER OF APPLICATION FOR PERMIT
IN THE NAME OF THE CITY OF EAGLE NO. 63-12448

November 13-14, 2003

1. Lynne Sedlacek, Eagle City Councilwoman
2. Vernon Brewer, Holladay Engineering Co.
3. Terry Scanlan, P.E., P.G., Scanlan Engineering
4. Nancy Merrill, Mayor, City of Eagle
5. Applicant reserves the right to call as a witness any witness identified by any party in this case.

23	Chase Dairy Well Pump Evaluation 11/13/03 by Terry M. Scanlan, P.E.	✓	✓
24	Chase Small Irrigation Well Station Lift Evaluation 11/13/03 by Terry M. Scanlan, P.E.	✓	✓
25	Letter dated January 9, 2001, re Revision to Well Site Evaluations	✓	No

* The Applicant, Protestant Eagle Water Company and Protestant Chase Estate agreed to share in the cost of reproducing certain reports each intended to identify as exhibits in this matter and to reference the Chase Estate's designated exhibit number(s).

Bruce M. Smith, ISB #3425
Tammy A. Zokan, ISB #5450
MOORE SMITH BUXTON & TURCKE, CHARTERED
Attorneys at Law
225 North 9th Street, Suite 420
Boise, ID 83702
Telephone: (208) 331-1800
Facsimile: (208) 331-1202

RECORD
COPY

Attorneys for the City of Eagle

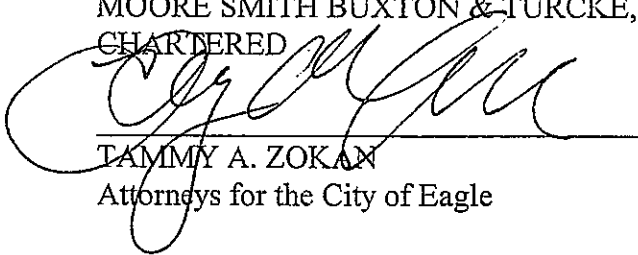
BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

IN THE MATTER OF	)	
	)	
CITY OF EAGLE, PETITIONER	)	NOTICE OF SERVICE OF
	)	WITNESS AND EXHIBIT LIST
APPLICATION FOR PERMIT NO. 63-12448	)	AND PRE-MARKED EXHIBITS
	)	
	)	

COMES NOW, the City of Eagle, and gives notice that the City served its exhibit and witness lists and pre-marked exhibits in accordance with the Scheduling Order dated August 20, 2003 via hand delivery on the parties on the 17th day of October, 2003.

DATED this 17 day of October, 2003.

MOORE SMITH BUXTON & TURCKE,
CHARTERED


TAMMY A. ZOKAN
Attorneys for the City of Eagle

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on the 17 day of October, 2003, I caused to be served a true and correct copy of the foregoing NOTICE OF SERVICE by the method indicated below, and addressed to the following:

IDWR
Western Region
2735 Airport Way
Boise, Idaho 83705

☒ U.S. Mail
☐ Hand Delivered
☐ Overnight Mail
☐ Facsimile

Matt Howard
P.O. Box 190012
Boise, Idaho 83719

☐ U.S. Mail
☒ Hand Delivered
☐ Overnight Mail
☐ Facsimile

Molly O'Leary
Eagle Water Co.
P.O. Box 1849
Eagle, ID 83616

☐ U.S. Mail
☒ Hand Delivered
☐ Overnight Mail
☐ Facsimile

Weldon Fisher
546 E. Beacon Light Road
Eagle, ID 83616

☐ U.S. Mail
☒ Hand Delivered
☐ Overnight Mail
☐ Facsimile

Jim Burton
1896 N. Eagle Road
Eagle, ID 83616

☐ U.S. Mail
☒ Hand Delivered
☐ Overnight Mail
☐ Facsimile

Peter Anderson
Hearing Officer
729 W. Braemere Road
Boise, ID 83702

☒ U.S. Mail
☐ Hand Delivered
☐ Overnight Mail
☐ Facsimile


TAMMY A. ZOKAN

Form 211
10/93
(GP Version)Receipt No. _____
Received by _____
Date _____STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR AMENDMENT OF A PERMIT

RECEIVED

JUN 08 2001

Applicant The City of Eagle¹ Phone 208-939-~~WESTERN REGION~~
Address 310 E. State Street, Eagle, ID 83616I am the owner and holder of Permit to Appropriate the Public Waters of the State of Idaho No. 63-12448, and request that the permit and permit map be amended and/or changed as follows:

Purpose of Amendment:

- ☐ Change point of diversion ☒ Add diversion point(s) ☐ Change place of use
☐ Change nature of use ☐ Change period of use ☐ Other _____

1. Point(s) of Diversion:

Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Local name for diversion
	SW	SW	SW	§3	T4N	R1E	Ada	City of Eagle Well #1 (aka Lexington Hills Well #1)
		NW	SW	§3	T4N	R1E	Ada	City of Eagle Well #2 (aka Lexington Hills Well #2)
		SW	SW	§4	T4N	R1E	Ada	City of Eagle Well #3 (aka Brookwood Subdivision Well)
		NE	SE	§4	T4N	R1E	Ada	City of Eagle Well #4
		SE	SW	§5	T4N	R1E	Ada	Floating Feather Well

2. Period and nature of use: (irrigation, domestic, stockwatering, industrial, etc.)
 amount 3.25 cfs² for municipal (per Idaho Code § 42-202B(4)) purposes from 01/01 to 12/31
 (cfs/acre foot per annum) (water use) (begin month) (end month)

3. Place of use or land to be irrigated:

Twp.	Rge.	Sec.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				Totals
			NE 1/4	NW 1/4	SE 1/4	SW 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	

See the City of Eagle's most recent Description of Municipal Service Area, filed separately with the Department.

Total acres not applicable

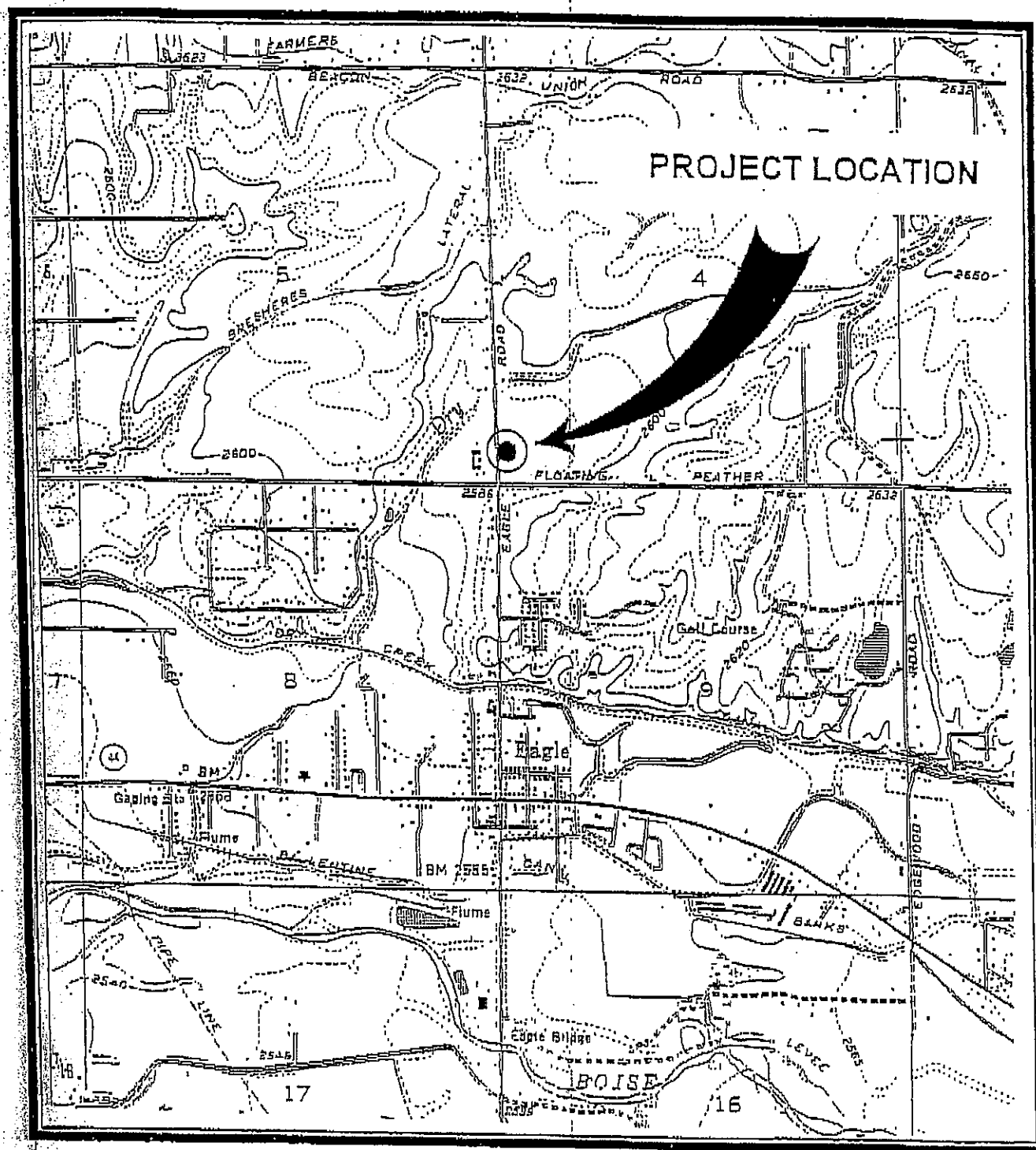
4. a. Who owns the property at the point of diversion? The City of Eagle owns, controls or will otherwise will obtain access to City of Eagle Well sites 1 through 4. United Water Idaho ("UWID") owns the Floating Feather Well. UWID has previously consented to the inclusion of this potential POD, subject to future negotiation of an agreement on use of the Floating Feather Well. This application seeks no change with respect to the Floating Feather p.o.d.
- b. Who owns the land to be irrigated at the place of use? Not applicable to a municipal water right.
- c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing: Ownership of place of use is not applicable to a municipal water right.

EXHIBIT 1

¹For city officials, see City of Eagle's most recent Description of Municipal Service Area, filed separately with the Department.²As limited by Condition No. 11 in the Permit as issued (limiting the total combined diversion rate to 3.25 for Nos. 63-11412, 63-12017, and 63-12448)

Complete the following map by showing land and point of diversion as proposed by this amendment. Show 1/4 1/4, section, township, range and ditches. (The smallest subdivision represents 40 acres.)

The following map shows the City of Eagle Well #3 (Brookwood Subdivision Well) site now under construction. It is labeled "Project Location":



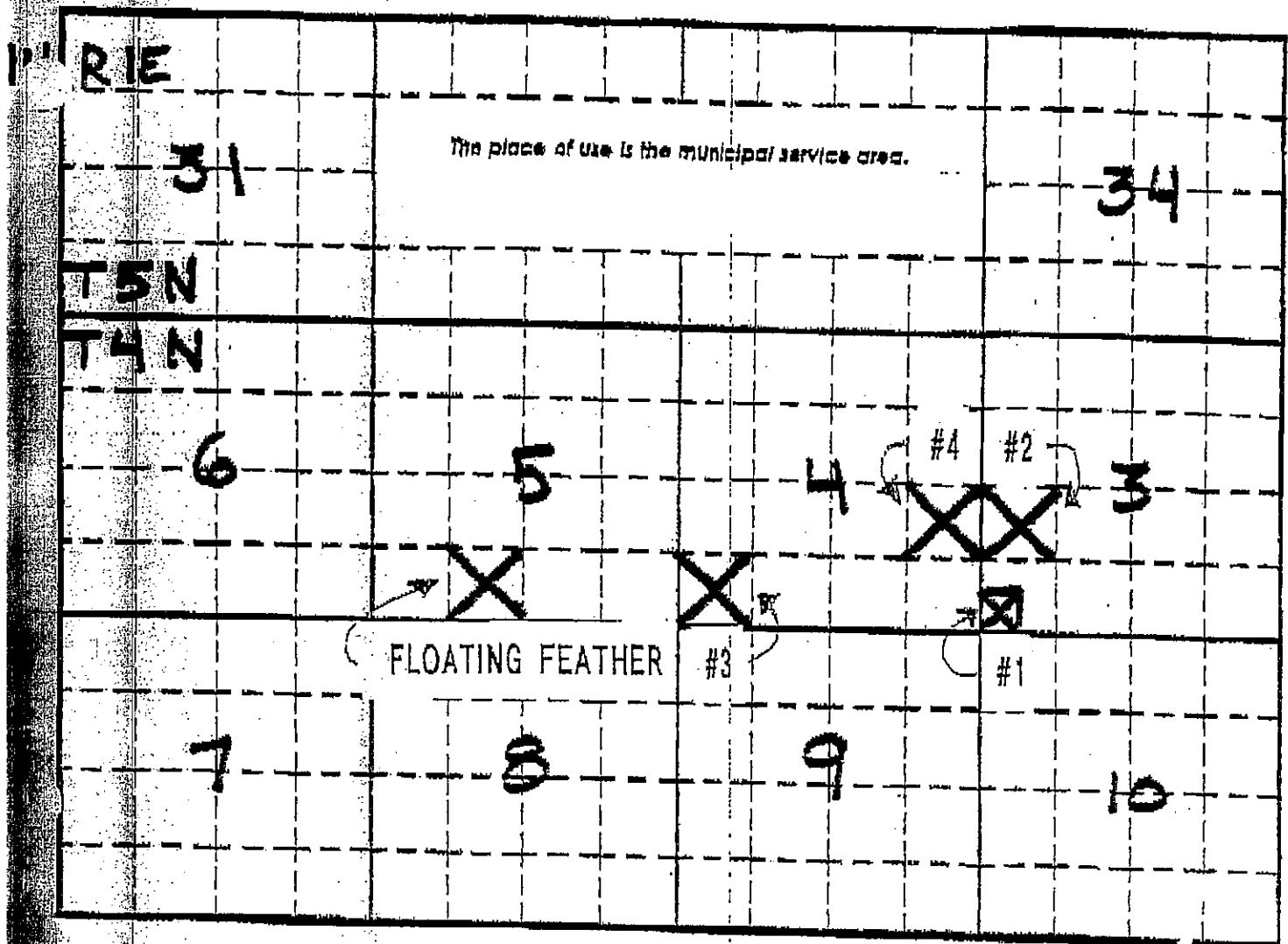
VICINITY MAP

MODIFIED FROM EAGLE, ID. 7 1/2-MIN. TOPOGRAPHIC MAP

H
HOLLADAY
ENGINEERING CO.

SITE EVALUATION
BROOKWOOD WELL

The following map shows the five points of diversion associated with this water right:



Scale: 2 inches equal 1 mile.

I hereby request approval of this change subject to the fact that no one will be injured by the change, and that the change will be made at my own risk.

Signed this 8th day of June, 2001.

Christopher H. Mayer

Christopher H. Mayer
Givens Pursley LLP
277 N. 6th Street, Ste. 200
P.O. Box 2720
Boise, ID 83701-2720
(208) 388-1200
Special Water Attorney for Applicant

ACTION OF THE DEPARTMENT OF WATER RESOURCES

Preliminary check by _____ Publication prepared by _____ Date _____
Published in _____ Pub. dates _____
I, _____, of the Department of Water Resources hereby

Witness my hand this _____ day of _____, 19____

Idaho Department of Water Resources Receipt

Receipt ID W027880

Payment Amount Date Received Region Status

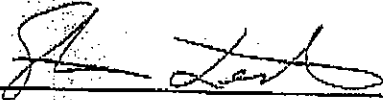
Payment Type Check Number

Payer

Comment

Fee Detail

Amount Description Fund FD PCA SO


Signature Line (Dept. Representative)

RECEIVED

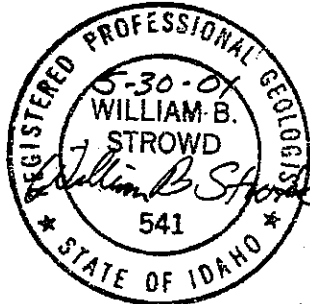
JUN 07 2001

DEPARTMENT OF
ENVIRONMENTAL QUALITY
BOISE REGIONAL OFFICE

BROOKWOOD PUBLIC WATER SUPPLY WELL

DESIGN/PROPOSAL PLANS AND SPECIFICATIONS CITY OF EAGLE, IDAHO

May 2000



State of Idaho Department of Environment & Quality
Boise Regional Office
PLANS & SPECIFICATIONS REPORT

These plans and/or specifications have been reviewed for compliance with the provisions of the Idaho Professional Engineer Act and the rules and regulations of the Board of Professional Engineers and Geologists. The reviewer has found that the plans and/or specifications comply with the provisions of the Idaho Professional Engineer Act and the rules and regulations of the Board of Professional Engineers and Geologists. The reviewer has also found that the plans and/or specifications are in accordance with the requirements of the City of Eagle, Idaho. The reviewer has signed and sealed these plans and/or specifications as a condition of their review.

7/24/01

Denise Hays

Refer to approval conditions in letter to Michael B. Hornsches

prepared by
HOLLADAY ENGINEERING CO.

Job No. 014100

EXHIBIT 2



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706-2239 • (208) 373-0550

Dirk Kempthorne, Governor
C. Stephen Allred, Director

July 26, 2001

Michael B. Hormaechea
Aries Development, L.L.C.
1101 W. River St., Suite 300
Boise, ID 83702

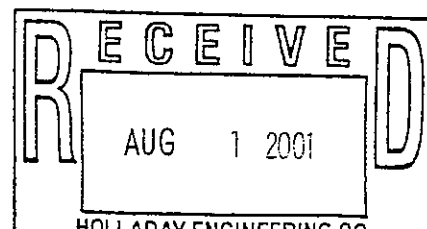
RE: Brookwood Subdivision Well (aka Eagle Well 3), City of Eagle
Revised From July 24, 2001: Drilling & Construction, Well Construction Approval

Dear Mr. Hormaechea:

The well site was approved by the Idaho Department of Environmental Quality (DEQ) on April 19, 2001. The plans and specifications for the subject project appear to meet State of Idaho standards and are approved based on the conditions listed below.

I. STANDARD CONDITIONS:

- A. The standard conditions on the DEQ review stamp are part of this approval. Any supporting reports or documents are considered to be part of the approved documents.
- B. This approval will be voided if: 1) construction is not completed by July 26, 2002; 2) the project is improperly constructed, operated, or maintained; or 3) the project fails to function as intended.
- C. Per the project documents, a professional engineer with Holladay Engineering Company shall provide construction inspection sufficient to ensure the project is built as designed and approved. DEQ approval, prior to construction, is required for any deviations from the approved plans and specifications. Verbal approvals, if any, shall be documented by the professional engineer in a cover letter submitted with the project record drawings (see the next condition).
- D. Within thirty days after construction, the professional engineer shall provide DEQ with either: 1) as constructed plans and specifications with a cover letter as described in Item C, or 2) a letter of certification stating that the project was installed with no deviations from the approved plans.



- E. The *Application For Drilling Permit* from IDWR contains conditions that are an essential part of the subject plans and specifications. A copy of the *Application For Drilling Permit* and the DEQ approved plans and specification must be maintained at the drill site.
- F. The project engineer must stake where the well will be drilled in accordance with the DEQ approved well site plan.
- G. This approval applies only to the drilling of the well; separate plans and specification must be approved for the pump, well house, and appurtenances.
- H. Before drinking water may be distributed to the public:
 - 1. Water samples must be collected and tested by a certified laboratory. Testing shall include the parameters on the attached list. Those results must be sent to Don Lee of this office for review and approval. Mr. Lee will advise me when that process is complete.
 - 2. Documentation that the project was completed as approved must be submitted to me for review and approval. We will advise you if a sanitary survey will be conducted before the water may be distributed to the public.

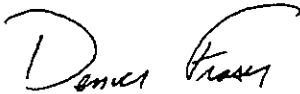
II. PROJECT SPECIFIC CONDITIONS:

- A. The approval is for the well only. Construction of the well house and distribution system components cannot begin until plans and specifications are approved by DEQ. The design package needs to include at least the following:
 - *Well House and Equipment Design Checklist; and*
 - *Other items required per the checklists, rules, or standards, or site specific items deemed appropriate by the consultant.*
- B. The existing infiltration chamber to the northeast of the proposed well site must be abandoned and the seepage bed to the northwest must be relocated outside the 100-foot radius (as per Bill Strowd's, P.G., February 28, 2001, letter).
- C. This proposed well must be accepted by the City of Eagle prior to this office issuing final approval of the well. Written proof of ownership should be provided as soon as possible.

Michael B. Hormaechea
Brookwood Subdivision Well (aka Eagle Well #3)
July 26, 2001
Page 3

If you have any questions, please contact me at (208) 373-0162, or via e-mail at dfraser@deq.state.id.us.

Sincerely,



Denver C. Fraser, E.I.T.
Associate Engineer

Enclosure: Drinking Water Monitoring Requirements for New Community Public
 Drinking Water Sources (Owner and Holladay Engineering Company)
 Stamped Plans (Owner and Holladay Engineering Company)

cc: Charles W. Ariss, P.E., Regional Manager-Engineering, Boise Regional Office
 Bill Strowd, P.G., or Michael Holladay, P.E., Holladay Engineering Company
 Don Lee, Senior Water Quality Analyst, Boise Regional Office
 Rob Whitney IDWR-Boise
 Source File #1 Eng. City of Eagle, Brookwood Well
 Reading File
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STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706-2239 • (208) 373-0550

Dirk Kempthorne, Governor
C. Stephen Allred, Director

April 19, 2001

Michael B. Hormaechea
Aries Development, L.L.C.
1101 W. River St., Suite 300
Boise, ID 83702

RE: Brookwood Subdivision Well Site Evaluation (Eagle, Ada County)
A. Well Site Conditional Approval
B. Groundwater Under Direct Influence of Surface Water Determination
C. Future Federal Regulations

Dear Mr. Hormaechea:

I. Well Site Conditional Approval

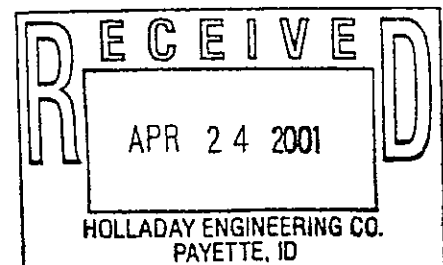
Your consultants have submitted the required information on the well site and have certified that the site is generally acceptable for a new Public Water System well. We have reviewed that information and are approving the site per the *Idaho Rules for Public Drinking Water Systems* (IRPDWS), § 550.03.n, subject to the conditions listed below.

A. STANDARD CONDITIONS:

1. The approval is for the well site only. Construction of the well, pump house, and distribution system components cannot begin until plans and specifications are approved by both the Department of Environmental Quality (DEQ) and the Idaho Department of Water Resources (IDWR). We recommend that duplicate sets be sent to this office for plan and specification approval and to Rob Whitney at the IDWR Western Regional Office for the Well Drilling Permit.

The plans, specifications, and related documents will have to verify and augment the data provided in the initial Well Site Evaluation, ensuring full conformance to the IRPDWS. The design package should include at least the following:

- ➔ *General Plan and Specification Review Checklist*
- ➔ *Well Construction Design Checklist*



- *Well House and Equipment Design Checklist*
 - *Well schematic and specifications for drilling and disinfection. DEQ will conduct a concurrent review with Rob Whitney (334-2190), Idaho Department of Water Resources, Western Regional Office (IDWR-WRO)*
 - *Other items required per the checklists, rules, or standards; or site specific items deemed appropriate by the consultant*
2. New source monitoring must be tested by a certified laboratory and approved by DEQ before the water may be distributed to the public. The detailed list of parameters that need to be tested will be forwarded when the well construction is approved.

B. **PROJECT SPECIFIC CONDITIONS:**

1. Because Brookwood Subdivision is not an approved public drinking water system, the proposed well shall be accepted by the Eagle Water Corporation prior to this office issuing final approval of the well. Written proof of ownership should be provided as soon as possible.

II. Groundwater under Direct Influence of Surface Water

Idaho is required by federal drinking water regulations to determine whether groundwater sources serving public drinking water systems are directly influenced by surface water. "Groundwater Under the Direct Influence of Surface Water" (GWUDI) may contain disease causing organisms which are normally found only in surface water, and may require additional treatment including filtration and/or disinfection and contact time.

Based on information provided by your consultants, and accepted by DEQ, this source is classified as a **Groundwater** source. No treatment is required unless contamination occurs, future monitoring indicates a problem, or new federal rules require treatment (see last section).

III. Comments for Your Consideration:

Federal regulations could affect the design and operation of water systems using ground water sources:

- A. The proposed "Ground Water Disinfection Rule" will evaluate ground water sources that are not under the direct influence of surface water for vulnerability to microbial

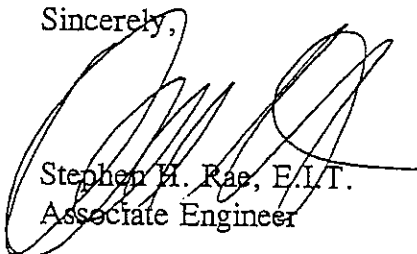
Michael B. Hormaechea
Brookwood Subdivision Well Site Evaluation
April 19, 2001
Page 3

contamination. If your source is found to be vulnerable, disinfection, including adequate contact time, prior to the first point of use, will be required. Therefore, the layout and design of your system must show a *location* for facilities that will provide for an equivalent of 30 minutes of contact time with a minimum residual of 0.2 parts per million of free chlorine. Actual *design* of the disinfection facilities is not required at this time. The Ground Water Disinfection Rule is still under development and subject to change.

- B. DEQ is in the process of adopting the "Disinfectants and Disinfection Byproducts Rule" that was enacted by EPA in 1998. DEQ will regulate certain compounds that are formed when disinfectants combine with naturally-occurring, organic constituents in water. The rule applies only to water systems that use disinfection. The rule will apply initially to systems with 10,000 connections; however, smaller systems could be affected by the year 2002.

If you have any questions, please contact me at (208) 373-0162, or via e-mail at srae@deq.state.id.us.

Sincerely,



Stephen H. Rae, E.I.T.
Associate Engineer

cc: Charles W. Ariss, P.E., Regional Manager-Engineering, Boise Regional Office
Bill Stroud, P.E., Holladay Engineering Co.
Robert DeShazo, Eagle Water Corporation
Source File #1 Eng, Eagle Water Corp, Brookwood Well
Reading File

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AGREEMENT BETWEEN ENGINEER AND DRILL CONTRACTOR

AGREEMENT made as of the _____ of _____ in the year of Two Thousand and One.

BETWEEN the ENGINEER: Holladay Engineering Co.
32 North Main
P.O. Box 235
Payette, Idaho 83661
Phone: 208-642-3304
FAX: 208-642-2159

and the CONTRACTOR: Riverside, Inc.
P.O. Box 720
111 South Roswell Blvd.
Parma, Idaho 83660
Phone: 208-722-6731
FAX: 208-722-6736

The ENGINEER has made an agreement dated November 6, 2000 with the OWNER, Aries Development, L.L.C., for the following project: drilling, constructing and test pumping a new public water supply well at Brookwood Subdivision, Eagle, Idaho (Job #014100 PR), which agreement is hereinafter referred to as the PRIME AGREEMENT and which provides for furnishing professional services in connection with the Project described therein. A copy of the PRIME AGREEMENT is on file at Holladay Engineering Company and is a part hereof by reference.

ENGINEER and CONTRACTOR agree as set forth below.

- I. CONTRACTOR shall provide for ENGINEER in accordance with the Terms and Conditions of this AGREEMENT, the following professional services which ENGINEER is required to provide for the OWNER under the referenced copy of the PRIME AGREEMENT:

CONTRACTED SERVICES: Drilling a new public water supply well located in Brookwood Subdivision within the City of Eagle in accordance with applicable Idaho Department of Environmental Quality design approvals and Idaho Department of Water Resources rules, regulations and permit requirements.

CONTRACTOR is ENGINEER'S independent subcontractor, responsible for methods and means used in performing CONTRACTOR'S services under this AGREEMENT, and is not a joint venturer with ENGINEER, nor an agent or employee of ENGINEER.

- II. ENGINEER shall be the general administrator of the professional services for the Project, and shall facilitate the exchange of information among the CONTRACTOR and other consultants retained by ENGINEER for the Project as necessary for the coordination of their work.

Except as authorized by ENGINEER, all communication between CONTRACTOR and the OWNER shall be forwarded through ENGINEER.

SECTION 1 - CONTRACTOR'S SERVICES AND RESPONSIBILITIES

- 1.1 GENERAL - CONTRACTOR shall not be responsible for the acts or omissions of ENGINEER'S other consultants, any other Subcontractors, any of their agents or employees, or any other persons performing any of the Work not employed by CONTRACTOR.
- 1.2 CONTRACTOR'S undertaking is limited to providing the services set forth in this AGREEMENT and in accordance with the terms and conditions of this AGREEMENT. The provision of such services performed by CONTRACTOR shall not be interpreted, construed, or regarded, either expressly or impliedly, as being for the benefit of, or creating any obligation for, any third party or legal entity other than the OWNER or ENGINEER.
- 1.3 Each of the parties hereto shall be responsible for its own errors and omissions and those of its officers, agents and employees.
- 1.4 Basic Services:
- 1.4.1 CONTRACTOR'S Basic Services consist of the attached description referenced as Exhibit A - Brookwood Public Water Supply Well, Design and Specifications - City of Eagle.
- 1.4.2 Labor and Machinery - supply in connection with CONTRACTOR'S scope of work all necessary equipment, including drill rig, fuels, lubricants, labor, and all other operating expenses, except as herein specifically provided, at CONTRACTOR'S cost and expense.
- 1.4.3 Transportation of Crews and Equipment - CONTRACTOR shall arrange for land surface transportation to unrestricted sites for crews and equipment.
- 1.4.4 Time - CONTRACTOR shall perform Basic Services as expeditiously as is consistent with professional skill and care and the orderly progress of the Work. CONTRACTOR will achieve Substantial Completion on or before one hundred and twenty (120) days following the date of signature execution by CONTRACTOR as shown in SECTION 10. of the AGREEMENT. ENGINEER and CONTRACTOR agree that liquidated damages for delay shall result in the CONTRACTOR paying ENGINEER One Hundred dollars (\$100) for each day that expires after the period of time as herein specified.
- 1.4.5 CONTRACTOR shall provide a qualified driller(s), currently licensed as such in the State of Idaho, for conducting well work. CONTRACTOR shall provide crew personnel that possess all licenses, certifications, and training that pertain to the Work as required by federal, state and county regulations.

1.5 Contractor's Responsibilities

- 1.5.1 CONTRACTOR is only responsible for the quality, completeness and performance of the construction which is produced by CONTRACTOR for the Project. CONTRACTOR will make all reasonable effort to assist ENGINEER in resolving issues of dispute related to design, construction, and performance of Work.
- 1.5.2 All confidential information obtained by CONTRACTOR in connection with this agreement (unless such information is generally available to the public or is established to be in the general

public domain) shall be held in confidence by CONTRACTOR provided same is clearly identified as confidential material.

1.5.3 CONTRACTOR shall maintain and present for authorization to the ENGINEER'S Representative a daily log of drill hours and footage, other work accomplished, and materials with quantities used.

1.5.4 CONTRACTOR shall notify ENGINEER'S Representative of project scheduling to allow for ENGINEER'S Representative to be onsite during critical portions of well drilling, sealant placement, and test pumping.

1.5.5 CONTRACTOR is responsible for his possessions and equipment. Tools, bits, equipment, materials, or other CONTRACTOR-owned items either stolen, lost or abandoned, above or below ground, will not be compensated for by ENGINEER.

1.5.6 CONTRACTOR is responsible for removing project-related trash, debris, drill cuttings, drill additives, and other CONTRACTOR-provided materials and equipment from the site upon completion of Project. The well site will be left in a clean, litter-free condition by CONTRACTOR. Disposal by burning is not allowed. Backfilling, re-compaction and re-contouring of mud pits, drill water trenches, soil berms, and other temporary earthworks constructed for Project is required and the responsibility of the CONTRACTOR. Damage to the landscape will be avoided or minimized in conducting the Work and restoration of damaged areas will be the responsibility of CONTRACTOR under the direction of ENGINEER'S Representative.

SECTION 2 - ENGINEER'S RESPONSIBILITIES

- 2.1 ENGINEER shall, with reasonable promptness, provide all available information, designs, drawings, and specifications regarding Project requirements. ENGINEER is only responsible for the accuracy, completeness and suitability of technical information that is produced by ENGINEER for the Project. ENGINEER will make all reasonable effort to assist CONTRACTOR in resolving issues of dispute related to design, construction, and performance of Work. ENGINEER shall designate a representative authorized to act in ENGINEER'S behalf with respect to the Project.
- 2.2 ENGINEER shall advise CONTRACTOR of the identity of other consultants participating in the Project and the scope of their services.
- 2.3 ENGINEER shall provide CONTRACTOR Right of Entry, both of ingress and egress, and the peaceable possession of all real property that may be required in connection with said Work.
- 2.4 ENGINEER shall provide CONTRACTOR with Idaho Department of Water Resources-approved well permits and associated reporting requirements.

SECTION 3 - MISCELLANEOUS

- 3.1 This AGREEMENT shall be governed by the laws of the State of Idaho.
- 3.2 To assure mutual agreement on work performed and quantities consumed, Representative of ENGINEER should confer with CONTRACTOR'S Representative on a daily basis, or as often as feasible. Should

ENGINEER'S Representative not be available, CONTRACTOR shall invoice from progress and quantities detailed on CONTRACTOR'S Daily Driller's Report. Copies of which are to be provided to ENGINEER'S Representative.

- 3.3 Force Majeure - Except for the obligation to make project progress payments, neither party shall be responsible for failure of or delay in performance hereunder if such failure or delay is caused by reason of "Force Majeure". The term "Force Majeure" shall mean act of God, strikes, lockouts, wars, insurrections, earthquakes, storms, fires, arrests and restraints by any government, civil disturbances, orders, laws or proclamations of government authorities and any other causes whether of the kind enumerated herein or otherwise which are not reasonably within the control of the party claiming suspension.

SECTION 4 - INSURANCE

- 4.1 CONTRACTOR as an independent contractor, shall maintain statutory workman's compensation insurance coverage, comprehensive general auto liability insurance, employers's liability, and comprehensive general liability insurance. During the term of this AGREEMENT, CONTRACTOR shall purchase and maintain in force insurance coverage as set forth below:
- 4.1.1 Workman's Compensation Insurance, including Employer's Liability Insurance for its employees with minimum coverage of \$100,000 per employee or statutory minimum.
- 4.1.2 Comprehensive General Liability Insurance, covering bodily injuries with limits of \$500,000 per person and \$1,000,000 each accident, and property damage with limits of \$500,000 per accident: provided further CONTRACTOR agrees to maintain general liability coverage in a general aggregate amount of \$1,000,000.
- 4.1.3 Comprehensive Automobile Liability Insurance, including operation of automobiles, covering bodily injury with limits of \$500,000 per person and \$1,000,000 each accident; and property damage with limits of \$500,000 per accident.
- 4.2 Proof of Insurance - A Certificate of Insurance showing ENGINEER as an additional insured on CONTRACTOR'S comprehensive general liability insurance along with a certified copy of the insurance policy or policies providing the coverages stated in Section 4.1 above, shall be provided to ENGINEER within Fifteen (15) days of the execution of this AGREEMENT. CONTRACTOR agrees not to cancel or materially change said policy or policies without thirty (30) days prior written notice to ENGINEER.

SECTION 5 - POLLUTION AND CONTAMINATION

- 5.1 Unless otherwise provided herein, CONTRACTOR shall assume all responsibility for, and protect, defend and hold harmless ENGINEER from and against all claims, demands, and causes of action of every kind and character arising from pollution or contamination of air, water or soil, from any material(s) wholly in CONTRACTOR'S possession and control. CONTRACTOR shall not assume responsibility for any prior occurrence of pollution or contamination detected at or below the surface of the Project site.

SECTION 6 - DEFECTIVE WORK

- 6.1 Written notice describing all defective work, defective materials, or construction not in accordance with design information contained in attached Exhibit A, of which ENGINEER has knowledge, will be given promptly to CONTRACTOR. All such defective work or defective product revealed within one year from date of Substantial Completion, and not found accountable, will be corrected at the sole expense of the CONTRACTOR within 30 days of given notice of such defect.

SECTION 7 - PAYMENT

Payment for services rendered by CONTRACTOR shall be in accordance with the following:

- 7.1 Invoices shall be submitted by CONTRACTOR by the 21st day of each calendar month during this project. Monthly invoices shall itemize costs of work completed for the invoice period using representative cost schedule amounts contained in attached Exhibit A.
- 7.2 Payment of approved invoice shall be made by ENGINEER within thirty (30) days of the 25th day of each calendar month after receipt of itemized invoice.
- 7.3 If ENGINEER fails to make monthly progress payments to CONTRACTOR according to the terms of the Agreement under Section 7.2, CONTRACTOR may suspend its services on the basis of non-performance on the part of ENGINEER. When such progress payments are restored in full, plus any additional costs incurred from additional mobilization, CONTRACTOR shall continue its service.
- 7.4 No deductions shall be made from CONTRACTOR'S compensation on account of penalty, liquidated damages or other sums withheld from payments to CONTRACTOR, or changes in the Work other than those for which ENGINEER is held legally liable.

SECTION 8 - TERMINATION OF AGREEMENT

- 8.1 This AGREEMENT is terminated without penalty to, or further obligation on, the part of ENGINEER if and when the PRIME AGREEMENT is terminated. ENGINEER shall promptly notify CONTRACTOR of such termination.
- 8.2 If CONTRACTOR does not perform work in a professional manner to achieve project goals consistent with applicable federal, state and local requirements and regulations, or against professional directive of onsite ENGINEER in his responsibility to achieve the goals of the project, ENGINEER may terminate the AGREEMENT.
- 8.3 Subject to the provisions herein, and in the event of termination not as a result of non-performance on the part of the CONTRACTOR, ENGINEER shall provide CONTRACTOR payment for all services performed to the date of termination.

SECTION 9 - SUCCESSORS AND ASSIGNS

9.1 ENGINEER and CONTRACTOR, respectively, bind themselves, their partners, successors, assigns and legal representatives to the other party to this AGREEMENT and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this AGREEMENT. Neither ENGINEER nor CONTRACTOR shall assign, sublet or transfer any interest in this AGREEMENT without the written consent of the other.

SECTION 10 - SIGNATURES

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE MADE AND EXECUTED THIS AGREEMENT AS OF THE DAY AND YEAR FIRST BELOW WRITTEN.

RIVERSIDE, INC.

HOLLADAY ENGINEERING CO.

By: Terry Daugherty, Authorized Agent

By: Vernon E. Brewer, Authorized Agent

DATE: _____

DATE: _____

EXHIBIT A

BROOKWOOD PUBLIC WATER SUPPLY WELL DESIGN AND SPECIFICATIONS

CITY OF EAGLE, IDAHO

May 2001

prepared by
HOLLADAY ENGINEERING CO.

ITEMIZED PROPOSAL

PROJECT IDENTIFICATION: Brookwood Well - Aries Development, L.L.C.

The project well site is located near the northeast corner of the intersection of Eagle Road and Floating Feather Road, City of Eagle (location map in Appendix). The well will be built to IDEQ and IDWR standards for a municipal water supply well. All work will be at the discretion and direction of Holladay Engineering Company as an authorized representative of the owner(s) listed above for the purpose of securing conditions most favorable toward successfully completing a public water supply well as per design and performance specified in this document. Contractor agrees to perform all work described in the **Item Descriptions** and **Special Conditions** for the unit prices provided below:

ITEM SCHEDULE

Item	Description	Unit	Unit Price	Amount	Total Price
1.	Mobilization & Demob	L.S.		1	\$
2.	28" Drilling	L.F.		160	\$
3.	18" Casing	L.F.		160	\$
4.	16" Drilling	L.F.		180	\$
5.	Resistivity Log	L.S.		1	\$
6.	10" Casing	L.F.		70	\$
7.	10" Screen	L.F.		110	\$
8.	Packer/Reduction Assembly	L.S.		1	\$
9.	Drilling Mud (50# Bags)	EA.		240	\$
10.	Filter Media	CY		5	\$
11.	Bentonite	CY		18	\$
12.	Water Testing	L.S.		1	\$
13.	Well Completion	L.F.		340	\$
14.	Well Development	HR.		24	\$
15.	Install Test Pump	L.S.		1	\$
16.	Conduct Test Pump	HR.		8	\$
17.	Televis Well	L.F.		335	\$
18.	Standby	HR.		4	\$
TOTAL COST =					\$

PROJECT REQUIREMENTS SUMMARY (see specifications and conditions for details)

Well Performance: Construction of a new public water supply well is planned with a minimum sustained capacity of 1000 gpm. Water quality will be potable as defined by current drinking water quality standards for a public system.

Drill Method Requirements: A drill capable of the water reverse circulation method is required for this project. Equipment and drill method must be capable of acquiring groundwater samples representative of the producing aquifer for water quality testing prior to final well completion.

Placement Method of Surface Seal and Filter Media: The surface seal will be placed by setting 18-inch diameter permanent casing from the surface into an effective confining strata of clay. The annular space between casing and oversize borehole will be sealed by slowly pouring 5/8" solid bentonite chips from the surface. Casing reduction to 10-inch diameter will be accomplished by inserting a telescoping, removable, steel reduction assembly with two integral, K-type, packer seals. Pre-approved filter media will be placed in the annulus around the screen section by slow pour delivery from the surface, either with or without the use of tremmie pipe depending on prevailing settlement conditions as determined at the time. Annular sealant and filter media levels will be monitored with tag line during installation to assure correct material placement. The calculated material volumes plus 20% will be available at the site. The material volumes used in construction will be compared to that precalculated for verification of proper placement.

Insurance Requirements: Contractor shall provide Holladay Engineering current proof of Idaho Workmans Compensation Insurance, General Liability Insurance, and Automobile Insurance at the time work is authorized in accordance with **Section 4.** of the **Agreement.**

CONTRACTOR INFORMATION and ACKNOWLEDGMENT

By: _____
Authorized Signature Date

Printed or Typed Name: _____

doing business as _____

Address: _____

City: _____ State: _____ Zip _____

Phone No: _____ FAX No: _____

Drilling Licence No.: _____ Public Works License No.: _____

ITEM DESCRIPTIONS

All pay unit items shall be supplied and constructed in accordance with the plans and specifications and are not intended to modify the work. **ALL CONSTRUCTION AND MATERIALS SHALL BE IN CONFORMANCE WITH 1999 IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC), IDAHO DIVISION OF ENVIRONMENTAL QUALITY WELL CONSTRUCTION DESIGN CHECKLIST (IDEQWCDC) and IDAHO DEPARTMENT WATER RESOURCES WELL CONSTRUCTION STANDARDS (IDWRWCS; IDAPA 37, TITLE 03, CHAPTER 09).** The above governing standards take precedence if conflicts occur within this document. Contractor must provide information showing possession of equipment and experience necessary for successfully completing the project as specified. Construction and design requirements of this project dictate that air rotary, mud rotary, or cable tool drill methods are not considered appropriate for this project.

1. MOBILIZATION and DEMOB

This item includes all cost associated with transporting all equipment, materials and personnel necessary to successfully complete the task of this project. Pay unit of **Item 1** is per one-time **Lump Sum (L.S.)**.

2. 28" DRILLING

This item includes the total time and costs necessary to drill a nominal one hundred sixty-foot (160') borehole with a minimum diameter of twenty-eight inches (28") to provide for a minimum five-inch (5") annulus outside of an eighteen-inch (18") diameter well casing. Comparative lithologic conditions are provided in well driller's logs of the Eagle area (appendix). The actual total drill footage may vary depending on encountered site conditions. The final depth of this item must be approved by Engineer. **Item 2** must reflect the contract rate of accomplishing the specified depth according to the drill method described within the **Special Conditions**. **Item 2** includes, but is not necessarily limited to, all of the following applicable time and item costs: decontamination of drill tools, rods, cable, casing and all other materials placed down hole to minimize bacterial introduction, vertical borehole drilling, hole conditioning and stabilization, drilling muds and construction of mud pit(s), collection of representative formation samples every five-foot depth interval into quart-size, water-tight, plastic bags, support vehicles and all equipment operation, bit costs, fuel and drill fluids and other equipment consumables, daily travel to and from site, and all manpower costs required to complete this item. Contractor shall bear the time and cost of any incurred equipment loss, repair and maintenance. The engineer may require drill advancement to be suspended at times for ground water development or seal placement assessment. Equipment works delays incurred by the Contractor at the request of the Engineer/Geologist shall constitute Standby under **Item 16**. Pay unit for **Item 2** is per **LINEAL FOOT (L.F.)**, not to exceed 160' without prior approval of Engineer/Geologist.

3. EIGHTEEN-INCH (18") CASING

This item includes the material cost and delivery to the project site for one hundred and sixty lineal feet (160') of eighteen-inch (18") nominal diameter, heavy wall (0.375 inch),

API Standard 5L Grade B steel casing with equivalent bottom plate or other approved bottom seal. Pay unit **Item 3** is per **LINEAL FOOT (L.F.)** delivered to site.

4. 16" DRILLING

This item includes the total time and costs necessary to drill a nominal one hundred eighty-foot (180') borehole below the bottom of the existing 28" borehole of Item 2 and placed 18" casing of Item 3 with a minimum diameter of sixteen inches (16") to provide for a minimum three-inch (3") annulus outside of a ten-inch (10") diameter well casing and screen. Comparative lithologic conditions are provided in well driller's logs of the Eagle area (appendix). The actual total drill footage may vary depending on encountered site conditions. The final depth of this item must be approved by Engineer/Geologist. Cost per lineal foot in **Item 4** must reflect the contract rate of accomplishing the specified depth according to the drill method described within the **Special Conditions. Item 4** includes, but is not necessarily limited to, all of the following applicable time and item costs: decontamination of drill tools, rods, cable, casing and all other materials placed down hole to minimize bacterial introduction, vertical borehole drilling, hole conditioning and stabilization, drilling muds, collection of representative formation samples every five-foot depth interval into quart-size, water-tight, plastic bags, support vehicles and all equipment operation, bit costs, fuel and drill fluids and other equipment consumables, daily travel to and from site, and all manpower costs required to complete this item. Contractor shall bear the time and cost of any incurred equipment loss, repair and maintenance. The engineer may require drill advancement to be suspended at times for ground water development or seal placement assessment. Equipment works delays incurred by the Contractor at the request of the Engineer/Geologist shall constitute Standby under Item 16. Pay unit for **Item 4** is per **LINEAL FOOT (L.F.)**, not to exceed 180' without prior approval of Engineer/Geologist.

5. RESISTIVITY LOG

Item 5 is optional work at the discretion of the Engineer/Geologist at the time of drilling. This item includes all cost associated with conducting an accurate, calibrated, down-hole resistivity survey within the entire depth of open borehole with an estimated depth of 340 feet, or an interval of interest as specified by the Engineer/Geologist, prior to placement of casing or screen. A legible copy of the complete and continuous survey will be provided to the Engineer/Geologist. Pay unit **Item 5** is per **LUMP SUM (L.S.)**.

6. TEN-INCH (10") CASING

This item includes the material cost and delivery to the project site for seventy lineal feet (70') of ten-inch (10") nominal diameter, heavy wall (0.365 inch), API Standard 5L Grade B steel casing with equivalent thickness bottom plate or other approved bottom seal. Pay unit **Item 6** is per **LINEAL FOOT (L.F.)** delivered to site.

7. TEN-INCH (10") SCREEN

This item includes the material cost and delivery to the project site of one hundred and ten lineal feet (110') of ten inches diameter (10"), wound wrap triangular-shaped wire, continuous slot screen of type 304 or better grade stainless steel (see 6. Well Screens in

the **Special Conditions**). The proposed screen slot size is 35-slot, but screen interval and slot size shall be based on formation conditions and gradation of Item 9 as determined by the Contractor and confirmed by the Engineer/Geologist. The final screen length and interval will be based on the aquifer thickness determined during 16" drilling in Item 4 in a manner which restricts average water entrance velocities within the screen to 0.1 foot per second or less at the designed well capacity. Screen slot size shall be selected to retain one hundred percent (100 %) of the artificially introduced filter pack described in Item 9 and to provide for maximum yield in a sand-free water condition as required in the **Special Conditions**. Pay unit **Item 7** is per **LINEAL FOOT (L.F.)** delivered to site.

8. **PACKER/REDUCTION ASSEMBLY**

This item includes the materials, manufacture and delivery cost to the project site of one telescoping, removable, 18" x 10", steel reduction assembly with two (2) water-tight, neoprene, K-type, packer seals as specified per **Packer Reducer Assembly** depicted on the **Well Design Diagram** located within the **Appendix** of the **Special Conditions**. **Item 8** pay unit is **Lump Sum (L.S.)**.

9. **DRILLING MUD**

This item includes the material cost and delivery to the project site drilling mud, only if required for hole stabilization, where site conditions restrict overflow production of reject drilling fluids, and with prior approval of the Engineer/Geologist. Pay unit **Item 9** is per **50 POUND BAG (EA.)** delivered to the project site.

10. **FILTER MEDIA**

This item includes the material cost and delivery to the project site of clean, uncontaminated, Colorado Silica Sand[®] filter media, or pre-approved equivalent, at the volume specified. The Engineer/Geologist may recommend a filter gradation size but it is the Contractor's responsibility to select appropriate gradation of filter media, unless selection is rescinded by Engineer/Geologist. If disputed, the Engineer/Geologist retains final authority, and responsibility, for gradation selection. Gradation of media will be based on mechanical sieve analysis of aquifer formation samples (performed by Engineer/Geologist) in order to achieve maximum production of sand-free water. The Contractor must provide a minimum two-inch-thick (2"), preferably three-inch-thick, annulus of sand pack adjacent to the screen section without voids or bridging. Sufficient filter media will be provided to extend to the bottom of the borehole up to a minimum of ten feet (10') above the screen. Based on a 16" minimum diameter borehole with 10" diameter casing, 135 lineal feet of annulus will require a minimum calculated volume of filter media of 4.25 CY. Approximately five (5) CY of media are required to maintain an adequate surplus for borehole irregularities. If the Contractor chooses to drill a borehole of diameter greater than sixteen inches (16"), the excess quantity of filter media required, plus 20%, must be available at the site. **Item 10** pay unit is per **CUBIC FOOT (C.F.)** delivered to site.

11. **BENTONITE**

This item includes the material cost and delivery to the project site five-eighth-inch (5/8")

solid bentonite chips, pumped slurry grout, or other well sealant selected by Contractor that is within regulatory compliance and acceptable to the Engineer/Geologist. Placement of solid bentonite will be dispensed slowly down the hole while its level and volume are monitored. Slurry grout sealant, if approved, will consist of a minimum of 30% solids and will be pressure pumped by pipe from the bottom of the hole until the grout level reaches the surface. The final grout level will be maintained after several days of settlement. Material volume of the final seal may vary depending on final well configuration and subsurface conditions. Sufficient well sealant will be available onsite to fill the annulus from a minimum of ten feet (10') above the screen to the ground surface. Based on a 28" minimum diameter borehole with a 18" diameter casing, 160 lineal feet of annulus will require a minimum volume of 14.8 CY of well sealant. 18 CY will be available onsite during completion for possible borehole diameter irregularities. Pay unit **Item 11** is per **CUBIC FOOT (CF)** delivered to the project site.

12. WATER TESTING

This item includes the equipment, materials, time and labor costs necessary for the Contractor to place the required temporary pump, pipe, screen, filter pack, and bentonite sealant within the borehole so as to acquire ground water representative of a depth and formation specified by the Engineer/Geologist for the purpose of water quality sampling and testing prior to well completion described in Item 13. Item 12 includes purging the borehole of drill agents or other contaminants and pumping until a representative water sample is collected by the Engineer/Geologist. This item also includes any incurred project delay within the period of time specified under 11. **Water Quality Testing** of the **Special Conditions**. Pay unit **Item 12** is **LUMP SUM (L.S.)** per test conducted.

13. WELL COMPLETION

This item includes time and equipment costs necessary to place 160 feet of 18-inch diameter steel casing of Item 3 from the surface to a depth of 160 feet, annular bentonite sealant of Item 10 from a depth of 160 feet to the ground surface, 65 feet of 10-inch steel casing of Item 6 from a depth of 145 feet to 210 feet, 110 feet of 10-inch diameter stainless steel screen of Item 7 from a depth of 210 feet to 330 feet, a 5-foot length of ten-inch diameter tailpipe of steel casing of Item 6 with bottom plate from a depth of 330 feet to 335 feet, 145 lineal feet of annular silica sand pack of Item 9 from a depth of 195 to 340 feet, a steel 28" x 18" reducer assembly with K-style neoprene seal of Item 8, two (2) centralizers, and a temporary steel well cap as shown on the **Well Construction Diagram** within the **Appendix** of the **Special Conditions**. Required levels of annular sealant and filter materials will be verified by the Contractor using a measurement line for tagging material levels as construction proceeds. Final depths, lengths, and volumes of all items used in well completion will be recorded by Contractor, which may vary from those listed in the **Item Schedule** as determined appropriate for encountered conditions at the project site. Pay unit **Item 13** is per **LINEAL FOOT (L.F.)** installed.

14. WELL DEVELOPMENT

This item includes Contractor development of the well by such means which effectively

extracts from the water-bearing formation the maximum quantity of fine formation and/or drilling mud or agents for achieving the well's maximum production yield per foot of draw down in a sand-free condition as specified in the **Special Conditions, 9. Well Development**. **Item 14** includes decontaminating the well immediately prior to development and immediately following pump testing. Decontamination should follow the *AWWA Standard for Disinfection of Wells* (ANSI/AWWA C654-87). Pay unit **Item 14** is per **HOUR (HR.)** performed for a nominal duration of twenty four (24) hours, subject to change by the Engineer/Geologist pending pumping test results of **Item 16**.

15. INSTALL TEST PUMP

This item includes all costs associated with temporarily providing, installing, wiring and removing a submersible test pump and drop pipe in accordance with that specified in the **Special Conditions** under section **10. Test Pumping**. Where necessary, the Contractor will provide a hose or pipe of sufficient length and diameter to dispose of discharge water to the nearest storm drain, ditch or designated location at the pumping rate specified in the **Special Conditions**. Pay unit **Item 15** is **LUMP SUM (L.S.)**.

16. CONDUCT PUMP TEST

This item includes all cost incurred from conducting a pumping test with exception of that described under **Item 13**. This includes all equipment use, generator, fuel consumption, crew operation and other costs required to successfully perform a sustained pump test at a constant and continuous capacity as required in the **Special Conditions** under section **10. Test Pumping**. Pay units do not include time employed during logistical material collection, equipment delivery and setup, crew transportation, breakdowns, machinery repair, equipment maintenance, Contractor related delays, or pumping time having unscheduled pumping interruptions that degrade test information. Minimum pump test period is eight (8) continuous hours and until at least three (3) hours after pumping water levels have stabilized. Unless pre-approved by the Engineer/Geologist, any pumping period of duration less than specified, or with unscheduled interruptions or deviations of the specified pumping rate, will not qualify as time under this item. Pay unit **Item 16** is per **HOUR (HR.)**.

17. TELEWISE WELL

This item requires that the Contractor provide two clearly imaged video recording tapes of the completed well's total depth by color camera. The survey will be accurately logged by depth in feet visibly imaged on the recording. Survey depth will be calibrated to an established surface datum visible in the image, such as the top of the well casing. This item must be scheduled with the Engineer/Geologist so that he is present to observe camera operations. Attention will be directed towards the general condition of the casing and screen, welds and joins, screen location, packer/reducer placement and external filter media. Defects found that impair the well's seal, reliability, or performance are subject to correction by Contractor without additional cost to ENGINEER (see terms of **AGREEMENT** under **Section 6**). Substantial well defects may constitute rejection of the well as a defective product. Pay unit **Item 17** is per **LINEAL FOOT (L.F.)**.

18. **STANDBY**

This item includes time when the drill and crew are idle and Contractor progress is interrupted or delayed for periods exceeding one-half (1/2) hour during normally scheduled work shifts due to actions or inactions of the Owner or Engineer/Geologist. Standby may include unforeseen extra work in order to successfully complete the project where approved or requested by the Engineer/Geologist. Suspension of drilling operations at the request of the Engineer/Geologist for water quality sampling and laboratory testing (Item 12) does not constitute Standby unless the period of delay exceeds the time specified in the **Special Conditions** under **11. Water Quality Testing**. The Engineer/Geologist, or any available representative of Holladay Engineering Company, must be notified at the earliest possible opportunity when Standby is in force. The Engineer/Geologist shall be forewarned of foreseeable occurrences of Standby by Contractor. Standby time does not include weekends, holidays, after hours, breaks, equipment repairs or down time, material collection and delivery time, water transport, retrieving lost tools or other Contractor-related delays. Pay unit **Item 18** is per **HR.** with a maximum possible accrual rate of eight (8) hours per day.

SPECIAL CONDITIONS BROOKWOOD MUNICIPAL WELL CONSTRUCTION

1. PROJECT DESCRIPTION AND LOCATION:

These specifications describe the materials, construction and performance standards of a proposed municipal water-supply well at the Brookwood Subdivision, City of Eagle, Idaho. The site is located in the SW1/4, SW1/4 of Section 4, T4N, R1E. The site can be accessed by traveling north on Eagle Road from the City of Eagle, and thence to the west entrance to Brookwood Subdivision at the northeast corner of the intersection with Floating Feather Road (location map and site map are provided in the attached *Appendix*).

2. DRILLING CONDITIONS:

- A. Drilling will be performed with the use of a reverse water circulation drill as approved by the Engineer. Drilling water will be supplied as specified in section 14.D. - "*Other Special Conditions*". The borehole from the surface will have a minimum diameter of 28", drilled into a confining layer a minimum of five feet, and placed with permanent 18" diameter steel casing as indicated on the diagram entitled **Brookwood Well Design**. Drilling will continue below the confining layer with a minimum reduced diameter of 16" to a depth which fully penetrates a producing zone(s) sufficient to meet minimum production requirements. Prior to final well construction a means to collect a representative water quality sample from the borehole will be provided by the drill contractor. After the Engineer/Geologist confirms water quality requirements, 10" diameter casing, screen, annular filter pack, and annular seal will be placed in the configuration required to maximize production capacity in accordance with the well design diagram attached in the *Appendix*. The casing reduction assembly will be strong and water tight, yet allow ready removal of the screens if required. The borehole drilling and casing placement sequence to effect the proper screen placement may be accomplished in the order deemed most appropriate by the Contractor.
- B. Subsurface geologic conditions may be approximated from the driller's logs provided in the *Appendix*. Depth and estimated volume of drill mud losses during drilling are to be recorded.
- C. Drill rejects, mud, additives, and other drill byproducts shall be confined to pits or sediment basins and not allowed to enter surface waters or leave the property.

3. PERFORMANCE AND CONSTRUCTION:

- A. The well is anticipated to produce sand-free water (less than two ppm sand by weight) at a minimum sustained rate of 1,000 gallons per minute (gpm). The maximum well design capacity is approximately 3,400 gpm based on the

proposed design of 110' of 10" nominal, 35-slot screen maintaining an entrance velocity of 0.1 ft/sec. Although final well design and capacity shall be subject to aquifer conditions, it is not to be limited to less than a sustained 1,000 gpm capacity, or produce impaired water quality, due to faulty well construction methods, deficient or damaged materials, poor screen placement or inadequate well development. If the performance of the well is established to be impaired as a result of construction deficiencies within one year of the date of completion, the well will be considered defective and subject to warranty correction or replacement with all attendant warranty costs the responsibility of the Contractor.

- B. Vertical alignment of casings shall be checked at fifty-foot (50') intervals. Misalignment shall be limited to two inches (2") horizontal per one hundred feet (100') vertical from centerline measured from the top of casing. The misalignment shall be measured by use of a vertical cable similar to the method recommended by the Bureau of Reclamation and Johnson Division of UOP.
- C. The Geologist/Engineer will attempt to be onsite periodically during setup, drilling, construction and testing phases of the project. It is the Contractor's responsibility to communicate his daily work schedule in advance so as to minimize scheduling conflicts with the Geologist/Engineer. It is the Geologist / Engineer's responsibility to respond promptly to matters requiring attention and to observe well seal placement, screen installation and pump testing.
- D. All materials used in well construction will be of new manufacture and transported, stored, and handled in their original containers and in a manner that provides protection from physical and chemical damage, contamination and theft. Materials and equipment used in well construction will be cleaned to prevent introduction of contaminants into the well. Disinfection procedures will follow guidelines established by the AWWA as attached in the *Appendix*. Well disinfection will be performed immediately following the pumping test.
- E. Equipment, drill fluids, sealants and materials used in well construction shall meet NSF Standard 61 or equivalent. Product names of drill fluids and well sealants will be provided to the Geologist/Engineer.

4. SAMPLES:

The Contractor collects formation samples at vertical depth intervals of every five feet (5') and at a each change in formation. Sample intervals shall not be greater than five feet unless there is a drill-related sample return problem. Formation samples shall be sealed in plastic ziplock[®]-type containers provided by the Contractor with the well name and depth intervals legibly labeled with an indelible marking pen. The samples will be lithologically logged and stored by the Geologist/Engineer for sieve analysis.

5. WELL SEAL:

The casing shall be sealed in accordance with all current Rules and Regulations for Well Construction Standards as prepared by the State of Idaho, Department of Water Resources and the Water Resources Board (IDAPA 37, Title 03, Chapter 09) and IDEQ public water system well construction design standards. The Contractor will notify the Geologist/Engineer at a minimum of 24 hours in advance in order to be present during installation of the well's surface seal and to notify IDWR. Placement of temporary seals may be required in water-bearing units to test water quality, aquifer potential and head conditions.

6. WELL SCREENS:

- A. The well screen(s) and fittings shall be fabricated from a corrosion resistant type 304 stainless steel. Well screens shall be of continuous slot, wire-wound design in order to provide maximum inlet area consistent with strength requirements. Fabrication shall be circumferentially wrapped, triangular-shaped wire around a circular array of internal rods. The wire configuration must produce inlet slots with sharp inner edges, widening outwardly so as to minimize clogging. For maximum collapse strength, each juncture between the horizontal wire and the vertical rods will be fusion welded under water by the electrical resistance method. End fittings will be welded to the screen body. The well screen shall be manufactured by Johnson Screen Division, UOP, St. Paul, Minnesota or Houston Well Screen Company, Houston Texas, or an approved equivalent.
- B. The screen slot size and artificially introduced filter pack material will be selected on the basis of a mechanical sieve analysis of the natural water-bearing formation. Sieve analysis will be conducted by Geologist/Engineer. The drill Contractor is responsible for selecting screen placement, screen slot size, and filter media gradation but they require review and concurrence by the Engineer/Geologist prior to ordering and installation. The screen's slot size will be chosen so that filter media is retained and the average entrance velocity of the water does not exceed one-tenth (0.1) foot per second at the yield specified in the section on *"Performance and Construction"* (3. A.) of these *Special Conditions*.

7. PACKERS:

Should drilling conditions and well design require the use of a packer(s), it shall be installed on top of a minimum length of five feet (5') blank casing connected to the top of the screen section. Construction of the reduction/packer assembly shall adhere to that shown on the well design plan. A minimum of two (2) figure K-type packers will be placed consecutively together to assure an effective seal. Welding will be performed with the neoprene seals fully immersed in water to maintain the seal's integrity. Any blank casing between screens shall be the same size as the screens.

8. CASING:

Permanent casing shall be seamless, standard weight, steel pipe in new condition as shown on the design drawings. Casing shall be joined by fully penetrating welds without voids, cracks, excess slag or other visible weaknesses which would impair strength or transmit water leakage.

9. WELL DEVELOPMENT:

- A. The Contractor shall develop the well by such means as will effectively extract the maximum practical quantity of sand, drilling mud and other fine materials from the water-bearing formation to affect maximum specific yield (yield-per-foot of drawdown) in a sand-free condition. Compressed air, surge block, plungers, jetting equipment, bailer, and/or pumps may be used for development. This work must be performed in a manner which prevents destructive disturbance of the aquifer formation and filter pack, nor disturbs the well seal installed around the casing.
- B. Development of the well shall continue until the well yields water clear and free of sand during maximum pumping rate. The water shall be considered sand-free when a sample collected during test pumping contains less than two (2) parts per million by weight. Following completion of well development, the Contractor shall clean all materials from the tailpipe (sump) as demonstrated by tagging the bottom plate of the well. The Engineer may require further development if increased production capacity may be accomplished or additional cleaning is required.

10. TEST PUMPING:

- A. Install Pump: The Contractor shall temporarily install a test pump at an approximate depth of 130 feet on 6-inch minimum diameter drop pipe. The pump will have a minimum capacity of 1,300 gallons per minute free discharge at the wellhead. Discharge will be measured continuously by a reliable flow meter with dial indicator displaying production rate in gpm and a volume totalizer in gallons. The meter will be placed in a non-turbulent position with a 6-foot minimum straight path upstream and 4-foot straight path downstream. The discharge will be capable of regulating flow by valve located downstream of the meter. The Contractor shall provide hose or pipe of adequate diameter and length for disposal to the nearest approved storm drain or ditch at the specified pumping rate.
- B. Conduct Test: The Contractor will be responsible for all phases of the pumping test. The Contractor will notify the Engineer forty-eight (48) hours in advance of the pending test. Minimum pumping test period is eight (8) continuous hours with a minimum of two (2) hours after dynamic water levels have stabilized. The pumping test crew will legibly record the following pumping information on

copies of the *Pump Test Log* provided in the *Appendix*: 1. name of well and operating crew, 2. date and time test started, 3. measured water levels from an identified datum, 4. discharge rate, and 5. time test ended. The time intervals for measuring water levels are specified as follows: static level immediately prior to starting the pump, once every 30 seconds or as quickly as possible for the first 5 minutes, once every minute the following 10 minutes (from 5 to 15 minutes following start), once every 2 minutes the following 20 minutes, once every 5 minutes the following hour, once every 10 minutes the next hour, once every 30 minutes the following hour, and once each hour for the remainder of the test. The time at which the pump is turned off must be recorded and well recovery measurements are to begin immediately employing the same time interval schedule specified for drawdown. Recovery measurements may be terminated after one (1) hour. Deviation from this schedule must be pre-approved by the Geologist/Engineer.

11. WATER QUALITY TESTING:

The Engineer/Geologist may require interim water quality sampling during the course of drilling. This may require the Contractor to suspend drilling while temporary casing and/or drill pipe with temporary sand and seal is placed at the depth of interest for acquiring representative ground water. The Engineer/Geologist shall collect water quality samples following the Contractor purging non-representative water from the borehole, casing or pipe. Well completion or borehole advancement may be deferred by the Engineer/Geologist for return of laboratory test results. The Contractor may remove the temporarily placed equipment and downhole materials during this period of delay. Delay of work progress resulting from laboratory return in excess of 120 hours (5 days) following the time of sample collection shall from that period on constitute hourly standby (Schedule Item 18) during normally scheduled work shifts. The Engineer/Geologist may collect additional water quality samples near the end of the pumping test that follows well completion.

12. SAFETY:

The Contractor is responsible for all safety practices and precautions related to his work on this project. The site is located within a busy residential area and restricting public access by fencing around the work area is required. Production of noise and fugitive dust shall be minimized and work will be confined to normal working days and hours as approved by the Engineer/Geologist.

13. CLEANUP:

It is the Contractor's responsibility to backfill pits or holes using native material in compacted lifts of not more than two-foot thick. The Contractor shall remove all equipment, trash, debris, and Contractor-owned materials from the site upon

completion of the project as a condition of final acceptance. Trash will be disposed of properly, burning materials is not permitted at the site.

14. OTHER SPECIAL CONDITIONS:

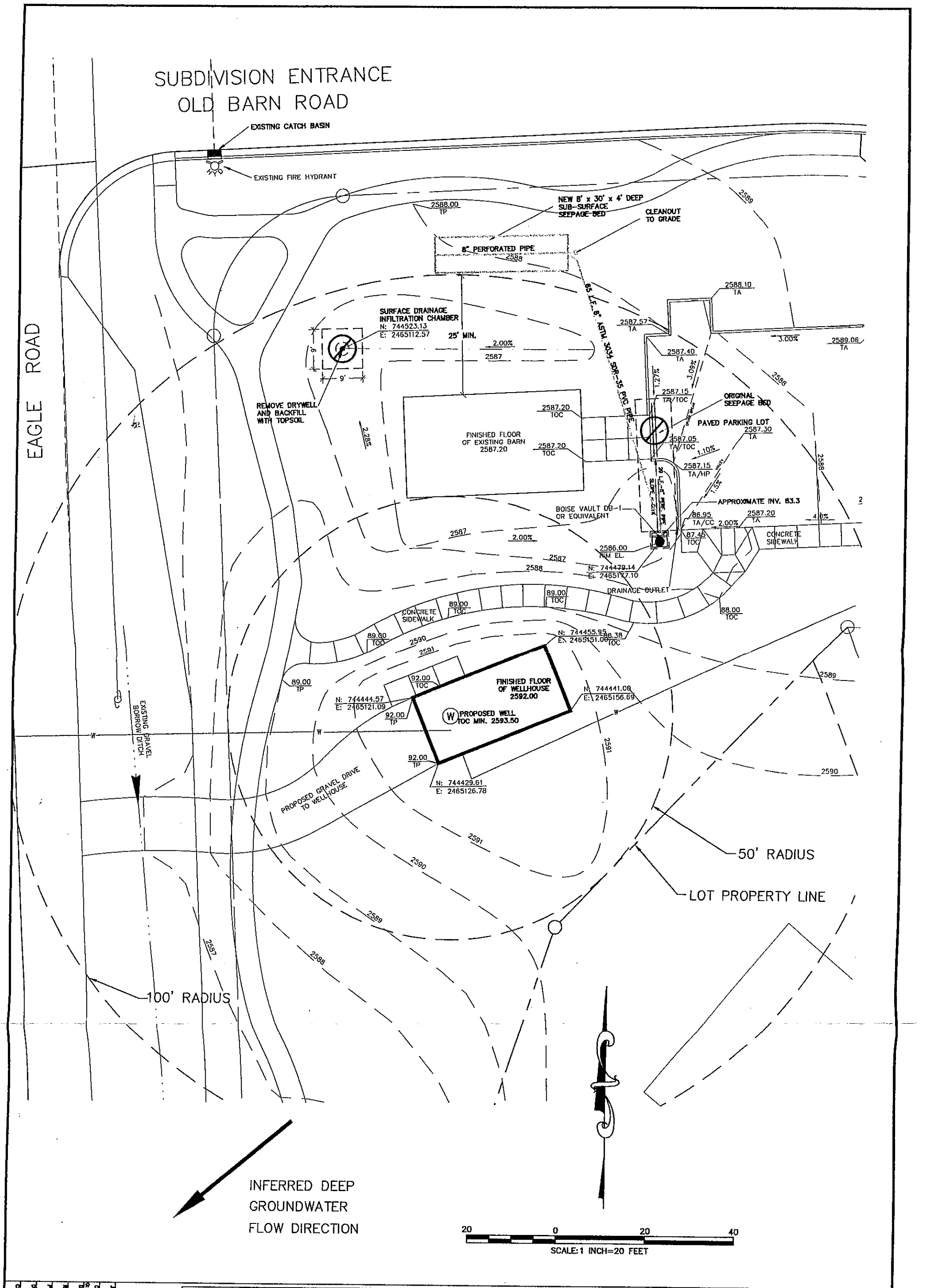
- A. Tools, bits, hammers, temporary casing, casing shoes or other Contractor-owned equipment lost downhole or damaged is not eligible for compensation by Owner. The Contractor will bear cost resulting from equipment damage, loss or retrieval.
- B. A well construction diagram is provided within the *Appendix* at the end of these *Special Conditions*. The well dimensions and configuration are subject to change pending drill results. Well completion materials will be assembled in the following general order starting from the bottom of the well:
- 3/8-inch thick steel bottom cap,
 - 5 feet of 10" steel casing (0.365" wall),
 - 110 feet (estimated) of stainless steel, 0.035-slot (estimated), wound wire screen (pending Contractor verification) with 145 lineal feet (estimated) of external Colorado Silica Sand[®] filter or pre-approved equivalent,
 - 70 feet of 10" steel casing (0.365" wall),
 - 6 feet of 18" x 10" reducer and double K-style packer,
 - 160 feet of 18" steel casing (0.375" wall) to 2.5+ feet above ground level sealed with tack welded, temporary, steel top-plate and 160 lineal feet of bentonite annular surface seal.
- C. Filter pack, screen, bentonite, casing and all other materials employed in well construction shall be approved by the Engineer prior to installation.
- D. United Water Idaho, Inc. (UWI) shall provide potable drilling water from a fire hydrant near the construction site. The Contractor is responsible for fully compensating UWI for drilling water consumed based on an installed water meter. The Contractor is responsible for contacting UWI in advance in order to make the necessary arrangements for securing and metering water. The Contractor is responsible for conveying drilling water from the approved source to the drill site by suitable means; whether by truck, pipe, or hose with all necessary fittings and connections. The Owner shall provide a location for disposal of drill water, or well discharge at the construction site. The Contractor is responsible for conveying reject water to the approved disposal location by suitable means, whether by truck, pipe, hose and accompanying fittings and connections. Drilling muds, contaminated drill cuttings, or other drilling byproducts that are unsafe or unsuitable for burial and re-compaction shall be removed and legally disposed of offsite.
- E. Contractor will keep complete, accurate, daily activity logs. Invoiced per hour or footage Schedule Items shall be based only on the documentation entered within

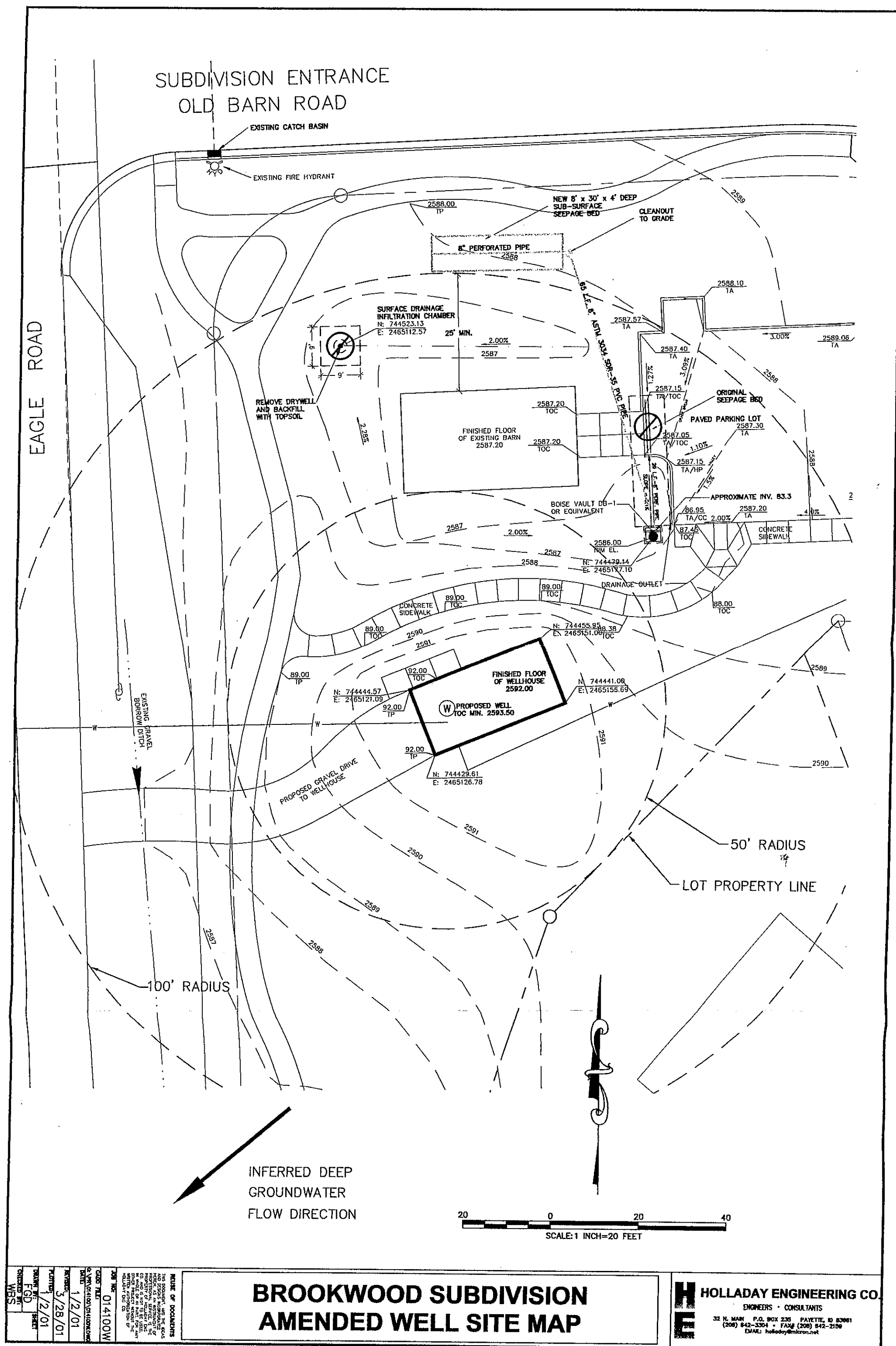
the activity log at the end of each work shift. The Engineer/Geologist or Contractor may request Engineer/Geologist inspection of activity logs on a routine basis, validated by signatures of both Contractor's and Engineer's Representative. Review of activity logs shall be performed frequently, not exceeding weekly intervals during the course of the project.

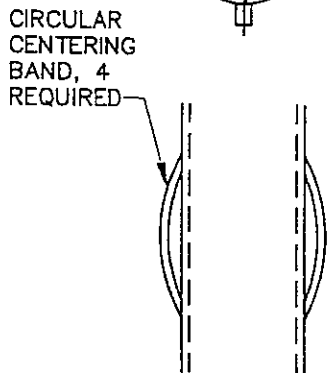
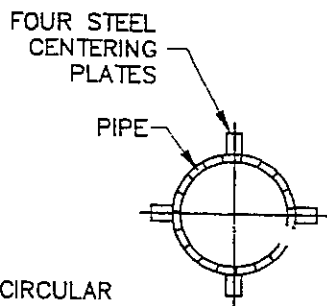
- F. Contractor must hold a current public works license in the State of Idaho and water well drillers license from the Idaho Department of Water Resources. Performance and payment bonds are not required for this project.
- G. The Engineer/Geologist will secure a drill permit for a public water supply well from the Idaho Department of Water Resources. The approved permit original will be furnished to the Contractor prior to commencing equipment mobilization.
- H. The Owner has a valid water right for this point of diversion as attached within the *Appendix*.

APPENDIX

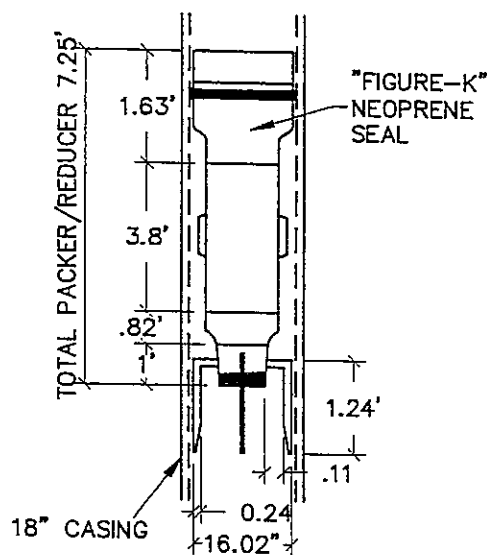
BROOKWOOD WELL







CENTERING SPACERS



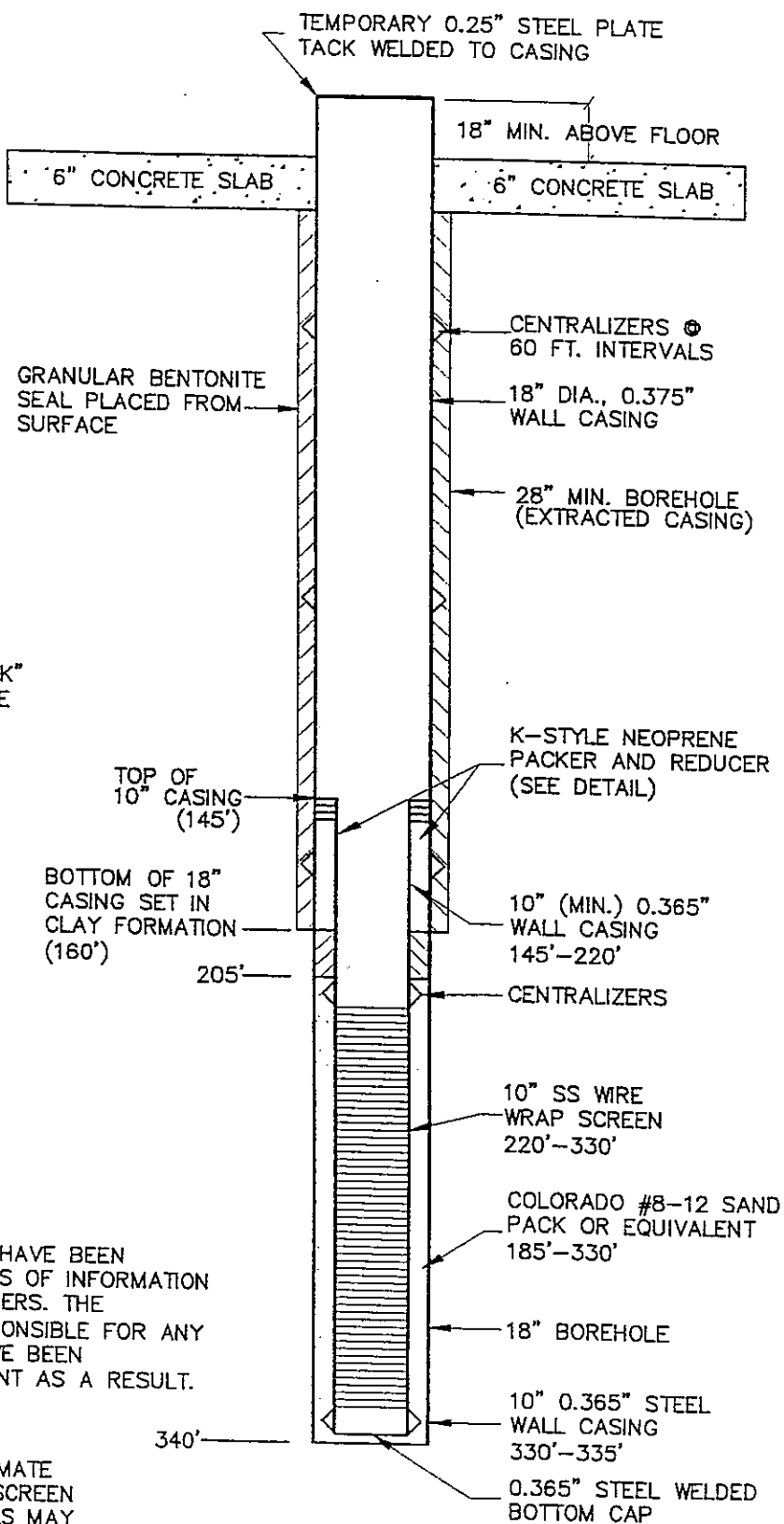
PACKER REDUCER ASSEMBLY

RECORD DRAWING

THE PARKER/REDUCER DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE ENGINEER/GEOLOGIST IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT AS A RESULT.
DATE: 12/4/00

NOTE:
ALL DEPTHS ARE APPROXIMATE FROM GROUND SURFACE. SCREEN AND SAND PACK INTERVALS MAY VARY PENDING DRILL RESULTS.

DRILLING WILL BE PERFORMED BY RIVERSIDE INC. USING THE REVERSE CIRCULATION WATER METHOD.



HOLLADAY ENGINEERING CO.
ENGINEERS CONSULTANTS
32 N. MAIN P.O. BOX 226 PAYETTE, ID 83857
(208) 848-3304 FAX (208) 842-2188
EMAIL: holladay@riverside.net

REUSE OF DOCUMENTS
THIS DOCUMENT AND THE SEAL AND DESIGN INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF HOLLADAY ENG. CO. AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF HOLLADAY ENG. CO.

**BROOKWOOD WELL
DESIGN
EAGLE, IDAHO**

NOT TO SCALE

JOB NO: PR014100
DATE: 11/27/00
REVISED:
PLOTTER: 11/27/00
DRAWN BY: FGD
CHECKED BY: MBS

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

JUL 20 1995

Use Typewriter
Ball Point Pen

(4)

Well No. 03-25-0119-500
Driller's Name WATER DRILLING, INC.
Address 1000 W. 7th St.
City Boise State ID Zip 83707

11. WELL TESTS:

Flow Rate	Pressure	Flow Rate	Pressure
1000 GPM	67'		
1000 GPM	54'		

Water Temp. 55° Bottom Hole Temp. _____
Water Quality test or comments: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Depth	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
28	0	3	Top soil		
28	3	15	Coarse sand		
28	15	19	Hard pan, sand & gravel		
28	19	27	Coarse sand		
28	27	47	Sand, gravel & river rock		
28	47	49	Fine white sand		
28	49	50	Light brown clay		
28	50	53	Fine white sand		
28	53	113	Brown clay		
28	113	129	Fine to medium white sand		
28	129	131	Brown clay		
28	131	132	Fine sand		
28	132	138	Brown clay		
28	138	147	Fine to medium sand		
28	147	154	Brown clay		
28	154	167	Fine to medium sand		
28	167	174	Light brown clay		
28	174	176	Fine to coarse sand		
28	176	181	Brown clay		
28	181	258	Fine to coarse sand		
28	258	267	Brown clay		
28	267	279	Fine to medium sand		
28	279	312	Fine to coarse sand		
28	312	314	Brown clay		
28	314	317	Fine to coarse sand		
28	317	332	Fine to coarse sand		
28	332	346	Brown clay		

10. DRILLER'S CERTIFICATION

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

Firm Name Riverside, Inc. Firm No. 233
Firm Official [Signature] Date 7/19/95
Supervisor or Operator [Signature] Date 6/18/95
(Signature of Firm Official/Operator)

3. LOCATION OF WELL by legal description:

Sketch map of land on which well is located with written location.

Top	North	East	South	West
1/4	1/4	1/4	1/4	1/4
Sec. 5	1/4	SE	1/4	SW
Govt Lot	County	Ada	State	ID

Address of Well Site Crandlemire site
Flooding Feather well City Boise

Driller's Name Water Drilling, Inc.

4. PROPOSED USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Section ☐ Other _____

5. TYPE OF WORK

☒ New Well ☐ Modify or Repair ☒ Replacement ☐ Abandonment

6. DRILL METHOD

☐ Mud Rotary ☐ Air Rotary ☐ Cable ☒ Other Reverse Potary

7. SEALING PROCEDURES

Method	From	To	Remarks	Method
Bentonite	0	171	30,000	Pour from top
3412001 Seal	171	346		Pour from top

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

8. CASING/LINER:

Depth	From	To	Material	Casing	Liner	Welded	Throated
18"	0	171	375 Steel	X		X	
11"	169	183	375 Steel	X		X	
14"	193	204	375 Steel	X		X	

Length of Haul Pipe _____ Length of Tailpipe 10'

9. PERFORATIONS/SCREENS

☐ Perforations Method _____
☒ Screen Screen Type Houston wire wrap

From	To	Size	Number	Material	Casing	Liner
183	193	040	14	Stain.	X	
204	214	040	14	"	X	
225	235	040	14	"	X	

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

50' ft. below ground Artesian pressure _____ lb.
Flow rate _____ ft. Describe across port or
method of discharge _____

FORWARD WHITE COPY TO WATER RESOURCES

MAY 24 1996

WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

WATER RESOURCES
1. DRILLING PERMIT NO. 04 W. 848 0
Office Use Only 03-12147

2. OWNER:

Name: EAGLE WATER CO. INC.
Address: P.O. BOX 433
City: EAGLE State: ID. Zip: 83616

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N		Twp. 4 N		North 1/4 or South 1/4	
E		Rge. 1 E		East 1/4 or West 1/4 SW	
S		Sec. 8		1/4 SW 1/4 SE 1/4	
W		Gov't Lot		County: ADA	
		Lat:		Long:	

Address of Well Site: APPROX. 1400 W. STATE

STREET

(Circle at least name of road - Distance to Head or Landmark)

City: EAGLE

LL: Blk. Sub. Name

4. USE:

MUNICIPAL
Domestic ☒ Municipal ☐ Monitor ☐ Irrigation
Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply NEW WELL (replacement etc.)

New Well ☒ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD REVERSE CIRCULATION

Air Rotary ☐ Cable ☐ Mud Rotary ☒ Other

7. SEALING PROCEDURES

SEA/FILTER PACK			AMOUNT		METHOD
Material	From	To	Sacks	Pounds	
BENTONITE	336	340	5000#		POURED
BENTONITE	332	0	37500#		POURED
FILTER PACK	140	136	62400#		POURED

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	Linear	Welded	Threaded
16"	+2	240	250	STEEL	☒	☐	☒	☐
10"	240	245	250	STEEL	☒	☐	☒	☐
10"	265	291	250	STEEL	☒	☐	☒	☐

Length of Headpipe: Length of Tailpipe:

9. PERFORATIONS/SCREENS

Perforations Method

☒ Screens Screen Type: HOUSTON STAINLESS STEEL

From	To	Slot Size	Number	Diameter	Material	Casing	Linear
345	265	35	304	10"	S. STEEL	☒	☐
291	371	35	304	10"	S. STEEL	☒	☐
367	377	35	304	10"	S. STEEL	☒	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

24" ft. below ground Artesian pressure 0 lb.

Depth flow encountered: Describe access port or control devices:

SEE ATTACHED

FOR STATIC

Access Port

FORWARD WHITE COPY TO WATER RESOURCES

11. WELL TESTS:

Yield gal/min	Discharge	Pumping Level	Time
3900 GPM	70 ft	200 ft	10 HRS

Water Temp. COLD Bottom hole temp. COLD

Water Quality test or comments: GOOD, CLEAR

Depth first Water Encountered 15'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dist.	From	To	Remarks: Lithology, Water Quality & Temperature	Water
	0	15	SAND	X
	15	46	RIVER ROCK & QUARTZ SAND	X
	46	51	BROWN CLAY	X
	51	61	COURSE SAND	X
	61	67	BROWN CLAY	X
	67	74	QUARTZ SAND	X
	74	86	BROWN CLAY	X
	86	98	COURSE SAND	X
	98	103	BROWN CLAY	X
	103	111	COURSE SAND	X
	111	138	BROWN CLAY	X
	138	139	COURSE SHARP SAND	X
	139	145	BROWN CLAY	X
	145	160	CRSE SAND & PEA GRAVEL	X
	160	163	BROWN CLAY	X
	163	165	CRSE SAND	X
	165	175	BROWN CLAY	X
	175	187	MED BRN SAND & PEA GRAVEL	X
	187	194	BROWN CLAY	X
	194	229	COURSE SAND & PEA GRAVEL	X
	229	242	BROWN CLAY	X
	242	245	CRSE SAND, GRAVEL, CLAY LAYERED	X
	245	270	GRSE BRN SAND & SOME PEA GRAVEL	X
	270	275	IRONISH COLORED CLAY	X
	275	276	SHARP CRSE SAND	X
	276	285	SAND, CLAY LAYERED	X
	285	291	GREEN, GRAY, BRN CLAY MIXED	X
	291	337	COURSE BRN SAND	X
	337	367	GREEN & BRN CLAY	X
	367	377	CRSE QUARTZ SAND	X
	377	379	BRN CLAY	X
	379	407	MED TO CRSE SAND	X
	407	410	BLK MET SAND	X

Completed Depth: 414 FEET (Measurable)

Date: Started 4/19/96 Completed 5/4/96

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: PETE COPE DRILLING CO., INC. Firm No. 213

Firm Official: Jay Cope Date: 5-8-96

Supervisor or Operator: Date:

(Signature of Firm Official & Operator)

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

Page 2 of 2

Office Use Only

Inspected by

Twp. Rge. Sec.
1/4 1/4 1/4

Lat. Long.
Flowing Artesian

1. DRILLING PERMIT NO. 03-94-V-0848-0002

Other IDWR No.

2. OWNER:

Name

Address

City

State Zip

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

North
Twp. 4 North ☒ or South ☐
Rge. 1 East ☒ or West ☐
Sec. 08 1/4 SW 1/4 SW 1/4
Gov't Lot _____ County Adair 10 acres 160 acres
Lat: _____ Long: _____

Address of Well Site

(Give at least name of road - Distance to Road or Landmark)

City

Li. Bk. 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

SEA/FILTER PACK			AMOUNT		METHOD
Material	From	To	Sacks or Pounds		
<u>FILTER PACK</u>	<u>340</u>	<u>332</u>	<u>35400#</u>		<u>POURED</u>

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
<u>10"</u>	<u>331</u>	<u>367</u>	<u>.250</u>	<u>STEEL</u>	☒	☐	☒	☐
<u>10"</u>	<u>377</u>	<u>383</u>	<u>.250</u>	<u>STEEL</u>	☒	☐	☒	☐
<u>10"</u>	<u>403</u>	<u>441</u>	<u>.250</u>	<u>STEEL</u>	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

☐ Perforations

Method

☒ Screens

Screen Type HOUSTON STAINLESS STEEL

From	To	Size	Number	Diameter	Material	Casing	Liner
<u>344</u>	<u>403</u>	<u>35</u>	<u>304</u>	<u>10"</u>	<u>STAINLESS</u>	☒	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

_____ ft. below ground Artesian pressure _____ lb.

Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:

☐ Pump ☐ Bailer

Yield (gpm)	Drawdown	Pumping Level	Flowing Artesian

Water Temp. _____ Bottom hole temp _____

Water Quality test or comments: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Depth first Water Encountered _____

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	W
	<u>410</u>	<u>416</u>	<u>BLUE CLAY</u>	
	<u>416</u>	<u>422</u>	<u>BROWN CLAY</u>	
	<u>422</u>	<u>425</u>	<u>SANDY BROWN CLAY</u>	
	<u>425</u>	<u>428</u>	<u>BROWN CLAY</u>	
	<u>428</u>	<u>429</u>	<u>COARSE SAND</u>	
	<u>429</u>	<u>431</u>	<u>SANDY CLAY</u>	☒
	<u>431</u>	<u>433</u>	<u>BLUE-GREEN SAND</u>	☒
	<u>433</u>	<u>435</u>	<u>BLUE CLAY</u>	☒
	<u>435</u>	<u>440</u>	<u>BLUE CLAY</u>	
	<u>440</u>		<u>BLUE CLAY</u>	

RECEIVED

SEP 17 1935

Department of Water Resources

RECEIVED

MAY 24 1936

WATER RESOURCES
WESTERN REGION

Completed Depth _____ (Measurable)
Date: Started _____ Completed _____

13. DRILLER'S CERTIFICATION

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

Firm Name _____ Firm No. _____

Firm Official _____ Date _____

Supervisor or Operator _____ Date _____

(5 - in office of Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

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 TYPEWRITTEN OR
BALLPOINT PEN

OCT 19 1990

8

1. WELL OWNER Name: <u>Roger Crandell</u> <u>1400 Floating Feather Road</u> Address: <u>Eagle, ID 83616</u> Owner's Permit No. <u>63-90-W-209</u>	7. WATER LEVEL Department of Water Resources Static water level <u>32</u> feet below land surface. Flowing? ☐ Yes ☒ No G.P.M. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: ☐ Valve ☐ Cap ☐ Plug Temperature <u>9F</u> Quality _____ Describe variation of temperature zones below _____																																																																																																																																																																																																										
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement Well done for increase _____ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)	8. WELL TEST DATA ☐ Pump ☐ Bailor ☐ Air ☐ Other _____ <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Discharge G.P.M.</th> <th>Pumping Level</th> <th>Hours Pumped</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	Discharge G.P.M.	Pumping Level	Hours Pumped																																																																																																																																																																																																							
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USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

Office Use Only

Inspected by _____

Twp _____ Rge _____ Sec _____

1/4 _____ 1/4 _____ 1/4 _____

Lat: _____ Long: _____

_____ Air _____ Flowing Artesian _____

3

1. DRILLING PERMIT NO. 63-99-W-0281-000

Other IDWR No. _____ tag # 0009764

2. OWNER:

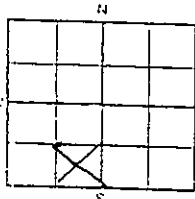
Name Joint School District #2

Address 911 Meridian St

City Meridia ID State _____ Zip 83642

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.



Twp. 4 North ☒ or South ☐

Rge. 1 East ☒ or West ☐

Sec. 5 1/4 S/E 1/4 S/W 1/4

Gov't Lot _____ County Ada 160 acres

Lat: _____ Long: _____

Address of Well Site 1000 West Floating

Feather Rd City Eagle

*Give at least name of road, entrance to fluid or landmark

LL. _____ Blk. _____ Sub. Name Eagle Middle School

4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☒ Irrigation

☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)

☒ New Well ☐ Modify ☐ Abandonment ☐ Other replacement

6. DRILL METHOD

☐ Air Rotary ☐ Cable ☒ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK		AMOUNT		METHOD
Material	From	To	Sacks or Pounds	
grout	0	154	2800#	pumped
#8-12 sand	154	260	4300#	poured

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
8	42	185	322	steel	☒	☐	☒	☐
8	205	225	322	steel	☒	☐	☒	☐
8	245	255	322	steel	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe 10'

9. PERFORATIONS/SCREENS

Perforations Method _____

☒ Screens Screen Type Johnson Vee wire

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
185	205	30		8	stnls	☒	☐
225	245	30		8	stnls	☒	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

49 ft. below ground Artesian pressure _____ lb.

Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:

Pump	Bailer	Air	Flowing Artesian
400	75'	74'	8 hrs

Water Temp. _____ Bottom hole temp. _____

Water Quality test or comments: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temperature	Water	
				Y	N
12	0	6	clay topsoil		X
	6	49	cemented gravel		X
	49	76	clay & sandy clay		X
	76	100	cemented sand & gravel	X	
	100	105	clay		X
	105	113	sand	X	
	113	116	clay		X
	116	133	sand	X	
	133	142	clay & sand streaks	X	
	142	150	sand	X	
	150	152	clay		X
	152	175	sand	X	
	175	178	clay		X
	178	215	sand	X	
	215	220	cemented sand	X	
	220	260	sand	X	
	260	280	cemented sand	X	

RECEIVED

JUL 21 1999

RECEIVED

JUL 16 1999

Department of Water Resources

WATER RESOURCES
WESTERN REGION

Completed Depth 255' (Measurable)

Date: Started 6/21/99 Completed 7/5/99

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 Stevens & Sons Firm No. 153

Firm Official Ron Stevens Date 7/10/99

and _____

Supervisor or Operator _____ Date _____

(Sign once if Firm Official & Supervisor)

FORWARD WHITE COPY TO WATER RESOURCES

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

USE TYPEWRITER OR
BALLPOINT PEN

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

1. WELL OWNER Name <u>Eagle Ranch Water Corp.</u> Address <u>P.O. Box 455, Eagle, Idaho 83616</u> Owner's Permit No. _____	7. WATER LEVEL Static water level <u>38</u> feet below land surface. Flowing? ☐ Yes ☒ No G.P.M. flow _____ Artesian closed in pressure _____ p.s.i. Controlled by ☐ Valve ☐ Cap ☐ Plug Temperature <u>OF.</u> Quality _____																																																																																																																																																																												
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<u>365</u> inches	<u>10</u> inches	<u>228</u> feet	<u>248</u> feet																																																																																																																																																																										
<u>365</u> inches	<u>10</u> inches	<u>268</u> feet	<u>288</u> feet																																																																																																																																																																										
<u>365</u> inches	<u>10</u> inches	<u>308</u> feet	<u>328</u> feet																																																																																																																																																																										
6. LOCATION OF WELL Sketch map location must agree with written location. N <table border="1" style="width: 100px; height: 100px; border-collapse: collapse;"> <tr><td></td><td></td><td></td></tr> <tr><td></td><td>X</td><td></td></tr> <tr><td></td><td></td><td></td></tr> </table> W E S Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Ada</u> <u>SW</u> <u>1/4</u> NW <u>1/4</u> Sec. <u>9</u> T. <u>4N</u> N/S. R. <u>1E</u> E/W.					X					10. Work started <u>6-2-80</u> finished <u>6-21-80</u> 11. DRILLERS CERTIFICATION I/We certify that all minimum well construction standards were complied with at the time the rig was removed. Firm Name <u>Pete Cope Drilling Co., Inc.</u> Firm No. <u>213</u> P.O. Box <u>561</u> Address <u>Meridian, ID 83662</u> Date <u>6-24-80</u> Signed by (Firm Official) <u>Pete Cope</u> and (Operator) <u>Jeremiah</u>																																																																																																																																																																			
	X																																																																																																																																																																												

WELL PUMP TEST LOG

Page No. _____

Well Name: _____ Owner: _____ Project No.: _____

Well Location: 1/4. 1/4. 1/4. Sec. T. R. City County

Pump Test Operator: _____ Professional Supervising: _____

Pump HP: _____ Pump Voltage/Brand/Model: _____ Pump depth: _____

Pipe Size: _____ Static Water Level: _____ Measurement Datum: _____

[illegible]



AWWA STANDARD FOR DISINFECTION OF WELLS

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard for disinfection of wells covers the chlorination procedures and bacteriological testing to be followed prior to placing in domestic service any new well or any existing well that has received servicing or maintenance that might have caused foreign material or contamination to be introduced into the well. Chlorination procedures are provided for the gravel pack, well casing, pump and appurtenant piping, which is the sequence in which chlorination procedures generally would be implemented.

Sec. 1.2 References

This standard references the following documents. In the latest edition, each document forms a part of this standard where and to the extent specified herein.

AWWA A100—Standard for Water Wells.

AWWA B300—Standard for Hypochlorites.

AWWA B301—Standard for Liquid Chlorine.

Standard Methods for the Examination of Water and Wastewater. ANSI,* APHA,† AWWA, and WPCF.‡ Washington, D.C. (16th ed., 1984).

Additional reference materials relating to activity under this standard include:
Chlorine Institute, Inc.§—*Chlorine Manual*.

Introduction to Water Treatment. AWWA, Denver, Colo. (1983).

Material Safety Data sheets for forms of chlorine used (provided by suppliers).

Safety Practice for Water Utilities. AWWA Manual M3. AWWA, Denver, Colo. (1983).

Water Chlorination Principles and Practices. AWWA Manual M20. AWWA, Denver, Colo. (1973).

Water Quality and Treatment. McGraw-Hill Book Co., New York (1971); prepared by AWWA.

*American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

†American Public Health Association, 1015 15th Street N.W., Washington, DC 20005.

‡Water Pollution Control Federation, 2626 Pennsylvania Avenue N.W., Washington, DC 20037.

§Chlorine Institute, Inc., 342 Madison Avenue, New York, NY 10017.

Sec. 1.3 Record of Compliance

The record of compliance shall be the report of bacteriological test results certifying that the well is producing water free of contamination by coliform organisms.

Sec. 1.4 Preventive Actions

Clean conditions are necessary for effective well disinfection. During construction and maintenance operations, precautions shall be taken to minimize contamination. Surface runoff shall be diverted away from the well, drilling fluid pond, and other construction areas. Drilling equipment, gravel, pump column, and any other items and materials that will be inserted in the well shall be used and stored in a manner that minimizes contamination. Special care should be taken with grease and other lubricants to protect them from contamination. Some drilling fluid additives have been demonstrated to promote bacterial growth; additives of this type should be avoided.

SECTION 2: FORMS OF CHLORINE FOR DISINFECTION

The forms of chlorine that may be used in the disinfecting operations are liquid chlorine, sodium hypochlorite solution, and calcium hypochlorite granules or tablets.

Sec. 2.1 Liquid Chlorine*

Liquid chlorine contains 100-percent available chlorine and is packaged in steel containers usually of 100-lb, 150-lb, or 1-ton net chlorine weight. Liquid chlorine shall be used only (1) in combination with appropriate gas-flow chlorinators and injectors to provide a controlled high-concentration solution feed to the water to be chlorinated; (2) under the direct supervision of a person who is familiar with the physiological, chemical, and physical properties of liquid chlorine, and who is trained and equipped to handle any emergency that may arise; and (3) when appropriate safety practices are observed to protect working personnel and the public.

Sec. 2.2 Sodium Hypochlorite†

Sodium hypochlorite is available in liquid form in glass, rubber-lined, or plastic containers typically ranging in size from 1 qt to 5 gal; containers of 30 gal or larger size may be available in some areas. Sodium hypochlorite contains approximately 5-percent to 15-percent available chlorine, but care must be used in control of conditions and length of storage to minimize its deterioration.

Sec. 2.3 Calcium Hypochlorite†

Calcium hypochlorite is available in granular form or in small tablets, and contains approximately 65-percent available chlorine by weight. The material should be stored in a cool, dry, and dark environment to minimize its deterioration. Note carefully the precautions listed on the container label.

*See AWWA B301—Standard for Liquid Chlorine.

†See AWWA B300—Standard for Hypochlorites.

SECTION 3: GRAVEL AND GRAVEL-PACK CHLORINATION

Sec. 3.1 Chlorination of Gravel Being Installed in New Wells

Gravel being installed in new wells shall be chlorinated by one of the following two procedures. In either case, prior to installation of gravel, the drilling fluid shall be thinned as described in AWWA A100-84, and the drilling fluid shall extend to the top of the casing.

3.1.1 *Tablet procedure in gravel.* Calcium hypochlorite tablets (approximately 5-g size) shall be uniformly mixed with the gravel at the rate of $\frac{1}{4}$ lb to $\frac{1}{2}$ lb of calcium hypochlorite per ton of gravel, and the mixture shall then be fed into the gravel chute to completely fill the annular void outside the casing to the level desired.

WARNING: There is an explosion potential if hypochlorite tablets are mixed with gravel containing organic materials.

3.1.2 *Chlorine residual in drilling fluid.* When the drilling fluid has been thinned, it shall continue to be circulated as chlorine is added to produce a chlorine concentration of not less than 50 mg/L in the entire volume of fluid within the well hole. The gravel shall then be fed into the gravel chute to completely fill the annular void outside the well casing to the level desired. The chlorine residual shall be measured periodically during this operation and the chlorine feed adjusted if necessary.

Sec. 3.2 Chlorination of Gravel Being Installed in Existing Wells

When gravel has settled in an existing well, any replacement gravel used to fill the void shall, immediately prior to its use, be soaked for at least 30 min in a chlorine solution maintained at a concentration of not less than 50 mg/L.

Sec. 3.3 Chlorination of Existing Gravel Pack in Wells

When it appears that an existing gravel pack is a source of contamination in a well, an effort to chlorinate the gravel pack shall be made by applying water containing not less than 100-mg/L chlorine residual down the gravel chute. The chlorinated water shall be fed down the gravel chute until the chute will no longer take water or until the volume down the chute is equal to at least twice the calculated volume of the annular space outside the well casing. The chlorinated water should be fed into the gravel chute through an air-gap system in order to avoid a pressure buildup that would lift the pump base. The maximum rate at which the gravel will accept water may vary greatly from one well to another, but rates of 20-50 gpm (70-190 L/min) are not unusual. (See Figure A.1 for suggested feed system.)

SECTION 4: CHLORINATION OF PERMANENT EQUIPMENT AND MATERIAL USED IN WELLS

All permanent equipment and material to be installed in the well shall be chlorinated just prior to its installation. This shall be done by dusting all exposed areas of the items with calcium hypochlorite powder or by spraying such areas with a solution having a chlorine residual of not less than 200 mg/L.

SECTION 5: CHLORINATION OF WELL AFTER PERMANENT EQUIPMENT IS INSTALLED

After permanent equipment is installed, the well shall be chlorinated by (1) treating the water in the well casing to provide a chlorine residual of approximately 50 mg/L, (2) circulating the chlorinated water within the well casing and pump column, and (3) pumping the well to waste to remove chlorinated water.

Sec. 5.1 Treating the Water in the Well Casing

The water in the well casing shall be treated with chlorine to give an average chlorine dose of 50 mg/L to the entire volume of water in the casing. This may be done by using calcium hypochlorite tablets or sodium hypochlorite solution in the amounts shown in Table A.1.

If calcium hypochlorite is used, dribble tablets of approximately 5-g size down the casing vent and wait at least 30 min for the tablets to fall through the water and dissolve.

If sodium hypochlorite is used, the solution must reach all parts of the well. Suspend a tube through the well-casing vent so that it reaches the bottom of the well; then withdraw the tube as the sodium hypochlorite solution is pumped through the tube.

After the chlorine has been applied, surge the well at least three times to improve the mixing and induce contact of the chlorinated water with the adjacent aquifer. Allow the chlorinated water to rest in the casing for at least 12 h, but not more than 24 h.

Sec. 5.2 Circulating the Chlorinated Water

Following completion of the procedure described in Sec. 5.1, make a pressure-tight connection at least 2 in. in diameter (but not larger than the discharge piping) from the pump discharge piping to the casing vent. Then operate the pump against a throttled discharge valve to return a flow of several hundred gallons per minute down the well casing while the rest of the pumped water is discharged to waste. In low-producing wells, the rate of return need not exceed one half the maximum rate of production of the well. (See Figure A.2.)

CAUTION: Do not throttle the discharge valve so much that the pressure developed is damaging to equipment or pipe-restraining ties. This procedure will remove oil or other material that has accumulated on the water surface and care must be used to ensure such material is harmlessly wasted or is recovered for proper waste disposal.

Periodically test the discharge water for chlorine residual. When zero chlorine residual is measured, continue pumping the well to waste for at least 15 min. Then sample the well for bacteriological evaluation.

SECTION 6: BACTERIOLOGICAL EVALUATION

After the well has been chlorinated and pumped to waste for a minimum of 15 min with zero chlorine residual, at least duplicate samples shall be taken not less than 30 min apart, and the samples shall be tested for the presence of coliform in accordance with *Standard Methods for the Examination of Water and Wastewater*. If none of these samples show the presence of coliform, the well may be placed into domestic service.

If any of these samples show the presence of coliform, one of the following procedures shall be followed:

1. Pump the well to waste for a minimum of an additional 15 min, then take at least duplicate samples not less than 30 min apart and test for the presence of coliform in accordance with *Standard Methods for the Examination of Water and Wastewater*. If none of

these samples show the presence of coliform, the well may be placed in domestic service. (If any of these samples show the presence of coliform, follow procedure 2 or 3 below.)

2. Again subject the well to chlorination and bacteriological evaluation as described in Sec. 5 and Sec. 6.

3. Subject the well to corrective action determined by a qualified engineer.

SECTION 7: DISINFECTION OF FLOWING WELLS

Flowing wells discharging at the surface generally do not require chlorination. Nevertheless, bacteriological sampling and evaluation for coliform shall be made as described in Sec. 6. If it is determined that coliform are present, chlorine should be applied at or below the lowest aquifer producing the artesian condition in an amount that will produce a chlorine concentration of at least 25 mg/L in the flowing water. The chlorine may be introduced through a weighted tube discharging a solution with a high concentration of chlorine (such as 15 000 mg/L), or by means of calcium hypochlorite tablets confined in a perforated container. If bacteriological evaluation shows the presence of coliform after this disinfection, procedure 3 of Sec. 6 shall be followed.

SECTION 8: DISPOSAL OF CONTAMINANTS

Any oil or other significant contaminant pumped from the well must be collected for proper disposal. Also, if the discharge of chlorinated water would be harmful to vegetation or wildlife, measures must be taken either to impound the highly chlorinated water or to neutralize the chlorine.

APPENDIX A

This appendix is for information only and is not a part of AWWA C654.

Table A.1 Chlorine Compound Required to Dose 100 ft of Water-Filled Well at 50 mg/L

Well-Hole or Well-Casing Diameter in.	Volume per 100 ft of Water Depth gal	Amount of Chemical Compound		
		Calcium Hypochlorite* (65-percent available Cl ₂)	Sodium Hypochlorite† (12 trade percent‡)	Liquid Chlorine§ (100-percent available Cl ₂) lb
4	65.28	0.7 oz	3.5 fl oz	0.03
6	146.9	1.5 oz	7.8 fl oz	0.06
8	261.1	2.7 oz	13.9 fl oz	0.11
10	408.0	4.2 oz	1.4 pt	0.17
12	587.5	6.0 oz	2.0 pt	0.25
16	1044.0	10.7 oz	3.5 pt	0.44
20	1632.0	1 lb 1 oz	0.7 gal	0.68
24	2350.0	1 lb 8 oz	1.0 gal	0.98
30	3672.0	2 lb 6 oz	1.5 gal	1.53
36	5287.0	3 lb 6 oz	2.2 gal	2.21
48	9400.0	6 lb 1 oz	3.9 gal	3.92
60	14 690.0	9 lb 7 oz	6.1 gal	6.13

Note:

For metric conversions, see Table A.2.

*Quantities of Ca (OCl)₂ based on 65-percent available chlorine by dry weight (16 oz = 1 lb).

†Quantities of NaOCl based on 12-trade-percent available chlorine by US liquid measure (1 gal = 4 qt = 8 pt = 128 fl oz).

‡Trade percent is a term used by chlorine manufacturers; trade percent × 10 = grams of available chlorine in 1 L of solution.

§Quantities of Cl₂ based on 100-percent available chlorine by weight.

Table A.2 Metric Conversion Factors

US Customary Unit	Conversion Factor	Metric Equivalent
inch (in.)	× 25.4	millimetre (mm)
feet (ft)	× 0.3048	metre (m)
US gallon (gal)	× 3.7854	litre (L)
US pint (pt)	× 0.9232	litre (L)
fluid ounce (fl oz)	× 0.02957	litre (L)
avoirdupois ounce (avdp oz)	× 0.02835	kilogram (kg)
avoirdupois pound (avdp lb)	× 0.45359	kilogram (kg)

1 cu ft = 7.48 gallons

HOLLADAY ENGINEERING COMPANY

PROFESSIONAL SERVICES AGREEMENT

This is an Agreement made effective as of the date of signature between the person or organization as identified by authorized representative's signature, hereinafter called OWNER and Holladay Engineering Company, of Payette, Idaho, hereinafter called CONSULTANT.

PROJECT TITLE: Brookwood Subdivision Well (1000 gpm)

PROJECT NO. PR 014100

SCOPE OF ENGINEERING WORK

Project tasks items

1. Review local well logs for initial well design
2. 1000 gpm public drinking water well design and specs
3. Incorporate United Water (UW) well design constraints
4. IDEQ review and permitting (well site evaluation report & well design)
5. IDWR review and permitting (well site evaluation report & well design)
6. Drill contract / setup
7. Well drilling and construction as per design (final design & cost subject change)
8. Onsite supervision of well drilling and construction as per project requirements
9. Geophysical survey
10. Sieve analysis of target formation
11. Design well screen based on formation analysis and geophysics
12. Televised well survey
13. Setup and supervise pumping test to establish well capacity and pump size
14. 10-hour minimum pumping test
15. Water quality sampling
16. Lab analysis
17. Pump selection
18. Pump & installation (preliminary; assumes 1000 gpm @ 300' TDH)
19. Appurtenances design (meters, valves, chlorination, telemetry, controls, etc.)
20. Liaison with UW regarding telemetry design
21. IDEQ review appurtenances design
22. Appurtenances installed
23. Onsite services during construction
24. Subcontract electrical engineering for controls
25. Coordinate with architect on well house
26. Construct well house
27. Construction contract administration

Total Probable Costs

Range of Probable Costs

This Agreement shall have a period of 180 calendar days including holidays and weekends and shall begin upon the date of signatures contained herein. OWNER shall pay CONSULTANT according to the following:

☒ Current Time and Materials Fee Schedule	☐ Fixed Fee as defined in Scope of Work Schedule	☐ Other as Defined in Scope of Work Schedule
---	---	---

By: [Signature] 11/6/00
Representative's Signature Date

Aries Development, L.L.C.
P.O. Box 6887
Boise, ID 83707

By: [Signature] 11-2-00
Holladay Engineering Company Date

Holladay Engineering Company
P.O. Box 235
Payette, ID 83661



HOLLADAY ENGINEERING COMPANY

32 N. Main Street P.O. Box 235 Payette, ID 83661 (208) 642-3304 Fax: (208) 642-2159 email: holladay@micron.net



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706-2239 • (208) 373-0550

April 19, 2001

Dirk Kempthorne, Governor
C. Stephen Allred, Director

Michael B. Hormaechea
Aries Development, L.L.C.
1101 W. River St., Suite 300
Boise, ID 83702

- RE: Brookwood Subdivision Well Site Evaluation (Eagle, Ada County)
- A. Well Site Conditional Approval
 - B. Groundwater Under Direct Influence of Surface Water Determination
 - C. Future Federal Regulations

Dear Mr. Hormaechea:

I. Well Site Conditional Approval

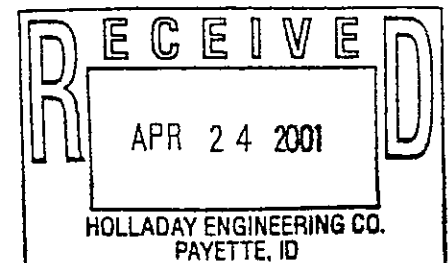
Your consultants have submitted the required information on the well site and have certified that the site is generally acceptable for a new Public Water System well. We have reviewed that information and are approving the site per the *Idaho Rules for Public Drinking Water Systems* (IRPDWS), § 550.03.n, subject to the conditions listed below.

A. STANDARD CONDITIONS:

1. The approval is for the well site only. Construction of the well, pump house, and distribution system components cannot begin until plans and specifications are approved by both the Department of Environmental Quality (DEQ) and the Idaho Department of Water Resources (IDWR). We recommend that duplicate sets be sent to this office for plan and specification approval and to Rob Whitney at the IDWR Western Regional Office for the Well Drilling Permit.

The plans, specifications, and related documents will have to verify and augment the data provided in the initial Well Site Evaluation, ensuring full conformance to the IRPDWS. The design package should include at least the following:

- *General Plan and Specification Review Checklist*
- *Well Construction Design Checklist*



- *Well House and Equipment Design Checklist*
 - *Well schematic and specifications for drilling and disinfection. DEQ will conduct a concurrent review with Rob Whitney (334-2190), Idaho Department of Water Resources, Western Regional Office (IDWR-WRO)*
 - *Other items required per the checklists, rules, or standards; or site specific items deemed appropriate by the consultant*
2. New source monitoring must be tested by a certified laboratory and approved by DEQ before the water may be distributed to the public. The detailed list of parameters that need to be tested will be forwarded when the well construction is approved.

B. PROJECT SPECIFIC CONDITIONS:

1. Because Brookwood Subdivision is not an approved public drinking water system, the proposed well shall be accepted by the Eagle Water Corporation prior to this office issuing final approval of the well. Written proof of ownership should be provided as soon as possible.

II. Groundwater under Direct Influence of Surface Water

Idaho is required by federal drinking water regulations to determine whether groundwater sources serving public drinking water systems are directly influenced by surface water. "Groundwater Under the Direct Influence of Surface Water" (GWUDI) may contain disease causing organisms which are normally found only in surface water, and may require additional treatment including filtration and/or disinfection and contact time.

Based on information provided by your consultants, and accepted by DEQ, this source is classified as a Groundwater source. No treatment is required unless contamination occurs, future monitoring indicates a problem, or new federal rules require treatment (see last section).

III. Comments for Your Consideration:

Federal regulations could affect the design and operation of water systems using ground water sources:

- A. The proposed "Ground Water Disinfection Rule" will evaluate ground water sources that are not under the direct influence of surface water for vulnerability to microbial

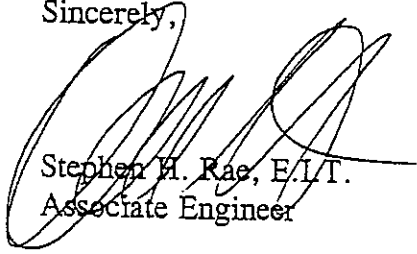
Michael B. Hormaechea
Brookwood Subdivision Well Site Evaluation
April 19, 2001
Page 3

contamination. If your source is found to be vulnerable, disinfection, including adequate contact time, prior to the first point of use, will be required. Therefore, the layout and design of your system must show a *location* for facilities that will provide for an equivalent of 30 minutes of contact time with a minimum residual of 0.2 parts per million of free chlorine. Actual *design* of the disinfection facilities is not required at this time. The Ground Water Disinfection Rule is still under development and subject to change.

- B. DEQ is in the process of adopting the "Disinfectants and Disinfection Byproducts Rule" that was enacted by EPA in 1998. DEQ will regulate certain compounds that are formed when disinfectants combine with naturally-occurring, organic constituents in water. The rule applies only to water systems that use disinfection. The rule will apply initially to systems with 10,000 connections; however, smaller systems could be affected by the year 2002.

If you have any questions, please contact me at (208) 373-0162, or via e-mail at srae@deq.state.id.us.

Sincerely,



Stephen H. Rae, E/I.T.
Associate Engineer

cc: Charles W. Ariss, P.E., Regional Manager-Engineering, Boise Regional Office
Bill Stroud, P.E., Holladay Engineering Co.
Robert DeShazo, Eagle Water Corporation
Source File #1 Eng. Eagle Water Corp, Brookwood Well
Reading File

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STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

AMENDED

AMENDMENT OF PERMIT
PERMIT NO. 63-12448

AMENDED

This is to certify, that CITY OF EAGLE
310 E STATE ST
EAGLE ID 83616

has requested a change to the above captioned water right(s). This change in water right(s) is authorized pursuant to the provisions of Section 42-211, Idaho Code. The approved amendment of permit is described as follows:

SOURCE

GROUNDWATER

Priority: April 8, 1998

BENEFICIAL USEPERIOD OF USERATE OF DIVERSIONANNUAL VOLUME

MUNICIPAL

01/01 to 12/31

3.25 CFS

1455.0 AF

LOCATION OF POINT(S) OF DIVERSION:

NWSW , Sec. 3, Township 04N, Range 01E
SWSW , Sec. 3, Township 04N, Range 01E
SESW , Sec. 5, Township 04N, Range 01E
ADA County

PLACE OF USE: See RemarksCONDITIONS OF APPROVAL AND REMARKS

1. Proof of construction of works and application of water to beneficial use shall be submitted on or before December 31, 1999.
2. Subject to all prior water rights.
3. The right holder shall use the full allotment of appurtenant surface water rights in conjunction with groundwater diverted under this right and shall only divert groundwater under this right when water from the appurtenant surface water rights cannot be delivered to the right holder.
4. This right shall not be used if the surface water right(s) appurtenant to the place of use is sold, transferred, leased or used on any other place of use.
5. After specific notification by the department, the right holder shall install a suitable measuring device or shall enter into an agreement with the department to determine the amount of water diverted from power records and shall annually report the information to the department.
6. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code.
7. The issuance of this right does not grant any right-of-way or easement across the land of another.

PAGE 2

AMENDED

AMENDED

PERMIT NO. 63-12448

CONDITIONS OF APPROVAL AND REMARKS

8. The Director retains jurisdiction to require the right holder to provide purchased or leased natural flow or stored water to offset depletion of Lower Snake River flows if needed for salmon migration purposes. The amount of water required to be released into the Snake River or a tributary, if needed for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this permit.
9. Rights 63-11413, 63-12017 and 63-12448 when combined shall not exceed a total diversion rate of 3.25 cfs and a total annual maximum diversion volume of 1455.0 af.
10. Points of diversion locally known as City of Eagle Wells #1 and 2, and Floating Feather Well.
11. Place of use is located within city limits of Eagle and surrounding service area.
12. Rights 63-11413 and 63-12017 are also diverted from the wells located in the NWSW and SWSW, S3, T4N, R1E.
13. Water bearing zone to be appropriated is from 183 to 602 feet.

Witness my hand this 7th day of April, 2000
Chief, Water Allocation Bureau

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

AMENDED

AMENDMENT OF PERMIT
PERMIT NO. 63-11413

AMENDED

This is to certify, that CITY OF EAGLE
PO BOX 477

EAGLE ID 83616-0477

has requested a change to the above captioned water right(s). This change in water right(s) is authorized pursuant to the provisions of Section 42-211, Idaho Code. The approved amendment of permit is described as follows:

SOURCE

GROUNDWATER

Priority: April 2, 1991

BENEFICIAL USEPERIOD OF USERATE OF DIVERSIONANNUAL VOLUME

MUNICIPAL

01/01 to 12/31

3.15 CFS

540.0 AF

LOCATION OF POINT(S) OF DIVERSION:

NWSW , Sec. 3, Township 04N, Range 01E
SWSW , Sec. 3, Township 04N, Range 01E
SWSW , Sec. 4, Township 04N, Range 01E
NESE , Sec. 4, Township 04N, Range 01E
ADA County

PLACE OF USE: See RemarksCONDITIONS OF APPROVAL AND REMARKS

1. Proof of construction of works and application of water to beneficial use shall be submitted on or before September 1, 2000.
2. Subject to all prior water rights.
3. The issuance of this right does not grant any right-of-way or easement across the land of another.
4. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code.
5. After specific notification by the department, the right holder shall install a suitable measuring device or shall enter into an agreement with the department to determine the amount of water diverted from power records and shall annually report the information to the department.
6. The right holder is responsible on an on-going basis to provide a well suitable for monitoring as determined by the Department.
7. The right holder is responsible to insure that pumpage under this water right does not directly cause the water level to significantly decline in any domestic well drilled and in use prior to March 29, 1978, or to cause the water level in any other well having a prior right to exceed a reasonable pumping level, unless the right holder provides reasonable compensation or mitigation to the prior water right holder for the reduced water levels as determined by the Director.

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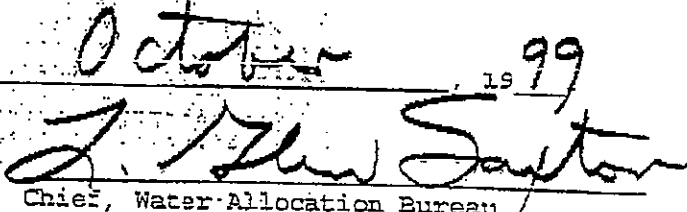
AMENDED

AMENDED

PERMIT NO. 63-11413

CONDITIONS OF APPROVAL AND REMARKS

8. Farmers Union Canal Company water shall be utilized for the irrigation of the lots in Lexington Hills and Trail Creek Ranch parcels equal to or greater than one-half acre in size during periods when water is being delivered in the canal. This water right may be used for irrigation purposes only if the entire amount of water from the Farmers Union Canal Co. remains with the lands in Lexington Hills and Trail Creek Ranch. Sale or transfer of surface water from any portion of these properties will be cause for the Department to further limit the use of this right.
9. The right holder shall permanently maintain totalizing flow measurement devices of a type approved by the Department at each well. The water right holder shall provide flow measurements to the Department on a frequency determined by the Department.
10. Each lot which receives water under this right shall be metered.
11. Rights 63-11413, 63-12017, and 63-12448 when combined shall not exceed a total diversion rate of 3.25 cfs.
12. Rights 63-12017 and 63-12448 also diverted through the point(s) of diversion described above.
13. Points of diversion were formerly known as Hormaechea Wells 1 and 2 and Lexington Wells 1 and 2. They are currently known as City of Eagle Wells 1-4.
14. Place of use is located within the city limits of Eagle and the surrounding service area.

Witness my hand this 18th day of October, 1999
Chief, Water Allocation BureauMICROFILMED
NOV 12 1999

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCESAMENDMENT OF PERMIT
PERMIT NO. 63-11413

This is to certify, that CITY OF EAGLE
PO BOX 477

EAGLE ID 83615-0477

has requested a change to the above captioned water right(s). This change in water right(s) is authorized pursuant to the provisions of Section 42-211, Idaho Code. The approved amendment of permit is described as follows:

SOURCE

GROUNDWATER

Priority: April 2, 1991

BENEFICIAL USE

MUNICIPAL

PERIOD OF USE

01/01 to 12/31

RATE OF DIVERSION

3.25 CFS

ANNUAL VOLUME

540.0 AF ..

LOCATION OF POINT(S) OF DIVERSION:

NWSW , Sec. 3, Township 04N, Range 01E
SWSW , Sec. 3, Township 04N, Range 01E
SWSW , Sec. 4, Township 04N, Range 01E
NESE , Sec. 4, Township 04N, Range 01E
ADA County

PLACE OF USE: See RemarksCONDITIONS OF APPROVAL AND REMARKS

1. The issuance of this right does not grant any right-of-way or easement across the land of another.
2. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code.
3. After specific notification by the department, the right holder shall install a suitable measuring device or shall enter into an agreement with the department to determine the amount of water diverted from power records and shall annually report the information to the department.
4. The right holder is responsible on an on-going basis to provide a well suitable for monitoring as determined by the Department.
5. The right holder is responsible to insure that pumpage under this water right does not directly cause the water level to significantly decline in any domestic well drilled and in use prior to March 29, 1978, or to cause the water level in any other well having a prior right to exceed a reasonable pumping level, unless the right holder provides reasonable compensation or mitigation to the prior water right holder for the reduced water levels as determined by the Director.

PAGE 2

PERMIT NO. 63-11413

CONDITIONS OF APPROVAL AND REMARKS

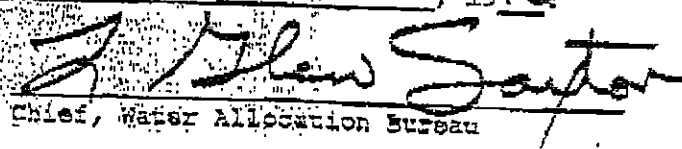
6. Farmers Union Canal Company water shall be utilized for the irrigation of the lots in Lexington Hills and Trail Creek Ranch parcels equal to or greater than one-half acre in size during periods when water is being delivered in the canal. This water right may be used for irrigation purposes only if the entire amount of water from the Farmers Union Canal Co. remains with the lands in Lexington Hills and Trail Creek Ranch. Sale or transfer of surface water from any portion of these properties will be cause for the Department to further limit the use of this right.
7. The right holder shall permanently maintain totalizing flow measurement devices of a type approved by the Department at each well. The water right holder shall provide flow measurements to the Department on a frequency determined by the Department.
8. Each lot which receives water under this right shall be metered.
9. Rights 63-11413, 63-12017, and 63-12448 when combined shall not exceed a total diversion rate of 3.25 cfs.
10. Rights 63-12017 and 63-12448 also diverted through the point(s) of diversion described above.
11. Points of diversion were formerly known as Hornaschee Wells 1 and 2 and Lexington Wells 1 and 2. They are currently known as City of Eagle Wells 1-4.
12. Place of use is located within the city limits of Eagle and the surrounding service area.

Witness my hand this

20th

day of

November, 1998


Chief, Water Allocation Bureau

Form 211
10/93
(GP Version)

DRAFT

Receipt No. _____
Received by _____
Date _____

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR AMENDMENT OF A PERMIT

Applicant The City of Eagle¹Phone 208-939-6813Address 310 E. State Street, Eagle, ID 83616

I am the owner and holder of Permit to Appropriate the Public Waters of the State of Idaho No. 63-12448 and request that the permit and permit map be amended and/or changed as follows:

Purpose of Amendment:

- ☐ Change point of diversion ☒ Add diversion point(s) ☐ Change place of use
☐ Change nature of use ☐ Change period of use ☐ Other _____

1. Point(s) of Diversion:

Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Local name for diversion
	SW	SW	SW	\$3	T4N	R1E	Ada	City of Eagle Well #1 (aka Lexington Hills Well #1)
		NW	SW	\$3	T4N	R1E	Ada	City of Eagle Well #2 (aka Lexington Hills Well #2)
		SW	SW	\$4	T4N	R1E	Ada	City of Eagle Well #3 (aka "Brookwood Subdivision Well")
		NE	SE	\$4	T4N	R1E	Ada	City of Eagle Well #4
		SE	SW	\$5	T4N	R1E	Ada	Floating Feather Well

2. Period and nature of use: (irrigation, domestic, stockwatering, industrial, etc.)
amount 3.25 cfs² for municipal (per Idaho Code § 42-202B(4)) purposes from 01/01 to 12/31
(cfs/acre foot per annum) (water use) (begin month) (end month)

3. Place of use or land to be irrigated:

Twp.	Rge.	Sec.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				Totals
			NE 1/4	NW 1/4	SE 1/4	SW 1/4	NE 1/4	NW 1/4	SE 1/4	SW 1/4	NE 1/4	NW 1/4	SE 1/4	SW 1/4	NE 1/4	NW 1/4	SE 1/4	SW 1/4	

See the City of Eagle's most recent Description of
Municipal Service Area, filed separately with the
Department.

4. a. Who owns the property at the point of diversion? The City of Eagle owns or controls City of Eagle Well sites 1 through 4. United Water Idaho ("UWID") owns the Floating Feather Well. UWID has previously consented to the inclusion of this potential POD, subject to future negotiation of an agreement on use of the Floating Feather Well.
- b. Who owns the land to be irrigated at the place of use? Not applicable to a municipal water right.
- c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing: Ownership of place of use is not applicable to a municipal water right.

Total acres not applicable**DRAFT**

¹For city officials, see City of Eagle's most recent Description of Municipal Service Area, filed separately with the Department.

²As limited by Condition No. 11 in the Permit as issued (limiting the total combined diversion rate to 3.25 for Nos. 63-11413, 63-12017 and 63-12448).

The place of use is the municipal service area.
The additional point of diversion for Floating Feather Well is
as shown in UWID's Application for Permit (No. 63-12452)
reproduced below.

S:\Wt\CHM\Water Applications\Eagle2001-08-25 Application for Amendment of a Perm - #53-1244B.wpd

DRINKING WATER MONITORING REQUIREMENTS

FOR NEW COMMUNITY PUBLIC DRINKING WATER SOURCES

All the following testing must be completed and demonstrate that water falls within allowable contamination levels (below MCL) before a newly developed source can deliver drinking water to the public. The only exceptions to monitoring requirements are denoted by a parenthetical statement or footnote symbol beside the name of the contaminant.

Required Monitoring or Determination	Regulatory Status	Action After Review of Results
Coliform	Coliform Rule	Contamination will require disinfection treatment.
Surface Water Influence Determination (Required only for all wells located less than 500 feet horizontally from surface water and wells screened or perforated less than 50 feet deep and all springs and infiltration galleries)	Surface Water Treatment Rule	Determination that water is surface water influenced will require disinfection, turbidity monitoring and probably filtration.
Treatment Contact Time (Only if disinfection is required)	Coliform Rule or Surface Water Treatment Rule	If disinfection is required, an IDEQ engineer will work with water system to ensure contact time is sufficient to deactivate the required percentage of organisms.

MONITORING REQUIRED FOR NEW WATER SOURCE DEVELOPMENT

VOC Contaminant	Regulatory Status	MCL mg/l	MDL mg/l
Vinyl chloride	Phase II	.002	.0005
Benzene	Phase II	.005	.0005
Carbon tetrachloride	Phase II	.005	.0005
1,2-dichloroethane	Phase II	.005	.0005
Trichloroethylene	Phase II	.005	.0005
<i>para</i> -dichlorobenzene (1,4-dichlorobenzene)	Phase II	.075	.0005
1,1-dichloroethylene	Phase II	.007	.0005
1,1,1-trichloroethane	Phase II	0.2	.0005
<i>cis</i> -1,2-dichloroethylene	Phase II	.07	.0005
1,2-dichloropropane	Phase II	.005	.0005
Ethylbenzene	Phase II	0.7	.0005
Monochlorobenzene	Phase II	0.1	.0005
<i>ortho</i> -dichlorobenzene (1,2-dichlorobenzene)	Phase II	0.6	.0005
Styrene	Phase II	0.1	.0005
Tetrachloroethylene	Phase II	.005	.0005
Toluene	Phase II	1	.0005
<i>trans</i> -1,2-dichloroethylene	Phase II	0.1	.0005
Xylenes (total)	Phase II	10	.0005
Dichloromethane	Phase V	.005	.0005
1,2,4-trichlorobenzene	Phase V	.07	.0005
1,1,2-trichloroethane	Phase V	.005	.0005
Chloroform	THM rule: (Only systems serving a population of 10,000 or more people are required to conduct this test)	.10 mg/l is the MCL for the sum of the concentrations of all 4 THMs.	
Bromodichloromethane			
Chlorodibromomethane			
Bromoform			
<i>meta</i> -dichlorobenzene (1,3-dichlorobenzene)	Unregulated	Unregulated	
1,1-dichloropropene	Unregulated	Unregulated	
1,1-dichloroethane	Unregulated	Unregulated	
1,1,2,2-tetrachloroethane	Unregulated	Unregulated	
1,3-dichloropropane	Unregulated	Unregulated	
Chloromethane	Unregulated	Unregulated	
Bromomethane	Unregulated	Unregulated	
1,2,3-trichloropropane	Unregulated	Unregulated	
1,1,1,2-tetrachloroethane	Unregulated	Unregulated	
Chloroethane	Unregulated	Unregulated	
2,2-dichloropropane	Unregulated	Unregulated	
<i>ortho</i> -chlorotoluene (1,2-chlorotoluene)	Unregulated	Unregulated	
<i>para</i> -chlorotoluene (1,4-chlorotoluene)	Unregulated	Unregulated	
Bromobenzene	Unregulated	Unregulated	
1,3-dichloropropene	Unregulated	Unregulated	

SOC Contaminant	Regulatory Status	MCL mg/l	MDL mg/l
Alachlor	Phase II	.002	.0002
Aldicarb	Phase II	Delayed	.0005
Aldicarb sulfoxide	Phase II	Delayed	.0005
Aldicarb sulfone	Phase II	Delayed	.0008
Atrazine	Phase II	.003	.0001
Carbofuran	Phase II	.04	.0009
Chlordane	Phase II	.002	.0002
Dibromochloropropane (DBCP)	Phase II	.0002	.00002
2,4-D (2,4-dichlorophenoxyacetic acid)	Phase II	.07	.0001
Ethylene dibromide (EDB)	Phase II	.00005	.00001
Heptachlor	Phase II	.0004	.00004
Heptachlor epoxide	Phase II	.0002	.00002
Lindane	Phase II	.0002	.00002
Methoxychlor	Phase II	.04	.0001
Polychlorinated biphenyls (PCBs)	Phase II	.0005	.0001
Pentachlorophenol (penta)	Phase II	.001	.00004
Toxaphene	Phase II	.003	.001
2,4,5-TP (2,4,5-trichlorophenoxypropanoic acid) or (Silvex)	Phase II	.05	.0002
Benz[a]pyrene	Phase V	.0002	.00002
Dalapon	Phase V	0.2	.001
Di(2-ethylhexyl)adipate	Phase V	0.4	.0006
Di(2-ethylhexyl)phthalate	Phase V	.006	.0006
Dinoseb	Phase V	.007	.0002
Diquat †	Phase V	.02	.0004
Endothall †	Phase V	0.1	.009
Endrin (Also regulated under phase I with a MCL of .0002 mg/l)	Phase I/V	.002	.00001
Glyphosate †	Phase V	0.7	.006
Hexachlorobenzene	Phase V	.001	.0001
Hexachlorocyclopentadiene	Phase V	.05	.0001
Oxamyl (Vydate)	Phase V	0.2	.002
Picloram	Phase V	0.5	.0001
Simazine	Phase V	.004	.00007
2,3,7,8-TCDD★ (2,3,7,8-tetrachlorodibenzodioxin) or (Dioxin)★	Phase V	3x10 ⁻⁸	5x10 ⁻⁹
Aldrin	Unregulated	Unregulated	
Butachlor	Unregulated	Unregulated	
Carbaryl	Unregulated	Unregulated	
Dicamba	Unregulated	Unregulated	
Dieldrin	Unregulated	Unregulated	
3-hydroxycarbofuran	Unregulated	Unregulated	
Methomyl	Unregulated	Unregulated	
Metolachlor	Unregulated	Unregulated	
Metribuzin	Unregulated	Unregulated	
Propachlor	Unregulated	Unregulated	

★ New source testing for dioxin and asbestos will not be required except in special circumstances. You will be notified if your system is required to test for dioxin and/or asbestos.

† IDEQ may not require monitoring for diquat, endothall, or glyphosate for systems serving 150 connections or less.

IOC Contaminant	Regulatory Status	MCL mg/l
Fluoride	Phase II	4.0
Asbestos★	Phase II	7 million fibers per liter (> 10µm long)
Barium	Phase II	2
Cadmium	Phase II	0.005
Chromium	Phase II	0.1
Mercury	Phase II	0.002
Nitrate	Phase II	10 (as nitrogen)
Nitrite	Phase II	1 (as nitrogen)
Total nitrate and nitrite	Phase II	10 (as nitrogen)
Selenium	Phase II	0.05
Antimony	Phase V	0.006
Arsenic	Phase I (Regulation currently being modified to reduce MCL)	0.05
Beryllium	Phase V	0.004
Cyanide (as free cyanide)	Phase V (no monitoring if waived)	0.2
Nickel	Phase V	0.1
Thallium	Phase V	0.002
Lead	Lead/Copper Rule	0.015
Sulfate	Phase V (delayed)	
Sodium	Unregulated	Unregulated
Alpha Radioactivity	Phase I	15 pCi/L
Beta Radioactivity (Required only of systems over 100,000 population)	Phase I	4 mREM/yr
Sand content (for wells only)	IDAPA 16.01.08550,02.d.iii	5 ppm requires screening/gravel packing
Temperature (properly taken on site)	Corrosivity/lead ban	Non corrosive to lead and copper
pH (properly taken on site)	Corrosivity/lead ban	Non corrosive to lead and copper
Total Dissolved Solids (TDS)	Corrosivity/lead ban	Non corrosive to lead and copper
Alkalinity	Corrosivity/lead ban	Non corrosive to lead and copper
Calcium Hardness	Corrosivity/lead ban	Non corrosive to lead and copper
Turbidity (only if surface water or determination surface water influence is made)	Surface Water Treatment Rule	Performance Standard

Monitoring Recommended but not Required	Regulatory Status	MCL
Aluminum	Secondary	0.05 to 0.20 mg/l
Chloride	Secondary	250 mg/l
Color	Secondary	15 Color units
Copper	Secondary	1.0 mg/l
Fluoride	Secondary	2.0 mg/l
Foaming agents	Secondary	0.5 mg/l
Iron	Secondary	0.3 mg/l
Manganese	Secondary	0.05 mg/l
Odor	Secondary	3 Threshold odor number
Silver	Secondary	0.1 mg/l
Zinc	Secondary	5 mg/l

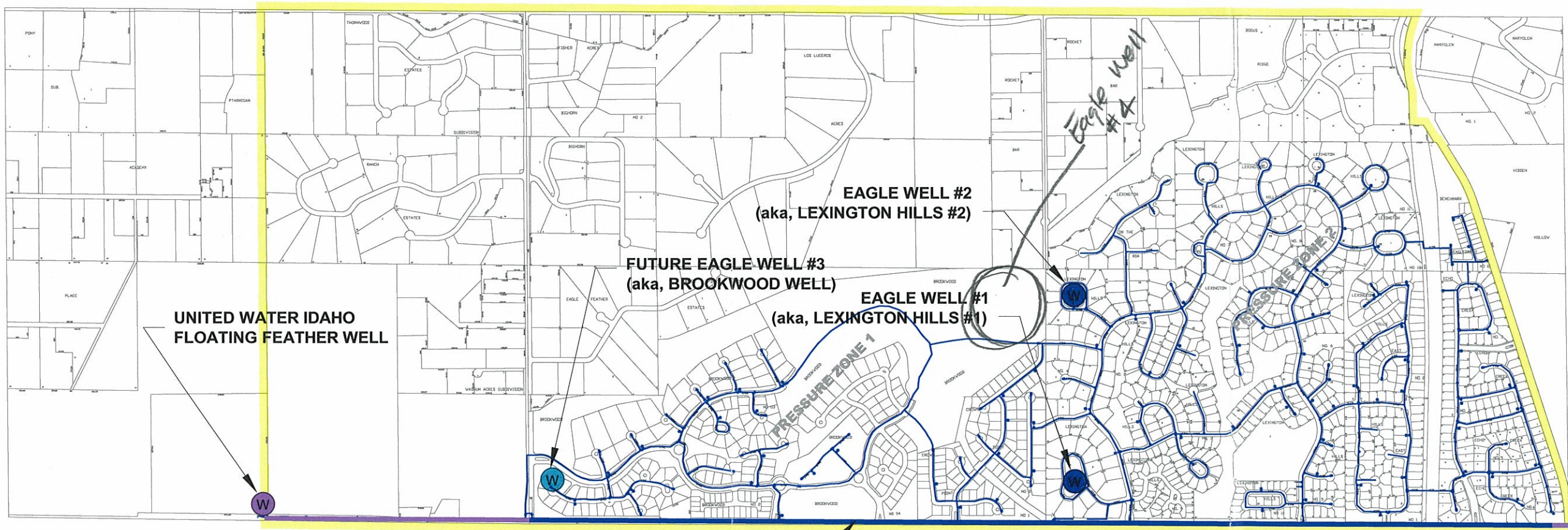
★ New source testing for dioxin and asbestos will not be required except in special circumstances. You will be notified if your system is required to test for dioxin and/or asbestos.

CITY OF EAGLE WATER SYSTEM



LEGEND

- CITY OF EAGLE WATER SYSTEM**
- W PROPOSED BROOKWOOD WELL
 - W COSTRUCTED WELLS
 - PIPELINES
 - SERVICE AREA BOUNDARY
- UNITED WATER IDAHO SYSTEM**
- W FLOATING FEATHER WELL
 - PIPELINE



TO UWI HIDDEN
HOLLOW RESERVOIR

12" PIPELINE

This map represents a compilation of public information from diverse records gathered by the City of Eagle and Holladay Engineering Company. The purpose for which this map is prepared is an overall general representation of positional relationships, and not a definitive description of location of any class of objects or conditions. Hence, no responsibility for errors can be or is assumed. The City of Eagle and Holladay Engineering Company CANNOT AND DO NOT GUARANTEE the absence of errors or the corrections of all information furnished to them for the preparation of this map.

Revised October 2003

HOLLADAY ENGINEERING CO.
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LEGEND

APPROXIMATE WELL LOCATIONS

PROTESTANTS

- EAGLE WATER CO. CONSTRUCTED WELLS
- BURTON GROUP WELLS
- CHASE ESTATE WELLS
- FISHER WELL

CITY OF EAGLE

- PROPOSED BROOKWOOD WELL
- CONSTRUCTED WELLS
- SERVICE AREA BOUNDARY

UNITED WATER IDAHO

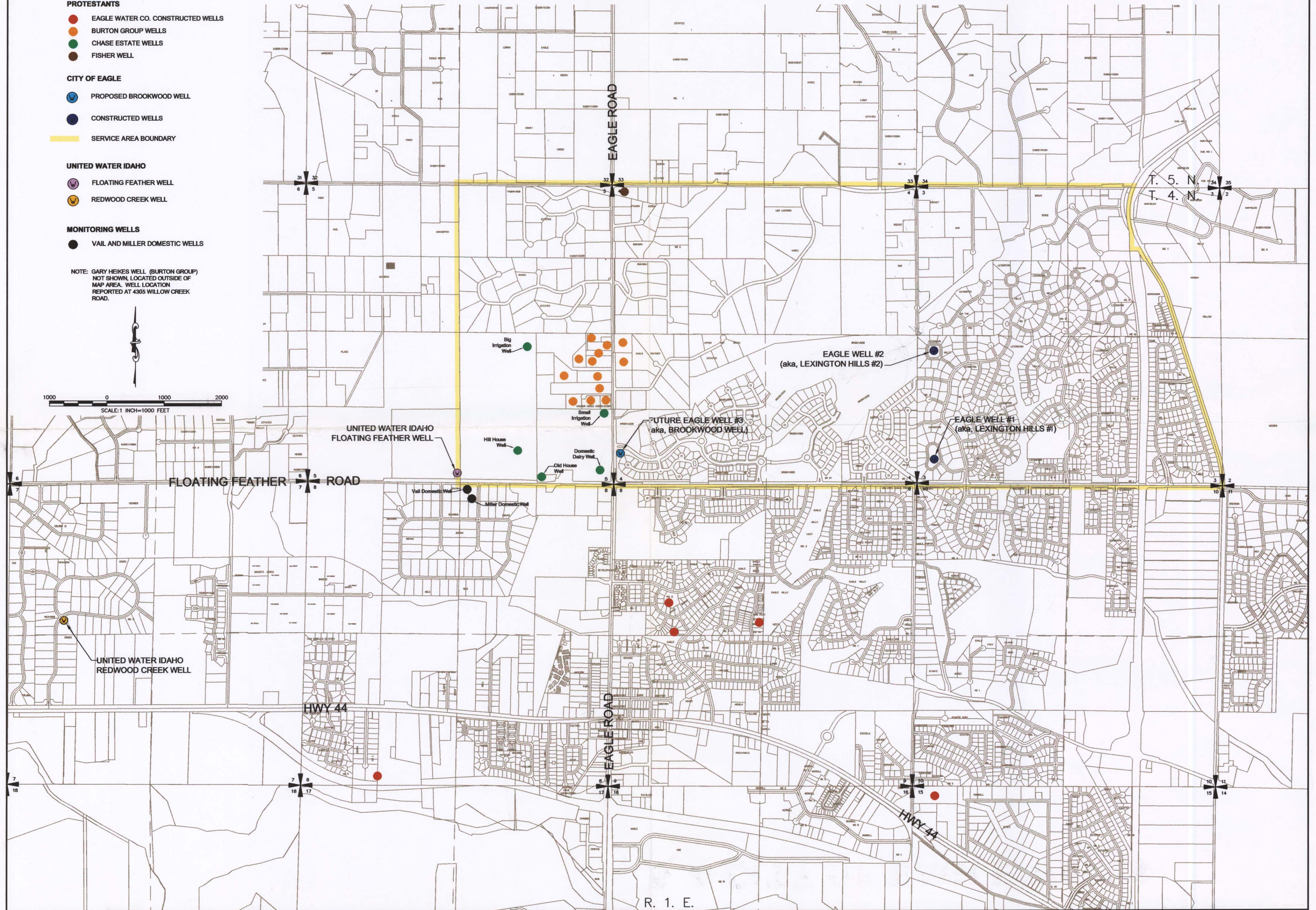
- FLOATING FEATHER WELL
- REDWOOD CREEK WELL

MONITORING WELLS

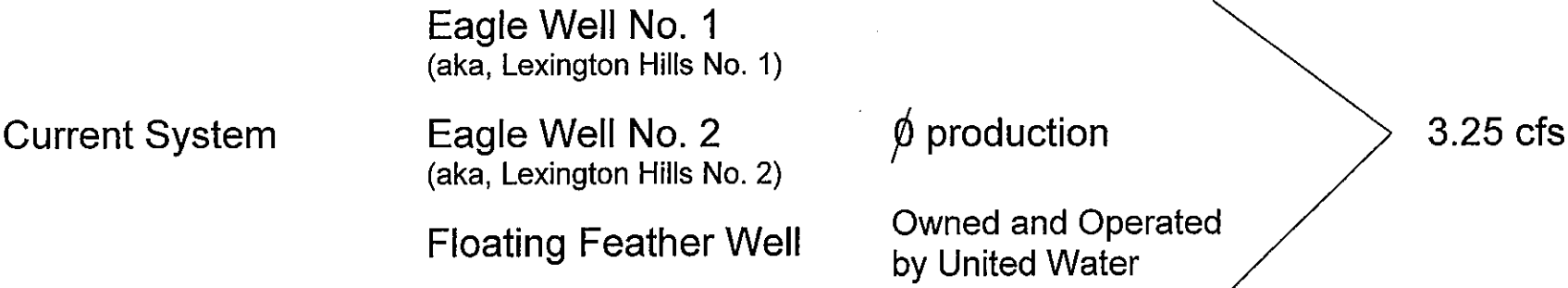
- VAIL AND MILLER DOMESTIC WELLS

NOTE: GARY HEIKES WELL (BURTON GROUP)
NOT SHOWN, LOCATED OUTSIDE OF
MAP AREA. WELL LOCATION
REPORTED AT 4305 WILLOW CREEK
ROAD.

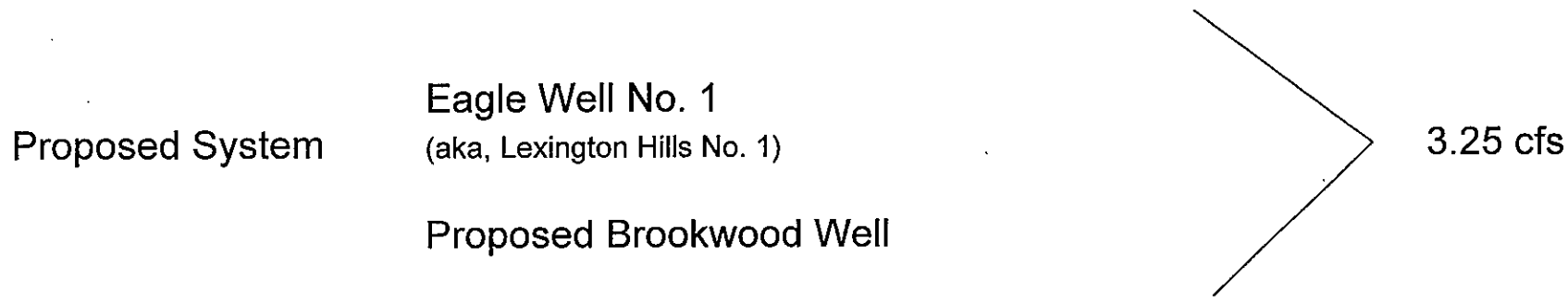
PROTESTANTS & CITY OF EAGLE WELLS



City of Eagle Water System



Fire Protection: United Water Idaho agreement



Fire Protection: United Water Idaho agreement and City system

TERRY M. SCANLAN
ENGINEER / HYDROGEOLOGIST

EDUCATION: B.S. Geological Engineering, University of Idaho, 1983
M.S. Geological Engineering, University of Idaho, 1986

REGISTRATION: Professional Geologist - Idaho (1989, #646), Oregon (#G1311)
Professional Engineer - Idaho (1990, #6266)

SUMMARY:

Mr. Scanlan is the Principal Engineer and Hydrogeologist for Scanlan Engineering. He has over fifteen years of professional experience in hydrogeology, environmental engineering, and water resource engineering.

Mr. Scanlan's work experience has focused on aquifer and well testing, well design and construction, surface water and ground water pump systems, water development studies, and water rights. Mr. Scanlan also has experience in geothermal resource development, mining related environmental studies, groundwater drainage investigations, soils investigations, geologic mapping, and wastewater land application studies.

REPRESENTATIVE PROJECT EXPERIENCE:

Groundwater Development

- Groundwater development projects at more than 100 sites in Idaho for public and private water utilities, subdivisions, schools, and industries including production well and pump design, aquifer pumping tests, exploration drilling programs, and groundwater development studies.
- Design, construction monitoring, and testing of three 1,000 to 1,200-foot, high capacity industrial water supply wells and pump systems for Micron Technology in Boise Idaho. Mr. Scanlan has also provided consulting services regarding long-term water supply management, water rights, pipelines, pumping stations, aquifer recharge and wastewater issues.
- Irrigation well and pump system design, surface water pump system design, construction monitoring, and well testing at municipal parks in Boise, Idaho. These projects have included work on approximately 80 well and pump systems.
- Evaluations of public water system facilities and water quality in community water systems in northern and southern Idaho.
- Design, construction, and testing of salt water production wells for large aquarium projects in Guam and Taiwan.

TERRY M. SCANLAN (continued)

- Evaluation of groundwater potential for snowmaking supplies at Sun Valley and Bogus Basin ski areas, and design and testing of the water supply well for the snow making system at Sun Valley.
- Evaluation and testing of infiltration galleries and Ranney Collectors at Sequim, Washington (horizontal gallery, Dungeness River), Irrigon, Oregon (four Ranney Collectors, Columbia River), Boise, Idaho (three Ranney Collectors, Boise River).
- Groundwater development studies, well construction, and aquifer testing for fish hatchery projects in the Columbia, Umatilla, Walla Walla, Imnaha, and Grand Ronde river basins of Oregon for the Bonneville Power Administration. These projects included test well drilling and aquifer tests at ten locations, with well construction in alluvial and basalt aquifers.
- Hydrogeologic investigations, groundwater exploration drilling, and design, construction, and testing of production wells for municipal groundwater supply in Olympia, Washington.
- Design of the domestic supply, mine-pit dewatering, and industrial supply wells for the Beartrack mining project at Leesburg, Idaho.
- Resident Geologist during drilling and completion of a 3,015-foot water supply well at Wright, Wyoming.
- Evaluation of the groundwater aquifers of northwest North Dakota as part of the NAWIS regional water supply system.

Water Rights

- Preparation of more than 100 water right transfers and water right permit applications for public and private clients in Idaho.
- Evaluation of surface water and groundwater interactions, well interference, irrigation development, and consumptive water use related to water right transfers in the Boise Valley, Wood River Valley, Mud Lake, Magic Valley, Big Lost River, and Little Lost River areas of Idaho.
- Evaluation and measurement of flow from springs involved in water right disputes along the Snake River near Twin Falls, Idaho.
- Investigations related to Snake River Basin Adjudication claims, including calculation of irrigation requirements and seepage losses, measurement of irrigation diversion rates, determination of historically irrigated areas.
- Expert witness testimony concerning water use, well interference and the interaction of surface water and groundwater for clients in southern Idaho.

TERRY M. SCANLAN (continued)

- Evaluation of irrigation diversions, natural flow, return flow and storage accounting on the Payette River system for the Payette Water Users Association.
- Evaluation of Federal and Tribal in-stream flow claims in the Snake and Salmon River Basins.
- Preparation of mitigation plans to allow groundwater diversions for irrigation and industrial use in moratorium areas or groundwater management areas in the Boise River and Snake River basins.

Geothermal Resource Development

- Construction monitoring for drilling and hydraulic fracturing of a 2,300-foot geothermal injection well for the Veterans Administration Medical Center in Boise, Idaho.
- Project manager for detailed study of the Boise Front Geothermal Aquifer for the City of Boise and Boise Warm Springs Water District. The study included computer modeling of hydraulic and thermal impacts of increased geothermal fluid production and spent fluid injection. Mr. Scanlan served as project manager for design, construction, and testing of a 3,200-foot geothermal injection well for the City. Mr. Scanlan is currently working as a consultant to the Idaho Water Resources Research Institute on investigations of the Boise Front Geothermal Aquifer.
- Geothermal resource monitoring associated with production and injection wells for Oregon Trail Mushroom Company in Vale, Oregon.
- Aquifer testing and high-capacity variable-speed pump system design for deep geothermal space-heating wells at the College of Southern Idaho.
- Geothermal aquifer investigations, well testing, production well and pump design, and water-level monitoring for J.R. Simplot Company at aquaculture facilities in Caldwell and Grand View, Idaho.
- Geothermal monitoring associated with a water right dispute at Belvidere Hot Springs near Cascade, Idaho.

Environmental

- Wastewater land application projects, including site characterizations, soil and groundwater investigations, or permit preparation, for the following clients: Mountain Home, Idaho (municipal), IBP, Inc. and Armour Fresh Meats (meat processing), Micron Technology (semiconductor), J.R. Simplot Company (potato

TERRY M. SCANLAN (continued)

processing at three sites), Carnation (tomato processing), Simplot Dairy Products and Sorrento Lactalis (cheese production) and several mining clients (treated cyanide solutions).

- Baseline groundwater and surface water monitoring studies, groundwater characterization for permitting and environmental impact statements at mining projects, and water supply development in Idaho (Leesburg, Stibnite, Sunbeam), Oregon (Grassy Mountain, Farewell Bend), South Dakota (Lead), and Nevada (Eureka, Lovelock).

PREVIOUS EMPLOYMENT:

Montgomery Watson (1986-1993)

Prior to forming Scanlan Engineering in 1994, Mr. Scanlan was a Supervising Hydrogeologist for Montgomery Watson in Boise, Idaho. In that position, he managed and conducted investigations related to groundwater development and groundwater contamination at locations throughout the western United States.

U.S. Geological Survey (1984-1986)

Mr. Scanlan was employed by the United States Geological Survey as a field assistant in the geologic division prior to joining Montgomery Watson in 1986. Responsibilities included geologic mapping, landslide hazard evaluation, and mineral potential studies. Mr. Scanlan worked on the Challis and Hailey 2° Quadrangle CUSMAP programs.

Idaho Geological Survey (1982-1983)

As a geologic field assistant, Mr. Scanlan mapped geology in various parts of central Idaho. He was involved in the River-of-No-Return Wilderness mineral evaluation study and the Challis 2° Quadrangle CUSMAP program.

ORGANIZATIONS:

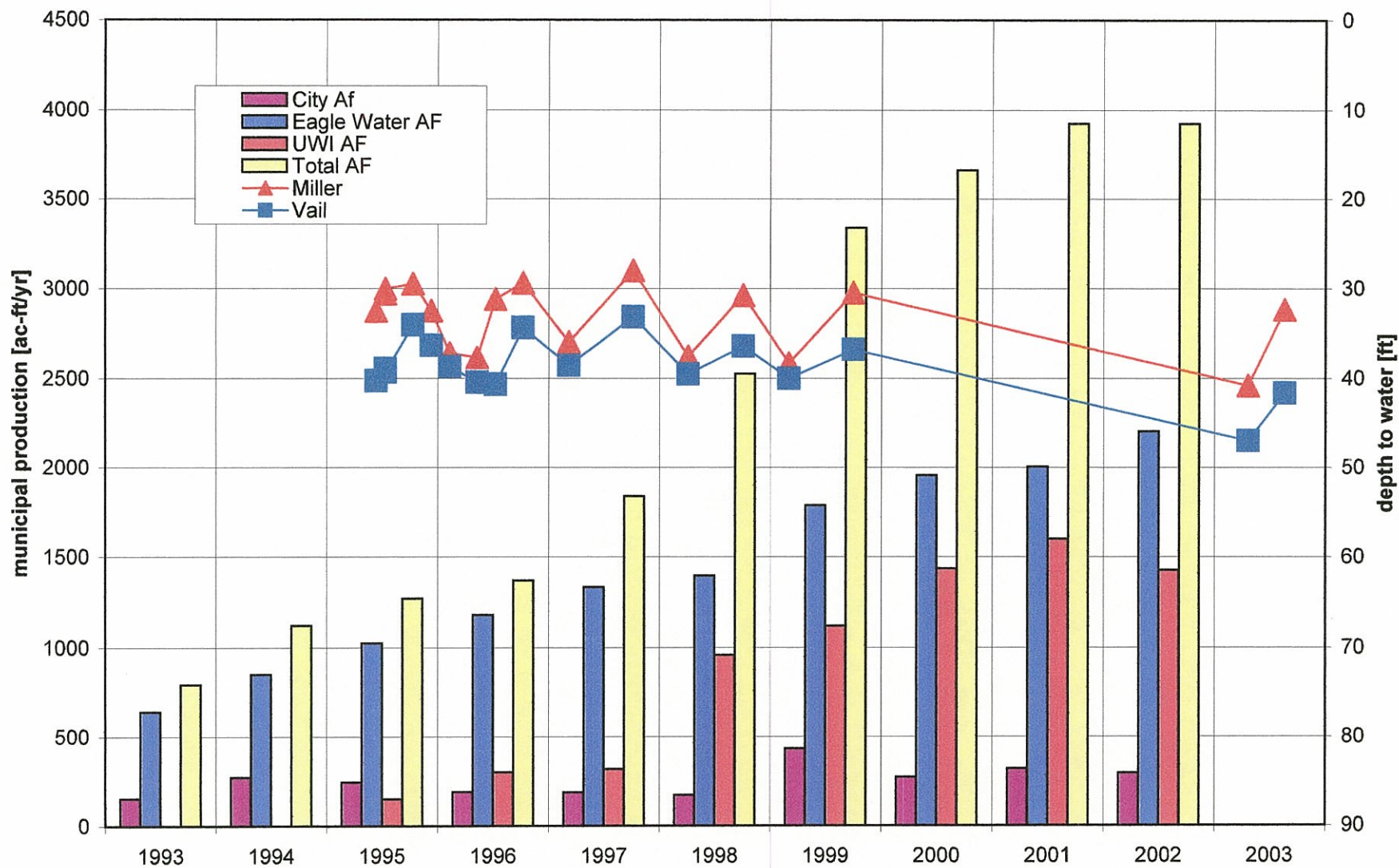
Idaho Association of Professional Geologists

Idaho Groundwater Association

National Groundwater Association - Association of Ground Water Scientists and Engineers

PUBLICATIONS:

Kiilsgaard, T.H., T.M. Scanlan, and D.E. Stewart, 1997, Geology of the Boise Basin Vicinity, Boise, Ada, and Elmore Counties, Idaho. Idaho Geological Survey, Map No. 7.



United Water Idaho

Floating Feather & Redwood Creek Monthly Well Production

1997

FF/RWC	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ATING FEATHER	0	0	10	2,710	10,810	8,110	21,530	21,290	17,820	4,530	0	20	86,830
EDWOOD CREEK	480	460	600	2,570	2,490	2,500	1,720	1,540	1,250	1,490	790	770	16,660
TOTAL	480	460	610	5,280	13,300	10,610	23,250	22,830	19,070	6,020	790	790	103,490

1998

FF/RWC	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ATING FEATHER	790	40	20	11,990	13,320	36,571	64,999	43,142	58,669	24,210	18	4,150	257,919
EDWOOD CREEK	0	1,000	130	2,620	4,330	4,992	2,222	38,895	5	0	0	0	54,194
TOTAL	790	1,040	150	14,610	17,650	41,563	67,221	82,037	58,674	24,210	18	4,150	312,113

1999

FF/RWC	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ATING FEATHER	4,417	3,636	2,303	30,649	46,974	57,179	53,630	55,909	51,999	24,477	5,426	6,276	342,875
EDWOOD CREEK	0	0	0	0	84	5,054	13,047	2,241	486	0	0	368	21,280
TOTAL	4,417	3,636	2,303	30,649	47,058	62,233	66,677	58,150	52,485	24,477	5,426	6,644	364,155

2000

FF/RWC	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ATING FEATHER	7,600	13,616	11,277	37,465	56,565	58,248	64,714	67,857	56,885	41,710	17,860	26,550	460,347
EDWOOD CREEK	40	49	917	2,276	106	2,294	1,071	286	0	0	12	0	7,051
TOTAL	7,640	13,665	12,194	39,741	56,671	60,542	65,785	68,143	56,885	41,710	17,872	26,550	467,398

2001

FF/RWC	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ATING FEATHER	23,018	18,681	22,422	29,947	64,311	67,399	67,754	69,710	59,694	44,712	26,286	26,570	520,504
EDWOOD CREEK	0	0	0	25	0	22	123	130	0	386	0	0	686
TOTAL	23,018	18,681	22,422	29,972	64,311	67,421	67,877	69,840	59,694	45,098	26,286	26,570	521,190

2002

FF/RWC	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ATING FEATHER	26,950	16,390	9,156	31,186	62,007	58,650	31,396	35,837	53,949	39,947	5,730	17,861	389,059
EDWOOD CREEK	13	0	2	50	298	6,079	37,994	30,834	33	7	0	0	75,310
TOTAL	26,963	16,390	9,158	31,236	62,305	64,729	69,390	66,671	53,982	39,954	5,730	17,861	464,369

claimed and in accordance with the respective permit for same. Without waiving this objection, Eagle Water further responds:

63-7368 – Well No. 1

(a) the amount of water pumped and used:

- 1993 – 54,077,000 Total Production Gallons
- 1994 – 86,593,000 Total Production Gallons
- 1995 – 62,660,000 Total Production Gallons
- 1996 – 76,073,000 Total Production Gallons
- 1997 – 36,565,000 Total Production Gallons
- 1998 – 50,816,000 Total Production Gallons
- 1999 – 95,881,000 Total Production Gallons
- 2000 – 75,276,00 Total Production Gallons
- 2001 – 67,658,00 Total Production Gallons
- 2002 – 78,356,000 Total Production Gallons

(e) its location and depth – Well No. 1 is located in the SW ¼ of the NW ¼ of Section 9, T 4N, R1E, Ada County; the depth is 328 feet.

(f) The pumping level is 165 feet. The static water level is currently available for the following dates only:

- June 24, 1980 – 38 feet
- March 15, 1987 (Record available from IDWR)
- May 20, 1991 (Record available from IDWR)
- February 28, 1992 – pump on, 54 feet; pump off, 39 feet
- April 14, 1992 – pump on, 55 feet; pump off, 41 feet
- August 6, 1992 – pump on, 56 feet; pump off, 43 feet

63-7618- Well No. 2

(a) the amount of water pumped and used:

- 1993 – 111,136,000 Total Production Gallons
- 1994 – 99,453,000 Total Production Gallons
- 1995 – 104,540,000 Total Production Gallons
- 1996 – 110,003,000 Total Production Gallons
- 1997 – 7,140,000 Total Production Gallons
- 1998 – 12,489,000 Total Production Gallons
- 1999 – 22,700,000 Total Production Gallons
- 2000 – 18,629,000 Total Production Gallons
- 2001 – 20,847,000 Total Production Gallons
- 2002 – 30,231,000 Total Production Gallons

- (e) its location and depth – Well No. 2 is located in Lot No. 2, Block No. 3 of the Eagle Ranch Subdivision, located in Section 9, T4N, R1E, Ada County. The depth of the well is 230 feet.
- (f) The pumping level is 125 feet. The static water level is currently available for the following dates only:
 - o January 1976 – 39 feet
 - o February 28, 1992 – pump on, 129 feet; pump off, 48 feet
 - o April 14, 1992 – pump on, 132 feet; pump off 61 feet
 - o August 4, 1992 – pump on, 146 feet; pump off, 57 feet

63-9245 – Well No. 3

- (a) the amount of water pumped and used:
 - o 1993 – 43,554,000 Total Production Gallons
 - o 1994 – 32,500 Total Production Gallons
 - o 1995 – 210,000 Total Production Gallons
 - o 1996 – 5,000 Total Production Gallons
 - o 1997 – 0 Total Production Gallons; back-up use only
 - o 1998 – 7,500 Total Production Gallons
 - o 1999 – 7,500 Total Production Gallons
 - o 2000 – 45,000 Total Production Gallons
 - o 2001 – 15,000 Total Production Gallons
 - o 2002 – 17,500 Total Production Gallons
- (e) its location and depth: Well No. 3 is located in the SE ¼ of the NE ¼ of Section 9, T4N, R1E, Ada County; its depth is 466 feet.
- (f) The pumping level is 120 feet. The static water level is available for the following dates only:
 - o August 28, 1977 – 58 feet
 - o February 28, 1992 – pump on, 72.5 feet; pump off, 67.5
 - o August 6, 1992 – pump on, 71 feet; pump off, 64 feet

63-11798 – Well No. 4

- (a) the amount of water pumped and used:
 - o 1994 – 90,973,000 Total Production Gallons
 - o 1995 – 166, 591,000 Total Production Gallons
 - o 1996 – 198,430,000 Total Production Gallons
 - o 1997 – 390,750,000 Total Production Gallons
 - o 1998 – 343,911,000 Total Production Gallons
 - o 1999 – 379,780,000 Total Production Gallons

- 2000 – 426,810,000 Total Production Gallons
- 2001 – 422,167,000 Total Production Gallons
- 2002 – 484,318,000 Total Production Gallons

(e) its location and depth: Well No. 4 is located in the NW ¼ of the NW 1/4 of Section 15, T4N, R1E, Ada County; the well depth is 385 feet.

(f) The pumping level varies from within two feet of the surface to an unknown depth depending on demand. As of November 8, 1992, the static level was recorded at 2 feet below the surface.

63-12147 – Well No. 6

(a) the amount of water pumped and used:

- 1998 – 47,422,000 Total Production Gallons
- 1999 - 84,195,000 Total Production Gallons
- 2000 – 116,497,000 Total Production Gallons
- 2001 – 142,762,000 Total Production Gallons
- 2002 – 125,295,000 Total Production Gallons

(e) its location and depth: Well No. 6 is located in the SW ¼ of the SE ¼ of Section 8, T4N, R1E, Ada County. The depth of the well is 440 feet.

(g) Well No.6 is a continuously flowing artesian well.

63-12559 – Well No. 7

(a) the amount of water pumped and used – Not drilled yet

(e) its location and depth – Not drilled yet

(f) The static water level, pumping levels, well head pressure for each of the past five years – Not drilled yet

INTERROGATORY NO. 15: For each water right you identified in your response to interrogatory no. 8, please state how long it is has been since you have diverted the water right and applied it to beneficial use.

RESPONSE TO INTERROGATORY NO. 15: The identified water rights have been in continual use since the date of inception.

ER-2.2

**City of Eagle Contract
United Water Operations Idaho
Quarterly Report - Year Ending December 31, 2001**

<u>Total Production (in 1,000 gallons)</u>	<u>2000</u>	<u>2001</u>
1st Quarter (March 31)	18,350	29,570
2nd Quarter (June 30)	24,209	25,208
3rd Quarter (Sept. 30)	21,490	24,550
4th Quarter (Dec. 31)	25,070	30,250

03/08/2002

City of Eagle Contract
United Water Operations Idaho
Report for Period Covering October 1, 2002 – August 31, 2003

<u>Total Production (in 1,000 gallons)</u>	<u>2002</u>	<u>2003</u>
1st Quarter (March 31)	29,470	27,150
2nd Quarter (June 30)	29,510	26,760
3rd Quarter (Sept. 30)	26,010	18,890 (thru 8/31/03)
4th Quarter (Dec. 31)	37,850	

SCANLAN ENGINEERING

Groundwater and Environmental Engineering

October 22, 1999

Mr. Dan Brown
United Water Idaho
P.O. Box 7488
Boise, ID 83707

Subject: Water Level Monitoring of Delmar Vail and Marvin Miller Wells

Dear Dan:

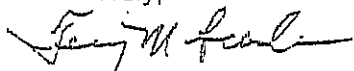
Water levels were measured in the Delmar Vail and Marvin Miller wells on October 21, 1999. The measurements were obtained as part of the semi-annual water-level measurement program proposed as a condition for permit No. 63-12144.

Water levels in each of the wells were measured using an electric-line well sounder. The measuring points are the tops of the well casings. Water-level data are provided at the bottom of the following table. Previous measurements are included for comparison purposes.

Date	Miller Well	Vail Well	Remarks
	Depth to Water	Depth to Water	
6/15/95	32.46	40.25	
7/27/95	30.55	38.90	
7/31/95	29.99	39.27	before Floating Feather Test
10/11/95	29.42	34.01	after Floating Feather Test
12/20/95	32.44	36.29	
2/22/96	37.15	38.66	
5/15/96	37.63	40.40	Miller well recovering 0.5"/min
7/25/96	31.13	40.64	Miller well recovering 0.5"/min
10/29/96	29.33	34.31	
3/26/97	35.93	38.51	
10/18/97	27.96	33.12	
4/14/98	37.51	39.49	
10/21/98	30.71	36.39	
3/20/99	38.26	39.97	
10/21/99	30.44	36.74	

Per the attached agreement, this is last measurement required as part of the semi-annual water-level measurement program. Please contact me if you would me to continue the monitoring program beyond the term described in the agreement.

Sincerely,



Terry M. Scanlan, P.E., P.G.

cc: Del Vail, Marv Miller

SCANLAN ENGINEERING*Groundwater and Environmental Engineering*

June 3, 2003

Marv Miller
1236 Downing Street
Eagle, ID 83616

Del Vail
725 West Floating Feather Road
Eagle, ID 83616

Subject: Well Measurements

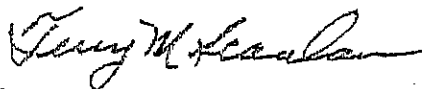
Dear Marv and Del:

On May 28, 2003 I measured water levels in your wells.

- Static water level in the Vail Well on May 28 was 46.95 feet below the top of the casing.
- Static water level in the Miller Well on May 28 was 40.78 feet below the top of the casing.

Thank you for your continued cooperation with water level monitoring in the Eagle area. Please contact me with any questions.

Sincerely,



Terry M. Scanlan, P.E., P.G.

Cc: Tammy Zokan

SCANLAN ENGINEERING*Groundwater and Environmental Engineering*

June 3, 2003

Tammy Zokan
Moore Smith Buxton & Turoke, Chartered
225 North 9th Street, Suite 420
Boise, ID 83702

Dear Tammy:

Jim Burton. Burton lives at 1896 North Eagle Road. He provided a log for the well. The log indicates that the well was drilled to 128 feet in March 1980. The well is constructed with 6-inch diameter casing to 108 feet. According to the well log, the static water level in March 1980 was 31 feet below ground surface. The well pump was operating when I arrived on May 28, with a pumping water level of 41.20 feet below top of casing. After turning the pump off, the water level recovered to 34.87 feet after 13 minutes, and 34.76 feet (about 33 feet below ground surface) after 21 minutes.

Michael Kilfoyle. Kilfoyle lives at 201 West Meadow Ridge. He showed me a February 22, 2001 pump repair report that indicated that the measured depth of his well was 79 feet with a static water level of 49 feet. The pump is a ¾ hp submersible set at a depth of 65 feet. I measured a pumping water level of 52.6 feet, and a recovered water level (after 12 minutes) of 47.95 feet.

Jason Stinar. Stinar lives at 1765 North Eagle Road. His well is 4-inch diameter of unknown depth. Static water level was measured at 21.28 feet. The measurement was taken with a steel tape inserted through a split in the sanitary well seal.

Shelby Conrad. Conrad lives at 2022 North Eagle Road. The well is 8-inch diameter with a reported depth of 115 feet. The December 6, 2002 static water level listed on the well log is 32 feet below ground surface. Static water level was 37.03 feet below top of casing (about 36 feet below ground surface) on May 28, 2003.

Stan Stevens. Stevens lives at 1901 North Eagle Road. His well is 6-inch diameter with a measured static water level of 30.45 feet.

Based on Form 202
2/96

Ident. No. _____

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

To appropriate the public waters of the State of Idaho

1. Name of applicant City of Eagle ("City") Phone 208-939-6813
Mailing address 310 E. State Street, Eagle, ID 83616

2. Source of water supply ground water which is a tributary of (not applicable)

3. Location of point(s) of diversion:

Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Old name for diversion	New name for diversion
	SW	SW	SW	§3	T4N	R1E	Ada	Lexington Hills Well #1	City of Eagle Well #1
		NW	SW	§3	T4N	R1E	Ada	Lexington Hills Well #2	City of Eagle Well #2
		SW	SW	§4	T4N	R1E	Ada	Hormaechea Well #2	City of Eagle Well #3
		NE	SE	§4	T4N	R1E	Ada	Hormaechea Well #1	City of Eagle Well #4

4. Water will be used for the following purposes:

Amount 3.25 cfs² for municipal³ purposes from 01/01 to 12/31
(cfs/acre feet per annum) (water use) (both dates inclusive)

5. Total quantity to be appropriated is (a) 3.25² and/or (b) up to 1.455²
cubic feet per second acre feet per annum

6. Proposed diverting works:

a. Description of type and size of devices used to divert water from the source Up to four wells
and pumps. These will be interconnected with the City's integrated water supply
system.

b. Height of storage dam n/a feet; active reservoir capacity n/a acre-feet; total
reservoir capacity n/a acre-feet

City of Eagle Well #1:

c. ~~Proposed~~ well diameter is 16 inches; ~~proposed~~ depth of well is 400 feet

d. Is ground water with a temperature of greater than 85° F being sought? No

e. If well is already drilled, when? 3/7/1991; Drilling firm Pete Cope Drilling, Inc.

Well was drilled for (well owner) Floating Feather Hills; Drilling Permit No. 63-91-W-044

¹For city officials, see the City's most recent Description of Municipal Service Area, filed separately with the Department.

²The City seeks the right to divert a total of up to 1,455 acre-feet per annum; with a combined total flow rate of 3.25 cfs, from this water right and Water Right Nos. 63-11413 and 63-12017. This limitation is described more fully in Attachment B, the terms of which are incorporated here by reference.

³See Remarks section at end of form.

City of Eagle Well #2:

c. Proposed well diameter is 18 inches; proposed depth of well is 400 feetd. Is ground water with a temperature of greater than 85° F being sought? Noe. If well is already drilled, when? 4/14/1992; Drilling firm Pete Cope Drilling, Inc.Well was drilled for (well owner) Lexington Hills Inc.; Drilling Permit No. 63-92-WY-170

City of Eagle Well #3:

c. Proposed well diameter is 14-18 inches; proposed depth of well is 300-500 feetd. Is ground water with a temperature of greater than 85° F being sought? Noe. If well is already drilled, when? n/a; Drilling firm n/aWell was drilled for (well owner) n/a; Drilling Permit No. n/a

City of Eagle Well #4:

c. Proposed well diameter is 14-18 inches; proposed depth of well is 300-500 feetd. Is ground water with a temperature of greater than 85° F being sought? Noe. If well is already drilled, when? n/a; Drilling firm n/aWell was drilled for (well owner) n/a; Drilling Permit No. n/a7. Time required for the completion of works and application of water to proposed beneficial use is five years (minimum 1 year).

8. Description of proposed uses (if irrigation only, go to item 9):

a. Hydropower; show total feet of head and proposed capacity in KW. n/ab. Stockwatering; list number and kind of livestock. n/ac. Municipal; show name of municipality. The City of Eagled. Domestic; show number of households. n/ae. Other; describe fully. n/a

9. Description of place of use:

a. If water is for irrigation, indicate acreage in each subdivision in the tabulation below.

b. If water is used for other purposes, place a symbol of the use (example: *D* for Domestic) in the corresponding place of use below. See instructions for standard symbols.

Twp.	Rge.	Sec.	NE¼				NW¼				SW¼				SE¼				Totals
			NE¼	NW¼	SE¼	SW¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

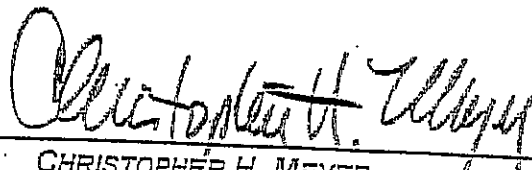
See the City's most recent Description of
Municipal Service Area, filed separately with
the Department.

Application of City of Eagle (April 1998)

Total number of acres to be irrigated not applicable

10. Describe any other water rights used for the same purpose as described above. Water Right Nos. 63-11413 and 63-12017 are owed by the City and are used to serve customers within the City's municipal service area. See Appendix B regarding cap on the combined use of these water rights. In addition, certain surface water rights (which may not be owned by the City) provide the primary source of water for lawn irrigation in some areas served by the City.
11. a. Who owns the property at the point of diversion? The City of Eagle
 b. Who owns the land to be irrigated or place of use? Not applicable to a municipal water right.
 c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing: Not applicable to a municipal water right. Ownership of land has no bearing on the City's service obligation.
12. Remarks: The City seeks a municipal water right under the Municipal Water Right Act of 1996. Idaho Code §§ 42-202, 42-202B, 42-217, 42-219, 42-222. However, the City intends to use the water solely to meet current needs and does not assert any claim for a "future need" component to the right under the Municipal Water Right Act of 1996.
13. MAP OF PROPOSED PROJECT REQUIRED - Attach an 8½" x 11" map clearly identifying the proposed point of diversion, place of use, section #, township & range: (A photocopy of a USGS 7.5 minute topographic quadrangle map is preferred.) (See Attachment A)

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

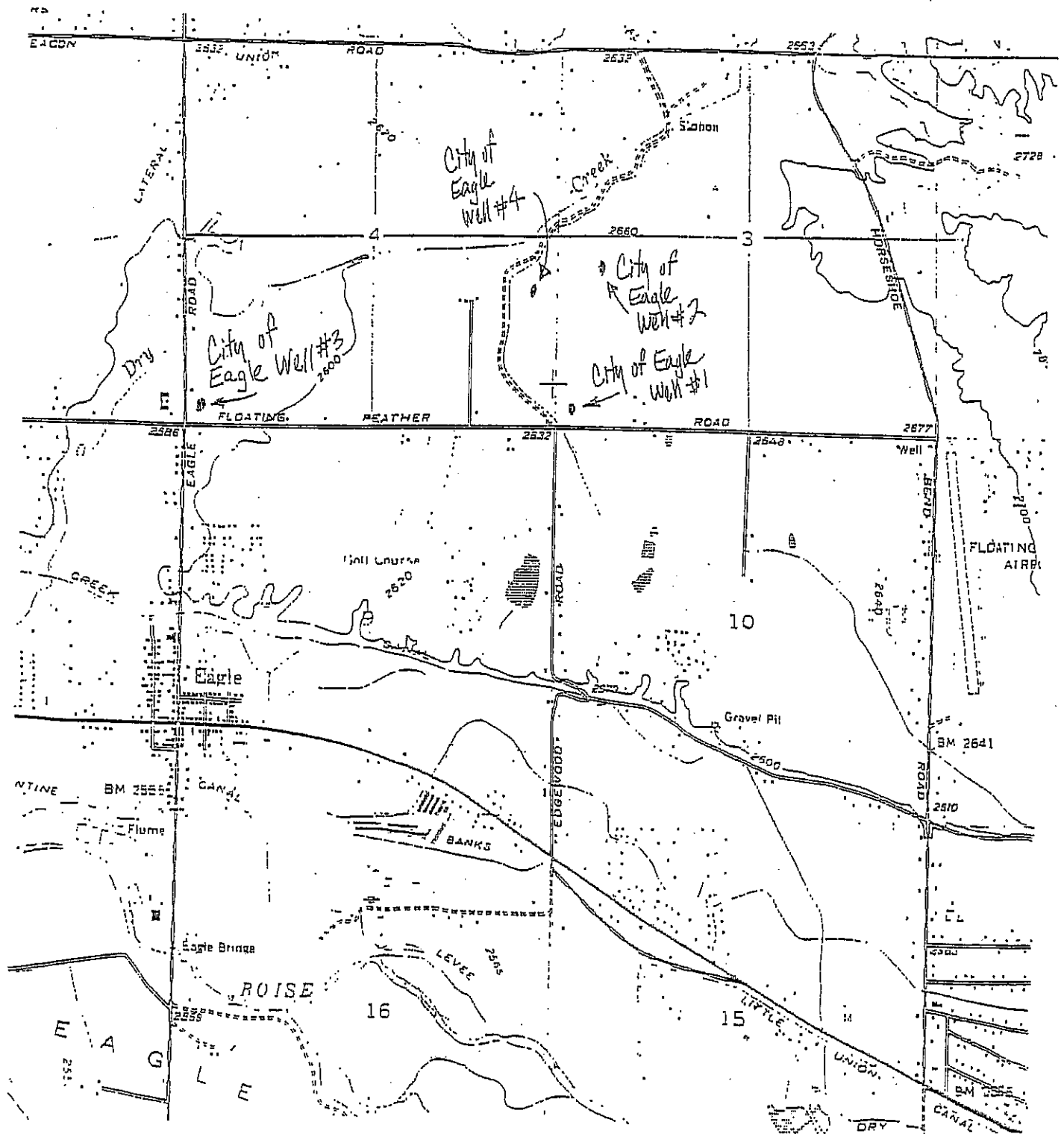


CHRISTOPHER H. MEYER
 Givens Pursley LLP
 277 N. 6th Street, Ste. 200
 P.O. Box 2720
 Boise, ID 83701-2720
 (208) 388-1200
 Special Attorney for City of Eagle

Received by SL for staff ^{no v. received} Date 4/7/98 Preliminary check by _____
 Fee \$ 160 Receipted by SL # 6025699 Date 4/9/98
 Publication prepared by _____ Date _____ Published in _____
 Publication approved _____ Date _____

NOTE: check received 4/8/98 +
 receipted 4/9 -
 priority date = 4/8/98

Attachment A (Map of Diversion Points)



Attachment B

CITY OF EAGLE - 1998 WATER RIGHT APPLICATION

Calculation of Diversion Rate and Annual Volume Requirements for 1800 Homes with Water Amenities

The intent of this application is to provide sufficient water for 1800 homes, including water amenities, when this right is used in combination with other ground water rights now owned by the City of Eagle, also taking into account the availability of surface water rights.

The calculation of water requirements is based on the following assumptions:

- Total build out of Lexington Hills, Echo Creek and the Hormaechea property will entail approximately 1,250 homes (roughly 440 of which are already constructed).⁴
- These 1250 homes are or will be irrigated by surface rights, and do not require ground water.
- In addition, this application intends to accommodate another 550 homes at locations not yet determined.
- It is anticipated that the Department will require that any surface rights available be maintained where 550 new homes are constructed. Nonetheless, we are making the conservative assumption that surface water supplies may not be available for some or all of the additional 550 homes, and that they will require ground water for irrigation of lawns.
- To the extent that it turns out that surface water is available, then this calculation will need to be revised downward accordingly. Consequently, the table below contains parallel calculations for "with" and "without irrigation" conditions.
- IDWR standard use requirements show that a typical home requires 0.6 af/yr without irrigation and 1.2 af/yr with irrigation.
- UWID's actual use data for the area indicate that the average peak flow requirement per home is 0.5 gpm without irrigation and 1.5 gpm with irrigation.
- The existing water amenity right (No. 63-12017) was obtained by a "dry up" of 5 acres of irrigated land under Water Right No. 63-11413. At 4.5 acre-feet per acre (times five), this equates to a maximum of 22.5 acre-feet per annum.
- Since the original right (No. 63-11413) was for 900 homes, and the objective here is to increase the supply to serve up to 1,800 homes, we have also doubled the amount of water available for water amenities to 45 acre-feet per annum. Thus, the assumption is that the new areas to be added will have similar water amenities (at least in level of water demand).

Based on these assumptions, the application seeks a total (from this and the other two water rights) of 3.25 cfs and a maximum annual volume of between 1,125 and 1,455 acre-feet, depending on whether surface supplies are available for lawn irrigation. The calculation leading to this conclusion is presented in the table on the following page.

This calculation is intended to serve as the upper limit on the City's entitlement to divert under this water right. In the event that less water is required to fully and reliably serve 1800 homes, together with water amenities, the water right shall be so limited.

⁴This description is for explanatory purposes only, and is not intended to restrict the place of use under this water right.

CALCULATION OF WATER REQUIREMENTS FOR 1800 HOMES						
ITEM	CALCULATION	IF NO LAWN IRRIGATION WITH GROUND WATER			IF NEW HOMES IRRIGATED WITH GROUND WATER	
		PLANNED HOMES	ADDITIONAL HOMES	TOTAL	ADDITIONAL HOMES	TOTAL
Number of homes		1250	550	1800	550	1800
System wide average peak flow per home (gpm)	Based on UWID data	0.5 gpm per home	0.5 gpm per home		1.5 gpm per home	
System wide average peak flow for all homes (gpm)	Multiply by number of homes	625 gpm	275 gpm	900 gpm	825 gpm	1,450 gpm
System wide average peak flow for all homes (cfs)	Divide by 448.8			2.01 cfs		3.23 cfs
Average volumetric use rate per home	Based on IDWR chart	0.6 af/yr per home	0.6 af/yr per home		1.2 af/yr per home	
Total volumetric use for all homes	Multiply by number of homes	750 af/yr	330 af/yr	1,080 af/yr	660 af/yr	1,410 af/yr
Amenity Water				45 af/yr		45 af/yr
Grand Total				1,125 af/yr		1,455 af/yr

SCANLAN ENGINEERING

Groundwater and Environmental Engineering

TAE

RECEIVED

JUN - 4 2003

MSB&T, CTD.

June 2, 2003

Tammy Zokan
Moore Smith Buxton & Turcke, Chartered
225 North 9th Street, Suite 420
Boise, ID 83702

Subject: City of Eagle's Application to Amend 63-12448 -- Vail and Miller Well Measurements

Dear Tammy:

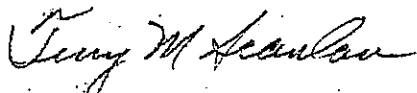
On May 28, 2003 I measured water levels in the Delmar Vail and Marvin Miller wells. Water levels in these wells were monitored during the period of 1995 through 1999. The purpose of this recent measurement was to help evaluate the extent of water level declines in the Floating Feather Road area north of Eagle since 1995.

Static water level in the Vail Well on May 28 was 46.95 feet below the top of the casing. This water level is approximately 6 feet lower than spring and early summer water levels measured in the 1995 through 1999 period.

Static water level in the Miller Well on May 28 was 40.78 feet below the top of the casing. This water level is approximately 2.5 feet to 8 feet lower than spring and early summer water levels measured in the 1995 through 1999 period.

Please contact me with any questions.

Sincerely,



Terry M. Scanlan, P.E., P.G.

EXHIBIT 12

SCANLAN ENGINEERING

Groundwater and Environmental Engineering

June 3, 2003

Marv Miller
1235 Downing Street
Eagle, ID 83616

Del Vail
725 West Floating Feather Road
Eagle, ID 83616

Subject: Well Measurements

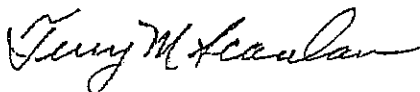
Dear Marv and Del:

On May 28, 2003 I measured water levels in your wells.

- Static water level in the Vail Well on May 28 was 46.95 feet below the top of the casing.
- Static water level in the Miller Well on May 28 was 40.78 feet below the top of the casing.

Thank you for your continued cooperation with water level monitoring in the Eagle area. Please contact me with any questions.

Sincerely,



Terry M. Scanlan, P.E., P.G.

Cc: Tammy Zokan

SCANLAN ENGINEERING

Groundwater and Environmental Engineering

FILE COPY 1018-J
2/22

RECEIVED

SEP 29 2003

MSB&T, CTD.

September 26, 2003

Marv Miller
1235 Downing Street
Eagle, ID 83616

Del Vail
725 West Floating Feather Road
Eagle, ID 83616

Subject: Well Measurements

Dear Marv and Del:

On September 26, 2003 I measured water levels in your wells.

- Static water level in the Vail Well on September 26 was 41.60 feet below the top of the casing.
- Static water level in the Miller Well on September 26 was 32.32 feet below the top of the casing.

Thank you for your continued cooperation with water level monitoring in the Eagle area. Please contact me with any questions.

Sincerely,



Terry M. Scanlan, P.E., P.G.

Cc: Tammy Zokan

EXHIBIT 13

SCANLAN ENGINEERING

Groundwater and Environmental Engineering

June 3, 2003

Tammy Zokan
Moore Smith Buxton & Turcke, Chartered
225 North 9th Street, Suite 420
Boise, ID 83702

Subject: City of Eagle's Application to Amend 63-12448 – Burton Group Well Measurements

Dear Tammy:

Jim Burton. Burton lives at 1896 North Eagle Road. He provided a log for the well. The log indicates that the well was drilled to 128 feet in March 1980. The well is constructed with 6-inch diameter casing to 108 feet. According to the well log, the static water level in March 1980 was 31 feet below ground surface. The well pump was operating when I arrived on May 28, with a pumping water level of 41.20 feet below top of casing. After turning the pump off, the water level recovered to 34.87 feet after 13 minutes, and 34.75 feet (about 33 feet below ground surface) after 21 minutes.

Michael Kilfoyle. Kilfoyle lives at 201 West Meadow Ridge. He showed me a February 22, 2001 pump repair report that indicated that the measured depth of his well was 79 feet with a static water level of 49 feet. The pump is a ¾ hp submersible set at a depth of 65 feet. I measured a pumping water level of 52.6 feet, and a recovered water level (after 12 minutes) of 47.95 feet.

Jason Stinar. Stinar lives at 1765 North Eagle Road. His well is 4-inch diameter of unknown depth. Static water level was measured at 21.28 feet. The measurement was taken with a steel tape inserted through a split in the sanitary well seal.

Shelby Conrad. Conrad lives at 2022 North Eagle Road. The well is 8-inch diameter with a reported depth of 115 feet. The December 6, 2002 static water level listed on the well log is 32 feet below ground surface. Static water level was 37.03 feet below top of casing (about 36 feet below ground surface) on May 28, 2003.

Stan Stevens. Stevens lives at 1901 North Eagle Road. His well is 6-inch diameter with a measured static water level of 30.45 feet.

EXHIBIT 14

Melissa Sadlek. Sadleck lives at 171 West Lance Lane. The well is reportedly 76 feet deep with a static water level of 12 feet below ground surface on July 24, 1997. Static water level on May 28 was 25.02 feet (approximately 22.5 feet below ground surface).

Steve Cappeller. Cappeller lives at 1935 North Eagle Road. He has two wells. The well that supplies his home is 6-inch diameter with a reported depth of 97 feet. Static water level was listed on the well log was 20 feet below ground surface on May 1, 2001. Static water level on May 28, 2003, was 28.66 feet (approximately 27.4 feet below ground surface). Cappeller also has a 4-inch well that is currently used for landscape irrigation purposes. This well supplied a former home on the property that was located closer to Eagle Road. The measured depth to water in the 4-inch well was 25.24 feet on May 28, 2003.

Darrell Davis. Davis lives at 1857 North Eagle Road. He has a 4-inch well with no access port. Therefore, the well was not measured.

Chris Brooks. I visited the Chris Brooks residence at 1821 North Eagle Road. There was no one home, so I did not attempt to measure the well.

I did not attempt to measure wells owned by the following group members: Stanton Niccolls, Laren Walker, Gary Helkes, William Miller. These group members had indicated to Burton that they were not interested in allowing measurements. I did not attempt to measure the well owned by Weldon Fisher, because the Fisher home is relatively distant from the proposed Brookwood Well. I did not attempt to measure the Sheri Kinzer well because Burton indicated that the well was located in the crawl space of the home and was relatively inaccessible.

Please contact me with any questions.

Sincerely,



Terry M. Scanlan, P.E., P.G.

PHOTO LOG

[illegible]

Notes:

PHOTO LOG OF CHASE DAIRY EAGLE, ID SITE INSPECTION ON 5/13/03 BETWEEN 13:30 AND 15:00. PHOTO'S TAKEN BY CHRIS DUNCAN (CD), HOLLADAY ENGINEERING, WITH OLYMPUS DIGITAL CAMERA (OFFICE CAMERA)

**WATER RIGHTS - WELL AT FLOATING FEATHER
Chase Dairy - Site Inspection
Eagle, Idaho**

HECO Project #
EG 014100



Well head looking West in building. Dairy / House Well, 5/13/03, 13:37 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 1



Well head looking West in building. Dairy / House Well, 5/13/03, 13:37 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 2

Photos taken with Olympus Digital Camera (HECO office camera).

**WATER RIGHTS - WELL AT FLOATING FEATHER
Chase Dairy - Site Inspection
Eagle, Idaho**

HECO Project #
EG 014100



Looking S.W. at building with well. Dairy / House Well, 5/13/03, 13:40 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 3



Well area looking N.E. Small irrigation well. 5/13/03, 13:46 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 4

Photos taken with Olympus Digital Camera (HECO office camera).

**WATER RIGHTS - WELL AT FLOATING FEATHER
Chase Dairy - Site Inspection
Eagle, Idaho**

HECO Project #
EG 014100



Well head. Small irrigation well, 5/13/03, 13:56 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 5



Looking N.W. at well head. Hill house well. 5/13/03, 14:00 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 6

WATER RIGHTS - WELL AT FLOATING FEATHER Chase Dairy - Site Inspection Eagle, Idaho



Looking East at well head. Hill house well, 5/13/03, 14:04 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 7



Well head. Hill house well. 5/13/03, 14:04 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 8

WATER RIGHTS - WELL AT FLOATING FEATHER Chase Dairy - Site Inspection Eagle, Idaho

HECO Project #
EG 014100



Looking East at well head. Big irrigation well, 5/13/03, 14:14 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 9



Looking South at well head. Big irrigation well. 5/13/03, 14:14 hrs, photo by Chris Duncan - Holladay Engineering Company. Photo 10

**WATER RIGHTS - WELL AT FLOATING FEATHER
Chase Dairy - Site Inspection
Eagle, Idaho**

HECO Project #
EG 014100



Looking East at well head. Big irrigation well, 5/13/03, 14:15 hrs, photo by
Chris Duncan - Holladay Engineering Company. Photo 11

Photos taken with Olympus Digital Camera (HECO office camera).

RECEIVED & FILED
CITY OF EAGLE

JUL 14 1997

AGREEMENT TO PROVIDE SUPPLEMENTAL WATER FOR FIRE FLOWS

This Agreement to Provide Supplemental Water for Fire Flows (this "Agreement"), effective this first day of August, 1997 by and between THE CITY OF EAGLE CITY, a municipal corporation, whose address is 310 East State Street, Eagle, Idaho 83616, and UNITED WATER IDAHO INC., an Idaho corporation ("United Water"), whose address is P.O. Box 7488, Boise, Idaho 83709.

RECITALS:

- A. United Water provides domestic, commercial, and fire flow water in the Eagle, Idaho area and is a public utility within the meaning of the Idaho Public Utility law.
- B. Eagle desires to obtain an additional source of water, including for fire protection purposes, to serve Eagle.
- C. United Water is willing and able to make quantities available to Eagle during each month of the year for the term hereof, as provided further herein.

NOW, THEREFORE, in consideration of the mutual promises and covenants herein contained, to be kept and performed by the parties, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by the parties, it is mutually agreed as follows to wit:

1. Provision of Water. United Water agrees to provide to City additional water and supplemental fire flow as hereinafter set forth. Said flow shall be provided on August 1, 1997 or within a reasonable time after approval by the Idaho Public Utilities Commission ("IPUC") of such provision by United Water. Water for fire flow shall not be less than One Thousand Five Hundred (1,500) gallons per minute measured at the hydrant nearest to the point of diversion of such water flow from United Water to City. United Water shall provide such flow by tying to City's water system at United Water's Floating Feather Well.
2. Payment. City will pay, as billed monthly, for actual flow through the meter, at the metered tariff rates then allowed to United Water by the IPUC for such provision.
3. Assistance by City. City agrees to use its best efforts to aid and assist United Water in obtaining IPUC approval, as required or as helpful for such approval or to speed such approval. The parties acknowledge that City cannot force said entities to provide such consents, and the only requirement hereof is that City reasonably use its best efforts to such end.
4. Term. The term of this Agreement shall be for one year from and after the date above written, during which term this Agreement may not be terminated by either party. Thereafter, the Agreement shall be deemed automatically extended for successive one-year periods unless terminated as herein provided. Eagle may terminate this Agreement by providing written notice of intention to so terminate at least twelve months prior to the proposed termination. United Water may terminate this Agreement by providing written notice of intention to so terminate at least twelve months prior to the proposed termination.
5. Interruptions. United Water shall use reasonable care and diligence to prevent interruptions and fluctuations in delivering the water provided for in this Agreement. Both parties agree that they will make no claim against each other for damages in the event United Water is unable to deliver water because of the need to make repairs for breaks or leaks or other repairs to its facilities, or because of other causes beyond its control. United Water agrees that any necessary repairs or maintenance shall be scheduled so as to minimize disruption to Eagle. Further, if repairs or maintenance are necessary, United Water will provide to Eagle reasonable advance notice of the need to make repairs and shall complete said repairs or maintenance in a timely and workmanlike manner.

6. Indemnity: Each of the parties hereto agrees to indemnify and hold harmless the other party from and against all actions, suits, proceedings, judgments, costs and expenses relating to any claims arising in connection with the subject matter hereof prior to the execution of this Agreement.

7. Notices: All notices required or desired to be given under this Agreement shall be in writing and delivered personally or sent by facsimile or by first class United States mail, postage prepaid addressed as follows:

If to Eagle:

310 East State Street
Eagle, Idaho 83616
208/939-6813
208/939-6827 (facsimile)
Attn: City Clerk

If to United Water:

United Water Idaho Inc.
P.O. Box 7488
Boise, Idaho 83709
208/362-1704
208/362-3858 (facsimile)

8. Miscellaneous:

- a. Enforcement. The failure on the part of any party to enforce its rights as to any provision of the Agreement shall not be construed as a waiver of such party or parties rights to enforce such provision in the future.
- b. Assignment. This Agreement, and the terms hereof, are binding on the parties named herein, their heirs, successors, and assigns. This Agreement shall not be assigned without the written consent of the other parties hereto not to be unreasonably withheld; provided however, that if the business of United Water is taken over by or transferred to a successor company, such shall not be deemed an assignment hereunder. United Water agrees to give Eagle prompt written notice of any such change in ownership.
- c. Entire Agreement. This Agreement contains the entire agreement between the parties hereto in connection with the transactions contemplated herein and supersedes all previous or contemporaneous communications, representations or agreements. This Agreement may be modified only by written amendment signed by all parties.
- d. Severability. If any section, subsection, sentence, clause, phrase or portion of this Agreement is for any reason held invalid, preempted or unconstitutional by any court or by any Federal or State agency of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision of this Agreement, and such holding shall not affect the validity of the remaining portions hereof.
- e. Application of Law. This Agreement is subject to all applicable laws of the State of Idaho.
- f. Survival. The terms, representations, provisions, covenants, agreements and indemnities shall remain binding upon and for the parties hereto until fully observed, kept or performed.

- g. Authority. The parties hereto represent and confirm that they have the authority to execute this Agreement on their behalf and on behalf of the other persons named herein, although those persons may not have executed this Agreement.
- i. Counterparts. This Agreement may be executed in counterparts, each of which shall constitute an original, but all together shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the date first above written.

CITY OF EAGLE CITY

By: _____

Its: _____

Mayor

ATTEST:



UNITED WATER IDAHO INC.

By: _____

Its: _____

VICE PRES.

WATER LINE AGREEMENT

This Water Line Agreement (this "Agreement") is made this 5th day of AUGUST, 1997, by and among the City of Eagle City, an Idaho municipal corporation ("City"); Lexington Hills, Inc., an Idaho corporation ("Lexington"), successor to Floating Feather Hills, Inc., an Idaho corporation; Treasure Valley Village, a California limited partnership ("TVV"); United Water Idaho Inc., an Idaho corporation ("United Water"); and Engineering, Management and Maintenance, Inc., an Idaho corporation ("EM²").

RECITALS

A. Lexington is the owner or contract purchaser of certain real property located in the City of Eagle, more particularly described on Exhibit A, attached hereto and made a part hereof (the "Lexington Property"), an Eagle City approved preliminary plat. TVV is the owner of certain real property located in the City of Eagle, more particularly described on Exhibit B, attached hereto and made a part hereof (the "TVV Property").

B. Lexington and TVV were holders of that certain Permit to Appropriate Water No. 63-11413, as amended (the "1991 Permit") issued by the Idaho Department of Water Resources ("IDWR") with a priority date of April 2, 1991, which 1991 Permit is attached hereto as Exhibit C. The 1991 Permit allows, in part, domestic use for 900 homes. The place of use designated by the 1991 Permit is located in Section 3, T4N, R1E, B.M, more particularly the Lexington Property and the TVV Property.

C. On July 24, 1992, Lexington and TVV assigned the 1991 Permit to City, which assignment was acknowledged by IDWR on September 11, 1992, as further provided in Exhibit C.

D. Lexington and TVV are holders of that certain Permit to Appropriate Water No. 63-12017 issued by IDWR with a priority date of April 21, 1993 (the "1993 Permit"), which 1993 Permit is attached hereto as Exhibit D. The 1993 Permit allows for wildlife, recreation and aesthetic uses. The place of use designated by the 1993 Permit is located in Section 3, T4N, R1E, B.M., more particularly the Lexington Property and the TVV Property. The 1993 Permit has not been assigned to City. Lexington, TVV and City shall, within thirty (30) days of the date hereof, use all good faith efforts to determine and mutually decide whether the 1993 Permit is to be assigned to City. If Lexington, TVV and City mutually agree to assign the 1993 Permit to City, Lexington and TVV shall assign the 1993 Permit to City within sixty (60) days of the date hereof, and take all appropriate action to ensure that IDWR confirms for City that such assignment has been perfected.

E. In 1991, Lexington and TVV received preliminary subdivision plat approval from City to develop the Lexington Property and the TVV Property with residential subdivisions (collectively the "Projects"). In connection with such development, Lexington, TVV and City entered into that certain "Agreement for Transfer and Operation of Domestic Water System" dated May 20, 1992, as amended on May 20, 1992, and as amended on October 5, 1993 (collectively, the "Contract"), which provides, in part, that Lexington and TVV have the obligation to construct a domestic water system, as defined in the Contract, to serve the Projects, and to convey that domestic water system to City over time as each phase of the domestic water system is completed. The Contract is attached hereto as Exhibit E.

F. The Contract contemplates that, upon completion of each phase of the domestic water system, Lexington and TVV shall convey the domestic water system to City by warranty deed for the well lots, and by bill of sale for the remaining components of the domestic water system. Further, the Contract contemplates Lexington and TVV shall provide City with a warranty agreement for each phase of the domestic water system that such phase substantially conforms to Agreed Construction Standards (as defined in the Contract), and assign to City any and all warranties received from contractors, subcontractors and suppliers. Such warranty deeds, bills of sale, warranty agreements and assignments of warranties for each phase of the domestic water system completed prior to the date hereof are on file with City. To the extent any such documents have not previously been provided to City, and are still contemplated under the

Contract, Lexington and TVV shall provide City with such documents, in form reasonably acceptable to City, on the later of thirty (30) days of the date hereof or upon completion of any such phase of the domestic water system.

G. Under the terms of the Contract, City agreed to accept the domestic water system so long as the domestic water system is constructed according to the terms of the Contract and, upon acceptance, City is to assume full responsibility for the operation and maintenance of the accepted domestic water system. Further, the Contract contemplates that upon completion of the second well, as defined in the Contract, Lexington and TVV shall certify to City that the domestic water system meets the requirements of supply for fire protection in the Projects as imposed by the Idaho Department of Health and Welfare. However, such second well has been completed, and Lexington and TVV acknowledge that neither Lexington nor TVV can certify to City the domestic water system meets the requirements of water supply for fire protection in the Projects. The construction of the Water Line, defined below, and the intertie to the Floating Feather Well, defined below, is contemplated to provide the Projects with the required water supply for fire protection. City will not assume full responsibility for the operation and maintenance of the domestic water system, and will not issue occupancy permits in connection with the Projects, unless and until EM² can make such certification to City as confirmed by City's engineer (at the direction of the City Council).

H. United Water is the owner of a source of water supply, commonly known as the "Floating Feather Well", located approximately one-half mile west of the northwest corner of Floating Feather and Eagle Roads. United Water is willing to provide City with a source of water supply for the Projects subject to IPUC approval, if and as required, and under the terms and conditions provided further herein.

I. In anticipation of further development of the Projects, Lexington, TVV and City acknowledge that it is in their collective best interests and, in the City's opinion, the public's best interest to include in the domestic water system a water line extending from the Projects to the Floating Feather Well and to intertie with the Floating Feather Well as a source of water supply for the Projects. EM² is willing to construct the water line on behalf of Lexington and TVV from the Projects to the Floating Feather Well under the terms and conditions provided further herein. Lexington and TVV are willing to convey the Water Line to City, and City is willing to accept the Water Line, under the terms and conditions contained herein. Notwithstanding anything to the contrary herein, City does not waive any other municipal development and/or building requirements in connection with the Projects. Nothing herein shall be construed as prohibiting City from enforcing any of its codes and/or ordinances, as amended from time to time, concerning the future development of the Projects.

J. In May, 1992 City entered into that certain Water Service Contract with EM², an independent service contractor, to perform certain operation and maintenance tasks in connection with the domestic water system. Since the effective date of such Water Service Contract, EM² has undergone a change in ownership and management. City and EM² are currently in the process of updating and revising the Water Service Contract. City shall set reasonable water service rates/connection fees, which rates and fees have reasonably been estimated initially as set forth on Exhibit F, attached hereto and made a part hereof.

K. Prior to the date hereof, City apprised the Idaho Public Utilities Commission ("IPUC") and its staff of this Agreement and the agreements, terms, conditions, and obligations contemplated hereunder.

NOW, THEREFORE, in consideration of the foregoing recitals which are incorporated below and the mutual covenants, conditions, terms and agreements contained herein, the parties, intending to be legally bound, agree as follows:

1. Government Approvals. The parties hereto shall cooperate fully with each and all other parties in connection with each and all other parties' efforts to obtain, without limitation, all other necessary permits, information, and consents required by the appropriate federal, state or local

governmental authorities, agencies or officials ("Government Approvals") to permit the construction of a 12- inch water line (the "Water Line") contemplated to connect the Floating Feather Well to the domestic water system, and an intertie between the Floating Feather Well and the Water Line.

2. Water Line. As soon as practicable after such Governmental Approvals have been received, Lexington and TVV, through EM², shall diligently proceed to construct the Water Line to connect the Floating Feather Well and the domestic water system in the Projects, as described, or to be described, in Water Line plans and specifications prepared and sealed by a licensed professional engineer, and reviewed by the parties hereto and City's engineer (at the direction of the City Council) (the "Plans and Specifications)." Such Plans and Specifications also include or shall include the details for the intertie between the Water Line and the Floating Feather Well. Inspection of the construction of the Water Line shall be conducted by City's engineer (at the direction of the City Council) and/or EM², and inspection of the intertie between the Water Line and the Floating Feather Well shall be conducted by City's engineer (at the direction of the City Council) and/or United Water. The cost of such Plans and Specifications and the cost of the construction of the Water Line including, without limitation, the intertie to the Floating Feather Well, shall be borne by Lexington and TVV at their sole cost and expense, which cost and expense shall not exceed Three Hundred Sixty Thousand and no/100 Dollars (\$360,000.00), as more fully provided herein.

The Plans and Specifications are hereby incorporated by this reference, with the same force and effect as if the same were set forth herein, and EM² and all EM²'s subcontractors will be and hereby are bound by any and all of the Plans and Specifications. Notwithstanding the foregoing, based on proper advice and consideration, EM² may alter the performance from strict adherence to the Plans and Specifications if based on experience on the job site or if adherence to the Plans and Specifications becomes impractical or unfeasible under the circumstances. Lexington and TVV shall be afforded the opportunity, but not the obligation, to review and comment on any material deviation from the Plans and Specifications, which deviation will be followed up by a change on the particular Plans and Specifications or notation of the change on the "as-built" plans.

3. Easements. City, Lexington, TVV, EM² and United Water shall cooperate with one another to secure any and all necessary easements and licenses required for the construction of the Water Line and the intertie between the Water Line and the Floating Feather Well.

4. Commencement of Construction. The construction of the Water Line shall commence as soon as practicable after the receipt of all Government Approvals, the successful negotiation and execution of a Source of Supply Agreement by and between City and United Water (which those two parties agree to use their best efforts to accomplish), and following review of the Plans and Specifications by the parties hereto and City's engineer (at the direction of the City Council). EM² shall use best efforts to substantially complete such construction, and United Water shall use best efforts to substantially complete the intertie between the Water Line and the Floating Feather Well, by September 15, 1997, subject to any delays as may be provided in this Agreement.

5. Unavoidable Delays and Default. Each party shall be excused from further performance under this Agreement as a consequence of any delays or defaults in the performance of this Agreement unavoidably caused by the act of any governmental authority, the act of any public enemy, acts of God, nature, war, war defense conditions, strikes, walkouts or other causes beyond the control of the party whose performance is impaired. Each party shall use best efforts to avoid any such delay or default and each party shall resume performance under this Agreement immediately following any such delay or default, but only if such default or delay does not continue for a period of ninety (90) days or more.

6. Liens. EM² will obtain releases from all subcontractors, laborers, materialmen, suppliers, and any other parties furnishing materials or services to the construction of the Water Line and intertie to the Floating Feather Well. EM² shall submit such releases to City.

7. Construction Cost; Loan. The cost of the Plans and Specifications, the construction of the Water Line, including administrative and engineering costs incurred by EM², and the intertie to the Floating Feather Well has been reasonably estimated at Three Hundred Sixty Thousand and no/100 Dollars (\$360,000.00) (the "Construction Cost"), which amount is to be paid by Lexington and TVV; provided, however, EM² has agreed to advance the Construction Cost to Lexington and TVV under the terms and conditions contained herein, including the Exhibits attached hereto and made a part hereof. City's and EM²'s obligations hereunder, and specifically the obligation to advance Lexington and TVV the Construction Cost and commence construction of the Water Line, is expressly conditioned upon Lexington and TVV providing to City and EM² satisfactory evidence (e.g., loan commitment letter, financial statement or other evidence acceptable to City and EM²) that Lexington and TVV shall be able to pay the Construction Cost in accordance with this Agreement and the Promissory Note, dated on even date herewith and substantially similar in form to that Promissory Note attached hereto as Exhibit G and made a part hereof. The obligations under the Promissory Note and this Agreement shall be guaranteed by Bert Bradley, Harvey Neef, Bryce Peterson, David Roylance, Duane Stueckle, Dennis Whitmore, Steve Yates, and William R. Guhrke and shall be evidenced by a Joint and Several Individuals' Guaranty (the "Guaranty"), dated on even date herewith and substantially similar in form to that Joint and Several Individuals' Guaranty attached hereto as Exhibit H and made a part hereof. Lexington and TVV shall have no liability for any amount in excess of the Construction Cost. If the actual Construction Cost is less than Three Hundred Sixty Thousand and no/100 Dollars (\$360,000.00), the parties hereto shall cooperate to amend this Agreement, the Promissory Note and the Guaranty so that the amount of the actual Construction Cost shall be reflected therein.

Any hook-up fees collected by City within the City municipal water system territory, shall be a total of not less than Eight Hundred Fifty and no/100 Dollars (\$850.00), paid upon customer request for service and, following collection by City, paid as follows:

\$120.00	Paid to EM ² for the cost of meter and meter set
200.00	Paid to Eagle City domestic water system reserve fund
530.00	Paid to EM ² to repay the Construction Cost advanced to Lexington and TVV, which advance is reflected on the Promissory Note. Such amount shall not be decreased during the term of the Promissory Note.

Lexington, TVV and City hereby acknowledge and agree that it is their intention that these three parties shall use best efforts to enter into a separate, cooperative agreement, in accordance with City's ordinance number 202, which agreement shall set out the terms and conditions for the reimbursement of Construction Costs to Lexington and TVV (after the payment in full and cancellation of the Promissory Note) through the collection of additional hook-up fees from either inside or outside of the Projects, which said cooperative agreement shall include, among other provisions, the following:

(a) a description of City's water service territory, which territory shall not be reduced in size while the cooperative agreement is in effect;

(b) that a reasonable connection fee be charged for connection to the City's domestic water system, a fixed portion of which shall be paid to Lexington and TVV; ^{\$240,000} as set forth in the Promissory Note;

(c) that Lexington and TVV shall be reimbursed their costs, including interest, incurred in the construction of the Water Line and intertie from any water service hook-up fee collected by City for a period of ten (10) years from the date of completion of the Water Line;

(d) that City shall make reasonable good faith efforts to obtain such modifications to its water permit and/or rights to allow for the delivery of water to any property located in City's water service territory;

[Handwritten signatures and initials]
J.H.R.
B.M.A.

(e) that City will not deliver or agree to deliver water from its domestic water system to any property or for any use where such delivery or use is likely to result in a water supply insufficient to serve the Projects and property commonly known as the McCallum property as presently approved for development; and

(f) that City shall waive any administrative fee provided for in its ordinance.

8. New Phase of Domestic Water System. The parties to the Contract agree that the Water line and the intertie between the Water Line and the Floating Feather Well are necessary for the maintenance and operation of the domestic water system constructed and to be constructed to serve the Projects. Accordingly, the parties to the Contract agree and hereby amend the Contract such that the term "domestic water system" shall include the Water Line and any and all easements necessary for the maintenance and operation of the same, and such Water Line and any and all easements associated therewith shall be considered a phase of the domestic water system, and Lexington and/or TVV shall deliver to City fully executed warranty deed(s), warranties, title insurance policy, all lien releases and as-built or record plans and specifications for such phase of the domestic water system as provided further in the Contract. EM² shall provide Lexington and TVV with a one-year warranty in connection with the construction of the Water Line. As provided further in the Contract, City will accept such phase of the domestic water system upon completion, provided the City engineer (at the direction of the City Council) and EM² shall have the right to review and accept the proposed plans and specifications for such phase, and to perform field inspections prior to completion of each phase to confirm the phase of the domestic water system was built in accordance with the Agreed Construction Standards, as defined in the Contract. Upon such acceptance, Lexington and TVV shall have no further obligation to provide additional water supply sources under the terms of the Contract.

9. Fees. City shall establish reasonable connection fees and usage rate charges initially estimated as set forth on Exhibit F, attached hereto and made a part hereof, applicable to users of the domestic water system, which fees and charges may be revised by the City from time to time upon notice as provided by City ordinance but in no event less frequently than every five years. Such revision of the fees and charges shall be based on all relevant factors including, without limitation, on the product of such previously adopted rates and fees multiplied by the percentage increase, if any, of the Consumer Price Index ("CPI") for the United States, all Urban Consumers, published by the United States Department of Labor, Bureau of Labor Statistics (Three Year Average of 1982-1984 = 100) between the month immediately preceding the current revision date of such fees and charges and the date of the last previous revision of such fees and charges plus an additional 5% of the last previously adopted fees and charges.

If the CPI is discontinued or is unavailable, City shall select a comparable index reflecting changes in the cost of living or purchasing power of the consumer dollar published by any other governmental agency, or nationally recognized financial institution, or any other nationally recognized authority.

10. Notices. All notices, demands, requests, and other communications under this Agreement shall be in writing and shall be deemed properly served or delivered, if delivered by hand to the party to whose attention it is directed, or when sent, two (2) days after deposit in the U.S. mail, postage prepaid, by registered or certified mail, return receipt requested, or upon transmission when sent via facsimile, or one (1) day after deposit with a nationally recognized air carrier providing next day delivery, addressed as follows:

If to City: - The City of Eagle
 Attn: Mayor
 310 E. State Street
 Eagle, ID 83616
 (208) 939-6813
 (208) 939-6827(facsimile)

If to Lexington: 1815 E. Stonybrook Ct.
Eagle, Idaho 83616
(208) 939-6000
(208) 939-6118 (facsimile)

If to TVV: 680 N. 9th Street
Boise, Idaho 83702
(208) 343-2235
(208) 344-2852 (facsimile)

If to EM²: 8248 W. Victory Road
Boise, Idaho 83707
Attn: President
(208) 362-7336
(208) 362-3858 (facsimile)

If to United Water: United Water Idaho Inc.
P.O. Box 7488
Boise, Idaho 83709
(208) 362-1704
(208) 362-1479 (facsimile)

or at such other address or to such other party which any party entitled to receive notice hereunder designates to the other in writing as provided above.

11. Default. If any party shall fail to perform such party's obligation(s) contemplated herein for any reason, other than the failure to obtain Government Approvals or other unavoidable delays as described in paragraph 5 hereof, one or more of the other parties may pursue any and all remedies at law or equity; provided, however, all parties affected by any default agree to attempt to mediate a settlement in good faith prior to initiating litigation. In the event litigation is filed, the prevailing party or parties shall be entitled to an award of reasonable costs and attorneys' fees.

12. General Provisions.

a. Enforcement. The failure on the part of any party to enforce its rights as to any provision of the Agreement shall not be construed as a waiver of such party or parties rights to enforce such provision in the future.

b. Assignment. This Agreement, and the terms hereof including the Exhibits attached hereto and made a part hereof, are binding on the parties named herein, their heirs, successors, and assigns. This agreement shall not be assigned without the written consent of the other parties hereto not to be unreasonably withheld.

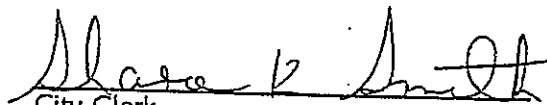
c. Entire Agreement. This Agreement contains the entire agreement between the parties hereto in connection with the transactions contemplated herein and supersedes all previous or contemporaneous communications, representations or agreements. This Agreement may be modified only by written amendment signed by all parties.

d. Severability. If any section, subsection, sentence, clause, phrase or portion of this Agreement is for any reason held invalid, preempted or unconstitutional by any court or by any Federal or State agency of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision of this Agreement, and such holding shall not affect the validity of the remaining portions hereof.

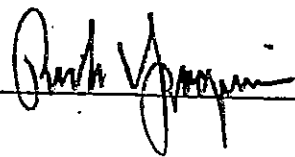
- e. Application of Law. This Agreement is subject to all applicable laws of the State of Idaho.
- f. Survival. The terms, representations, provisions, covenants, agreements and indemnities shall remain binding upon and for the parties hereto until fully observed, kept or performed.
- g. Authority. The parties hereto represent and confirm that they have the authority to execute this Agreement on their behalf and on behalf of the other persons named herein, although those persons may not have executed this Agreement.
- h. Counterparts. This Agreement may be executed in counterparts, each of which shall constitute an original, but all together shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the undersigned have executed this Water Line Agreement as of the date specified on page one hereof.

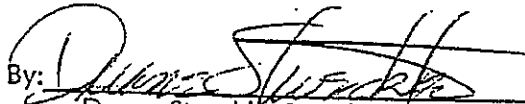
Attest:


City Clerk

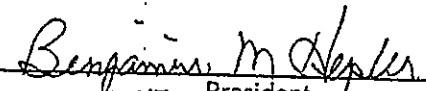
City of Eagle City

By: 
Its: Mayor

Lexington Hills, Inc., an Idaho corporation

By: 
Duane Stueckle, President

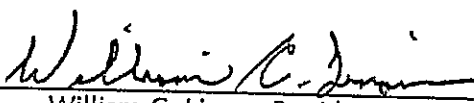
Engineering, Management & Maintenance, Inc., an Idaho corporation

By: 
Benjamin M. Hapler, President

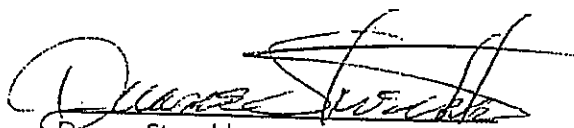
Treasure Valley Village, a California limited partnership

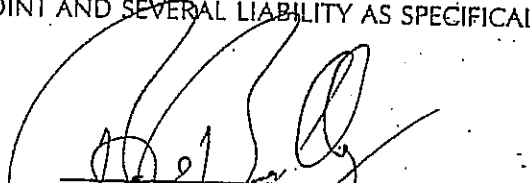
By: 
William R. Guhrke, its General Partner

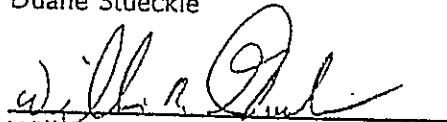
United Water Idaho Inc., an Idaho corporation

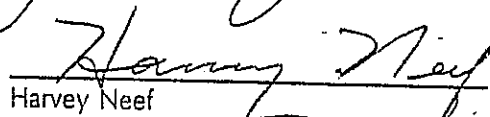
By: 
William C. Linam, President

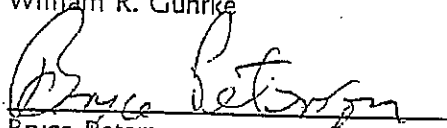
THIS AGREEMENT AND ACKNOWLEDGMENT IS EXECUTED AS OF THE DATE SPECIFIED ON PAGE ONE HEREOF BY DUANE STUECKLE, WILLIAM R. GUHRKE, BERT BRADLEY, HARVEY NEEF, BRYCE PETERSON, DAVID ROYLANCE, DENNIS WHITMORE, AND STEVE YATES FOR THE PURPOSE OF ACKNOWLEDGING THEIR PERSONAL AND JOINT AND SEVERAL LIABILITY AS SPECIFICALLY PROVIDED FOR HEREIN.


Duane Stueckle

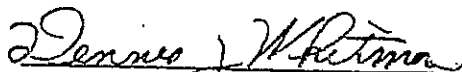

Bert Bradley

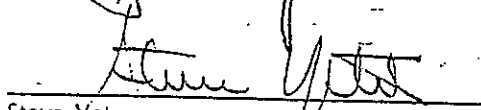

William R. Guhrke


Harvey Neef


Bryce Peterson


David Roylance


Dennis Whitmore


Steve Yates

AGREEMENT

This Agreement is made this 2nd day of December 1997, by and between the City of Eagle, an Idaho municipal corporation (herein called "City"), and United Water Idaho Inc., an Idaho corporation (herein called "UWID").

RECITALS

- A. City is the owner of a municipal, domestic water transmission and distribution system in the City of Eagle (hereinafter called the "System"). The geographical boundaries of the System are shown on Exhibit A, attached hereto and made a part hereof, which geographical boundaries of the System may be amended by the City from time to time.
- B. UWID is engaged in the business of owning, operating and managing a potable water systems, and delivering potable water. UWID owns and operates a potable water reservoir commonly known as the Hidden Hollow reservoir (the "Reservoir").
- C. City desires to have UWID provide such emergency back-up water to City and UWID desires to provide emergency back-up water to City.
- D. Conveyance of emergency back-up water to City from the Reservoir will require that UWID convey potable water to and through the System. City desires to have UWID convey such emergency back up water to City from the Reservoir to and through the System.

NOW, THEREFORE, in consideration of the recitals above which are incorporated below, the mutual terms, conditions, covenants and agreements contained herein, the parties hereto agree as follows:

1. In consideration of conveyance of emergency back-up water to City from the Reservoir, City hereby grants to UWID, and to its successors and assigns, the exclusive right and privilege, for a period of thirty (30) years from the first day following the hereof, to convey potable water to and through the System, all subject to the terms and conditions hereinafter specified.
2. The System shall be constructed and at all times maintained in good order and condition and in accordance with standard engineering practices and all applicable safety codes and lawful governmental regulations, including all applicable local, state, and federal regulations.
3. UWID shall at all times indemnify and hold City, its officers, employees and agent, harmless from any and all expenses or liability arising from or by reason of any negligent act or omission of UWID, its agents or employees, in conveying water to and through the System.
4. Before UWID shall have any rights hereunder, UWID shall file with City Clerk a certificate of insurance evidencing general liability insurance which covers claims for bodily injury, property damage and personal injury. Such insurance shall have minimum limits of \$1,000,000 per occurrence. City of Eagle shall be named as an additional named insured under UWID's insurance policy. Should the minimum limits of insurance as set forth herein be increased above \$1,000,000, pursuant to the Idaho Tort Claims Act (Idaho Code Section 6-901, et. seq.) or any similar legislation, UWID shall, upon City's request, be required to provide City with a new certificate of insurance evidencing such higher limits.
5. This Agreement shall at all times be subject to all rules, regulations and orders that may be lawfully prescribed by the IPUC or by any other governmental authority now or hereafter having jurisdiction over such matters.

6. City and UWID acknowledge that delivery of water other than water controlled by City and/or UWID is undesirable and agree that City shall not grant a permit, license or other agreement for the use of the System to another water service provider during the term of this Agreement.

7. In the event of an amendment to the laws, rules or regulations of City, the State of Idaho, or the IPUC applicable to this Agreement, or for periodic review of any section of this Agreement, the terms of this Agreement and the rights and privileges hereby conferred may be changed, altered, amended, or modified upon mutual agreement between City and UWID to carrying out the intent of this Agreement. In all cases, sixty (60) days notice shall be required on the part of City or UWID to reopen the Agreement pursuant to this section.

8. Sale, assignment, lease or other transfer of this Agreement by UWID may occur only subsequent to notification to City. Sale of the System by City shall be subject to the terms of this Agreement.

9. GENERAL PROVISIONS.

a. All notices, demands, requests, and other communications under this Agreement shall be in writing and shall be deemed properly served or delivered, if delivered by hand to the party to whose attention it is directed, or when sent, three (3) days after deposit in the U.S. mail, postage prepaid, by registered or certified mail, return receipt requested, or if sent by facsimile to the party to whose attention it is directed, addressed as follows:

If to City: The City of Eagle
 Attn: Mayor
 City Hall
 310 E. State Street
 Eagle, ID 83616
 (208) 939-6813
 (208) 939-6827(facsimile)

If to UWID: United Water Idaho Inc.
 Attn: President
 8248 W. Victory Road
 Boise, Idaho 83707
 (208) 362-1704
 (208) 362-3858 (facsimile)

or at such other address or to such other party which any party entitled to receive notice hereunder designates to the other in writing as provided above.

b. Upon reasonable request by City, UWID shall send a representative to any particular meeting of City's Council and shall provide City with quarterly reports of activities in connection with conveying water to and through the System.

c. The failure on the part of either party to enforce its rights as to any provision of the Agreement shall not be construed as a waiver of its rights to enforce such provision in the future.

d. If any party shall fail to perform such party's obligation(s) contemplated herein for any reason, one or more of the other parties may pursue any and all remedies at law or equity; provided, however, all parties affected by any default agree to attempt to mediate a settlement in good faith prior to initiating litigation. In the event litigation is filed, the prevailing party or parties shall be entitled to an award of reasonable costs and attorneys' fees.

e. If any section, subsection, sentence, clause, phrase or portion of the Agreement is for any reason held invalid, preempted or unconstitutional by any Federal or State court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision of the Agreement, and such holding shall not affect the validity of the remaining portions hereof.

f. The Agreement is subject to all applicable laws of the State of Idaho and ordinances of City.

g. The terms, representations, provisions, covenants, agreements and indemnities shall remain binding upon and for the parties hereto until fully observed, kept or performed.

IN WITNESS WHEREOF, the undersigned have duly executed this Agreement as of the date first above written.

CITY OF EAGLE, an Idaho municipal corporation

By: _____

Richard Yzaguirre, Mayor

ATTEST:

By: _____

City Clerk

UNITED WATER IDAHO INC., an Idaho corporation

By: _____

William C. Linam, President



EXHIBIT A

Geographical Boundaries City of Eagle Water System

Commencing at the section corner common to Sections 4, 5, 8 and 9, Township 4 North, Range 1 East, Boise Meridian, Ada County, Idaho, the REAL POINT OF BEGINNING;

thence easterly along the section line common to Sections 4, 3, 9 and 10 approximately 2 miles to the section corner common to Sections 2, 3, 10 and 11, Township 4 North, Range 1 East, Boise Meridian, said point being the centerline of State Highway 55;

thence northwesterly along said centerline of State Highway 55 approximately 3/4 mile to a point on the north line of the south half of the north half of said Section 3, Township 4 North, Range 1 East, Boise Meridian;

thence westerly along said north line of the south half of the north half of Section 3, approximately 3/4 mile to the common north-south section line of Sections 3 and 4, Township 4 North, Range 1 East, Boise Meridian;

thence southerly along said north-south section line of Sections 3 and 4 approximately 1/4 mile to the 1/4 corner common to said Sections 3 and 4, Township 4 North, Range 1 East, Boise Meridian;

thence westerly along the east - west half section line of said Section 4 approximately 1/8 mile to the centerline of Dry Creek;

thence southwestwesterly along said centerline of Dry Creek approximately 5/8 mile to the west line of the east half of the west half of said Section 4, Township 4 North, Range 1 East, Boise Meridian;

thence southerly along said west line of the east half of the west half of Section 4 approximately 3/8 mile to the north line of the south half of the south half of said Section 4, Township 4 North, Range 1 East, Boise Meridian;

thence westerly along said north line of the south half of the south half of Section 4 approximately 1/4 mile to the common north - south section line of said Sections 4 and 5, Township 4 North, Range 1 East, Boise Meridian;

thence southerly along said north - south section line of Sections 4 and 5 approximately 1/4 mile to the section corner common to Sections 4, 5, 8 and 9, Township 4 North, Range 1 East, Boise Meridian, the REAL POINT OF BEGINNING;

RECEIVED JUN - 4 1992

WATER SERVICE CONTRACT

THIS AGREEMENT, dated May, 1992, is entered into between the CITY OF EAGLE, an Idaho municipal corporation, whose address is City Hall, P. O. Box 477, Eagle, Idaho 83616 ("Owner"), and ENGINEERING, MANAGEMENT AND MAINTENANCE, INC., an Idaho corporation, whose address is 10487 Overland Road, #116, Boise, Idaho 83709 ("EM2, Inc.").

1. The Owner is, or is about to become, the owner of the domestic water system presently constructed, and as to be expanded in the future, to serve the Lexington Hills and Echo Creek Subdivisions in Eagle, Idaho, and which may be extended to serve other subdivisions, in which case the service provided for herein to Lexington Hills and Echo Creek Subdivisions shall be provided to other subdivisions served by the Owner on the same terms and conditions ("Water Service Area"). The domestic water system (hereinafter called the "Water System") presently consists of well(s), pumps, pump houses and related appurtenances, water distribution systems and appurtenances. The location of the Water System is depicted on the attached Exhibit A and Exhibit B.

2. EM2, Inc. agrees to perform the following services under this agreement promptly and in a good and workmanlike manner:

- a. Meters: To furnish and install water meters for the individual lots on request of the Owner, said meters to become a part of the Water System and the property of the Owner upon installation thereof.
- b. Normal Operation and Maintenance: To perform all services and furnish all necessary materials and equipment in connection with the normal operation and maintenance of the Water System, including periodic inspections and preventive maintenance of the Water System, meter reading, billing, record keeping, reporting and submission of water samples to health laboratories on a monthly or other required periodic basis, and to do all other things necessary to comply with applicable federal, state or local health authority requirements in connection with the operation of a domestic water system, including but not limited to the operating, testing and reporting requirements of state and federal law applicable to public drinking water systems.

3. Owner agrees to pay EM2, Inc. for services and materials to be performed or furnished by or under the supervision of EM2, Inc. in accordance with the following schedule:

- a. For Normal Maintenance and Operations: A \$3.00 per month per customer fee or charge plus mileage or \$100.00 per month, for all customers served under this contract, plus mileage at \$0.20 per mile, whichever is greater. EM2, Inc. shall mail or deliver, no more frequently than once per month, an invoice for all charges incurred by Owner under the terms of this Service Contract. The invoice shall be due within 30 days of its delivery. Along with the invoice, EM2, Inc. shall deliver a monthly statement of all customers served, the amount of mileage and the date the mileage was incurred.
- b. Meters: EM2, Inc. will furnish, install, and maintain all water meters. The cost to furnish and install a water meter is \$120.00, which EM2, Inc. will include in the monthly invoice to the Owner.
- c. Extra Work: Major pump work will be performed by a qualified pump repair company with the actual charges of the pump repair company billed to the Owner according to the terms and conditions contained in Paragraph 3.a. EM2, Inc. will take reasonable steps to ensure that such costs are competitive, considering all relevant circumstances. EM2, Inc. will be paid for hours of supervision of extra work only when requested by the Owner to be on site while such repairs are under way. Major breaks and repair shall be charged at, the lesser of, cost plus 15%, or at the hourly rates as shown:

\$20.00 per hour	EM2, Inc. supervision
\$15.00 per hour	Laborer
\$20.00 per hour	Backhoe*
\$15.00 per hour	Dump Truck*
\$ 5.00 per hour	Pickup*
\$12.00 per hour	Compressor and related tools

Items marked with an *, i.e.: include insurance, fuel and other necessary incidentals.

Other equipment shall be at agreed rates, which shall not exceed competitive rates.

Before any work is undertaken under Paragraph 3.c., an estimate of the costs of repair shall be obtained by EM2, Inc. and provided to the Owner for its approval. In the event the estimated costs of repair exceeds Five Thousand Dollars (\$5,000) for service work or Ten Thousand Dollars (\$10,000) for repair, maintenance or

materials, the work shall then be competitively bid in accordance with the state laws governing municipal competitive bidding.

4. All prices in this Water Service Contract, including the price to furnish and install water meters, shall be subject to change by EM2, Inc. annually on the anniversary date of this Water Service Contract. In the event EM2, Inc. desires to change any fee or charge under this Water Service Contract, it shall give written notice to the Owner of its desire to do so, at least sixty (60) days prior to the anniversary date of the Water Service Contract. In the event the Owner fails to give written notice of its approval of the fees or charges to be changed by EM2, Inc., for the following year, on or before the anniversary date of this Water Service Contract, the Water Service Contract shall expire without any additional notice at the expiration of its term.

5. EM2, Inc., at its sole expense, shall provide and maintain comprehensive general liability insurance, naming the Owner as an additional insured, in the amount of One Million Dollars (\$1,000,000) for injuries, including wrongful death or property damage or other loss as a result of any one occurrence or accident. The policy shall provide that the Owner is to receive notice of intent by the insurance company to cancel or of any substantial modification to the policy, at least twenty (20) days in the advance of such cancellation or modification. In addition, the insurance policy shall provide that the Owner is to receive annual proof of renewal of such insurance not less than ten (10) days before expiration.

6. This Water Service Contract is for an initial term of one year from the date of execution herein by the Owner and EM2, Inc. The Water Service Contract is automatically renewable for an additional one-year terms, provided that Owner has given written approval to the fees and charges to be charged by EM2, Inc. for the following year, as further described in Paragraph 4. This Water Service Contract may be terminated without cause by either party upon written notice given at least sixty (60) days in advance of the effective termination date, provided, however, that EM2, Inc. agrees to provide continued operation and maintenance of the Water System for a reasonable time, considering all of the circumstances, (notwithstanding) termination of this contract or failure or refusal of either party to agree to a renewal or extension of the contract.

7. The parties agree that EM2, Inc. is an independent contractor, and the Owner is the Principal, and that nothing herein contained shall be construed to create a joint venture, partnership or other similar relationship which might subject either party to liability for the debts or obligations of the other. Each party agrees to indemnify and hold harmless the other party against any and all liabilities, losses, damages, costs or expenses, including reasonable legal fees as a result of any claims, causes of action,

judgments and damages of any kind arising out of work performed under this Water Service Contract that they might sustain, caused in whole or part by any negligent or wrongful acts or omissions on the part of the indemnifying party or any employee or agent of said party.

8. EM2, Inc. agrees to bill the owners of lots in Lexington Hills and Echo Creek Subdivisions and others as may be added from time to time by Owner ("Water Customers") as soon as reasonably possible after EM2, Inc. obtains the information necessary to do so, monthly, at the same time each month, for the water customer's water service charges for the preceding month. EM2, Inc. will deposit Water Customer payments into a designated City of Eagle account within forty-eight (48) hours after receipt. EM2, Inc. agrees to provide a monthly accounting to Owner, showing all payments received by EM2, Inc., the Water Customer's name, account number, property address, amount of water used and the amounts owed by each water customer. Owner and EM2, Inc. agree to determine the content and form of the monthly reports. The Owner will collect the hook-up fees charged to water customers. EM2, Inc. shall bill the Owner monthly for any and all charges that it is entitled to receive under this Water Service Contract.

9. The Owner shall establish and advise EM2, Inc. of the scheduled water service charges to the water service customers and the City Ordinances affecting water use and any rules and regulations relating to water services.

10. Notices to be given under this Water Service Contract shall be in writing and be delivered in person or by public or private courier service (including U.S. Postal Service Express Mail) or registered or certified mail or by facsimile. Any notice given by registered or certified mail shall be sent with return receipt requested. All notices shall be addressed to the parties at the following addresses or at such other addresses as the parties may from time to time direct in writing.

OWNER:

The City of Eagle
City Hall
P. O. Box 477
Eagle, ID 83616
(208) 939-6813
FAX: (208) 939-6827

With a copy to: Mona Dobaran Mack
 City Attorney
 Davis Wright Tremaine
 702 West Idaho St., Suite 700
 Boise, ID 83702
 (208) 338-8215
 FAX: (208) 338-8299

EM2, INC.: Keith Stokes
 President
 Engineering, Management and
 Maintenance, Inc.
 10487 Overland Rd., #116
 Boise, ID 83709
 (208) 376-4145; (208) 375-1130
 (No FAX)

Any notice shall be deemed to have been given on (a) actual delivery or refusal, (b) the day of mailing, if delivery is by regular, registered or certified mail, or (c) the day facsimile delivery is verified.

11. EM2, Inc. agrees to act as custodian of those records, files, computer records, invoices and statements which EM2, Inc. prepares or obtains while acting under this Water Service Contract as it pertains to the Owner's Water System ("Records"), which such Records shall belong to and are the sole property of the Owner. EM2, Inc. agrees to turn over the Records to the Owner upon demand. EM2, Inc. further agrees to make available to the Owner, all Records and computer programs, for inspection purposes, relating the Water System which are the subject of the Water Service Contract, during regular business hours, provided Owner gives EM2, Inc. forty-eight (48) hours notice in advance of Owner's desire to make such inspection.

12. EM2, Inc. agrees to comply with all of the Owner's Ordinances, rules and regulations pertaining to the ownership, management operation and supervision of its domestic water system and to act as an agent for the Owner and further to act at the Owner's discretion.

13. EM2, Inc. agrees to collect delinquent accounts according to the terms and conditions of the Owner's Ordinances, rules and regulations pertaining to the domestic water system, including collection of amounts owed through small claims court.

14. EM2, Inc. agrees to send a representative to all meetings of the Owner's City Council, when its attendance is requested by

the Owner, and the Owner agrees to pay EM2, Inc. the fee herein provided for supervision, in Paragraph 3.a, plus mileage.

15. EM2, Inc. agrees to contact Digline and establish EM2, Inc. as the Owner's representative for the Water System in those areas that the Owner is providing water service, designated as the Water Service Area. EM2, Inc. further agrees to respond to calls concerning the location of water lines and mark their location as required by Digline. The fees payable to EM2, Inc. for services provided under this paragraph shall be as follows:

- a) the initial contact and establishment of EM2, Inc. as the Owner's representative with Digline, as well as any ongoing administrative matters with Digline, shall be included in the basic service provided by EM2, Inc. to the Owner and this shall be included in the base fee contained in Paragraph 3.a.
- b) EM2, Inc. shall be reimbursed for any costs it incurs as a result of acting as the Owner's representative plus 15%. EM2, Inc. shall obtain prior written approval for all expenses related to acting as the Digline representative over \$100 from the Owner.
- c) The Owner agrees to pay EM2, Inc. the fee for supervision, as contained in Paragraph 3.c, for all work that EM2, Inc. performs in identifying and marking water lines as required by Digline.

16. The Owner reserves the right, by providing thirty days advance written notice to EM2, Inc., to reassign the billing and collection responsibilities under this Water Service Contract, to any party or entity that is so desires. EM2, Inc. shall within a reasonable period of time after any such reassignment, review its fee structure and reduce the fee charged to the Owner to reflect this reassignment of responsibilities under the Water Service Contract.

17. This Water Service Contract constitutes the entire agreement between Owner and EM2, Inc., and there are no other representations or promises between them other than those expressly stated or provided for herein.

18. Time is of the essence of this Water Service Contract.

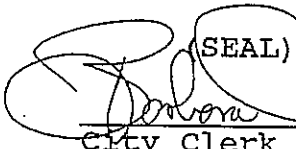
19. In the event any action is filed to enforce this Water Service Contract, or for damages arising out of any default in the performance of this Water Service Contract, the prevailing party shall be entitled to recover reasonable attorney fees and all costs incurred in connection with such action.

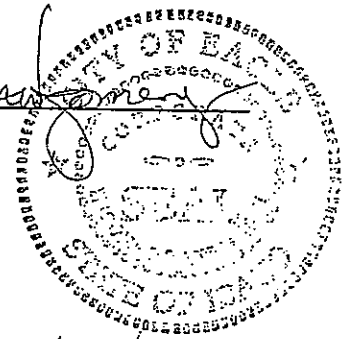
DATED: 5-26-92

OWNER: CITY OF EAGLE


Mayor

Attest:

 (SEAL)
City Clerk

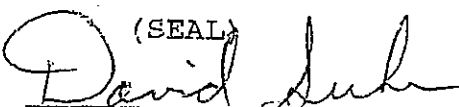


DATED: 6/5/92

ENGINEERING, MANAGEMENT
AND MAINTENANCE, INC.


Keith Stokes, President

Attest:

 (SEAL)
Secretary

ACORD.**CERTIFICATE OF INSURANCE**

41115

ISSUE DATE (MM/DD/YY)

9/14/95

PRODUCER

Marsh & McLennan, Incorporated
44 Whippany Road
P. O. Box 1966
Morristown, NJ 07962-1966

RECEIVED

SEP 19 1995

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND
CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE
DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE
POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A TRAVELERS INDEMNITY OF ILL.

COMPANY LETTER B

COMPANY LETTER C

COMPANY LETTER D

COMPANY LETTER E

INSURED

Engineering, Management & Maintenance, Inc.
8248 West Victory Road
Boise, ID 83707

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD
INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS
CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS,
EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY	UJEXGL752G2941TIL	1/01/95	1/01/96	GENERAL AGGREGATE \$ 2000000
	☒ COMMERCIAL GENERAL LIABILITY				PRODUCTS-COMP/OP AGG. \$ 2000000
	☐ CLAIMS MADE ☒ OCCUR.				PERSONAL & ADV. INJURY \$ 1750000
	OWNER'S & CONTRACTOR'S PROT.				EACH OCCURRENCE \$ 1750000
					FIRE DAMAGE (Any one fire) \$ 1750000
					MED. EXPENSE (Any one person) \$ 5000
A	AUTOMOBILE LIABILITY	UC2JCAP752G2989TII	1/01/95	1/01/96	COMBINED SINGLE LIMIT \$ 1000000
A	☒ ANY AUTO	UC2JCAP752G2965TII	1/01/95	1/01/96	BODILY INJURY (Per person) \$
	ALL OWNED AUTOS				BODILY INJURY (Per accident) \$
	SCHEDULED AUTOS				PROPERTY DAMAGE \$
	HIRED AUTOS				
	NON-OWNED AUTOS				
	GARAGE LIABILITY				
	EXCESS LIABILITY				EACH OCCURRENCE \$
	☐ UMBRELLA FORM				AGGREGATE \$
	☐ OTHER THAN UMBRELLA FORM				
A	WORKER'S COMPENSATION	UJUB752G2953TIL95	1/01/95	1/01/96	☒ STATUTORY LIMITS
A	AND	UC2JUB752G3009TIL	1/01/95	1/01/96	EACH ACCIDENT \$ 1000000
A	EMPLOYERS' LIABILITY	UC2JUB752G2990TIL	1/01/95	1/01/96	DISEASE-POLICY LIMIT \$ 1000000
A		ULJUB752G3010TIL95	1/01/95	1/01/96	DISEASE-EACH EMPLOYEE \$ 1000000
	OTHER				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

GL-Excess \$250,000 SIR.
Operation & Maintenance Contract.

9-20-95

CERTIFICATE HOLDER

City of Eagle Management &
Maintenance, Inc.
8248 West Victory Road
Boise, ID 83707

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE
EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO
MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE
LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR
LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Continuation

EM² Inc.

Engineering, Management & Maintenance

10487 Overland Road, #116
Boise, Idaho 83709
(208) 376-4145
March 24, 1993

City of Eagle
City Hall
P.O. Box 477
Eagle, Idaho 83616

On March 22, 1993, Engineering Management and Maintenance, (EM2 Inc) received a formal proposal from General Waterworks Corporation to purchase our stock.

It is the intent of both parties that this sale will be completed by May 1, 1993.

The present contracts will be assigned to General Waterworks Corp. and maintenance and operation of your system will not change. Also all accounting procedures and costs will remain the same until GWC renegotiates with each contract holder.

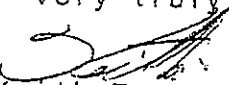
General Waterworks Corp will provide you with the names of contact people, regular and emergency phone numbers, address changes or any other information deemed necessary for continued operation of your water system.

General Waterworks Corp has the expertise, resources and trained personnel to provide you with excellent maintenance and operation of your water system.

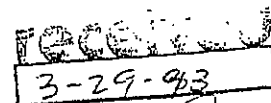
We will be available to all parties to assure a smooth transition in the operations of the system.

We, of EM2 Inc., have been pleased to provide service to you and we appreciate your past support.

Very truly yours,


Keith E. Stokes, P.E.
President

KES:ls
CC: Lexington Hills
Trail Creek
Briggs Engineering, Inc



Sent to Morra
3/29/93

FIRST AMENDMENT TO WATER SERVICE CONTRACT

This First Amendment to Water Service Contract (this "Amendment") is made this ~~2nd day of December~~ 1997 by and between The City of Eagle (herein called "Owner" or "City"), an Idaho municipal corporation, and Engineering, Management and Maintenance, Inc. (herein called "EM²"), an Idaho corporation, in order to provide operations, maintenance, and management services for the municipal water system currently owned and/or operated by City.

RECITALS

A. City is the owner of a municipal, domestic water transmission and distribution system in the City of Eagle (hereinafter called the "System"). The geographical boundaries of the System are shown on Exhibit A, attached hereto and made a part hereof, which geographical boundaries of the System may be amended by the City from time to time.

B. EM² is engaged in the business of operating and managing domestic water systems such as the System.

C. City entered into that certain Water Service Contract with EM² on May 26, 1992 (the "Water Service Contract").

D. City and EM² desire to amend the Water Service Contract as provided further herein.

E. The Water Service Contract and this Amendment are collectively referred to herein as the "Contract."

NOW, THEREFORE, in consideration of the recitals above which are incorporated below, the mutual terms, conditions, covenants and agreements contained herein, the parties hereto agree as follows:

1. Paragraph 6 of the Water Service Contract is hereby deleted in its entirety and replaced as follows:

TERM OF CONTRACT

The term of the Contract shall commence on the first day following the date of the final passage of the resolution referenced in Paragraph 3(A) below (the "Commencement Date"), and shall expire fifteen (15) years following the Commencement Date (the "Term") ; provided, however, that EM² agrees to provide continued operation and maintenance of the System for a reasonable time, considering all of the circumstances, notwithstanding termination, impairment, or expiration of the Contract.

2. Paragraphs 1, 2, 5, 8, 11, 12, 13 and 15 of the Water Service Contract are hereby deleted in their entirety and replaced as follows:

OBLIGATIONS OF EM².

A. Billing. EM² shall monthly bill City's existing customers and others as may be added from time to time by City as soon as reasonably practicable, at approximately the same time each month, for such water customer's water service charges for the preceding month. All rents, rates, fees or other charges for water service shall be paid to and collected by EM² and, except as otherwise provided herein including, without limitation, as set forth paragraph 3A below. shall be retained by and become the property of EM².

B. Capital Expenditures and System Repairs. EM², after consultation with City, shall prepare a budget for capital improvements and/or expenditures in connection with the System, which shall include the estimated City expenses in connection with the System. Each year, the parties will renegotiate EM²'s maximum annual budget for capital improvements and/or expenditures. All charges made against the budget by EM² shall be at EM²'s direct actual cost of labor, material and overhead. EM² shall reimburse City for budgeted and actual City expenses in connection with the System on a monthly basis not to exceed three percent (3%) of collected revenues.

(i) Future Capital Costs. In the event that other capital improvements and/or expenditures in connection with the System are deemed ordinary and necessary and/or desirable or are required to meet Federal, State, and local laws and regulations, City shall have the option to either finance such capital improvements and/or expenditures itself or request that EM² finance such additional capital improvements and/or expenditures. If City so requests, and if EM² agrees, to have EM² finance such capital improvements and/or expenditures, then City agrees to increase the water service rates and/or connection fees by an amount agreed upon by the parties hereto, which amount will adequately compensate EM² for such capital improvements and/or expenditures. EM² shall not be obligated to finance such capital improvements and/or expenditures unless and until the agreed-upon rate and/or connection fee increase has become effective. If repayment of the capital improvements and/or expenditures shall not be fully repaid while the Contract is in effect, or if any agreed-upon rate and/or connection fee increase shall have been finally ruled to be ineffective, City agrees to pay any unreimbursed portion of the capital improvements and/or expenditures upon such final ruling, or upon termination, impairment or expiration of the Contract, as applicable, as provided further in paragraph B(ii).

(ii) Repayment of Capital Costs. In the event of termination or impairment of the Contract for any reason, or expiration of the Contract, or upon such final ruling that any agreed-upon rate and/or connection fee increase is ineffective, City shall reimburse EM² for the unamortized portion of any and all capital improvements and/or expenditures made prior thereto using a straight-line amortization schedule utilizing a 2% amortization rate. City agrees to reimburse such advances immediately after termination, expiration, or impairment of the Contract.

For purposes of the Contract, capital improvement and/or capital costs shall mean an improvement to the System ~~that has a five year or greater useful life~~, is non-consumable in nature and constitutes a permanent part of the System. For example, without limitation, any repair to a broken water main involving the replacement of an entire length of pipe and two joints and/or as another example, major components of a pumping unit or well, shall be considered a capital improvement.

C. Services to be Provided.

(i) Staffing. EM² shall provide a professional staff of qualified employees for operations, maintenance and management procedures and shall provide additional third party support as needed to perform the scope of services described herein.

(ii) Licensees. The operations staff shall be required to possess all required State, Federal, and local licenses and certifications.

(iii) Water Quality Standards.

a) EM² shall comply with all Federal, State, and local regulations concerning safe drinking water standards. EM² agrees to indemnify and hold City harmless from any fines or penalties assessed by the appropriate regulatory agencies for any and all violations committed by EM².

b) EM² shall endeavor to meet all water quality requirements which exist as of the Commencement Date. To the extent that such environmental laws and regulations are changed so

as to require additional capital improvements and/or expenditures in order to effectuate compliance, City agrees that the rates and/or connection fees shall be adjusted so as to adequately compensate EM² for said additional capital improvements and/or expenditures. If additional capital improvements and/or expenditures are necessary to comply with changes in environmental laws and regulations, City shall have the option to either make such capital improvements and/or expenditures from its own funds or to request EM² to make such capital improvements and/or expenditures. If City so requests, and if EM² agrees, to have EM² finance such capital improvements and/or expenditures, then City agrees to increase rates and/or connection fees by an amount agreed upon by the parties hereto, which amount will adequately compensate EM² for such additional capital improvements and/or expenditures. EM² shall not be obligated to finance such additional capital improvements and/or expenditures unless and until the agreed-upon rate and/or connection fee increase has become effective. If repayment of the additional capital improvements and/or expenditures shall not be fully repaid while the Contract is in effect, or if any agreed-upon rate and/or connection fee increase shall have been finally ruled to be ineffective, City agrees to pay any unreimbursed portion of the additional capital improvements and/or expenditures upon such final ruling, or upon termination, impairment or expiration of the Contract, as applicable, as provided further in paragraph B(ii).

c) EM² shall have no obligation to indemnify City for any fines or penalties assessed for conditions which pre-exist the Commencement Date and constitute violations of any current Federal, State or local water quality laws or regulations. City shall disclose any and all such conditions to EM² as soon as reasonable and practicable. In the event the wells or any source of supply become contaminated or other circumstances cause the System to not meet standards as established by the regulatory agencies for reasons beyond the reasonable control of EM², all remedies and related costs shall be the responsibility of City.

d) EM² shall comply with all applicable State, Federal, and local laws, regulations, and ordinances as they apply to the System and will maintain existing regulatory licenses and/or permits (currently held by City) necessary for the operation and maintenance of the System. This provision shall not be construed to require EM² to make improvements or repairs beyond those required by ordinary maintenance or as otherwise provided in the Contract.

e) City agrees to indemnify and hold EM² harmless from any and all fines or penalties assessed by the appropriate regulatory agencies for any and all violations committed by City and for all conditions which pre-exist the commencement of the Contract and constitute violations of any current Federal, State or local water quality laws or regulations.

(iv) Reports. EM² shall comply with all reporting requirements related to its operations as mandated by Federal, State and local laws and regulations.

(v) Records. EM² shall act as custodian of those records, files, invoices and statements which EM² prepares or obtains in connection with the Contract, which records shall belong to and are the sole property of City. EM² agrees to turn over such records to City upon demand. EM² further agrees to make available to City, all such records for inspection purposes in connection with the Contract during regular business hours, provided City gives EM² forty-eight (48) hours advance notice of Owner's desire to make such inspection.

(vi) Expenses. EM² shall pay all expenses required for the normal operation, maintenance, and management of the System, subject to the limitations herein provided.

(vii) Insurance. EM² shall maintain the following insurance:

a) Commercial General Liability Insurance and Property Damage: not less than \$1,000,000.00 to any one (1) person and \$1,000,000.00 for any one (1) occurrence for bodily injury, and \$1,000,000.00 broad form coverage for property damage.

b) Comprehensive Automobile Liability Insurance: not less than \$1,000,000.00 for each accident for property damage.

c) Workers' Compensation: in accordance with State and Federal statutory requirements and liability insurance of not less than \$100,000.00.

d) Umbrella Excess Liability Insurance and Automobile Liability: covering EM² and City with the minimum limit of \$5,000,000.00.

The minimum coverage requirements may, at either party's request, be subject to renegotiation during the Term.

(viii) Digline. EM² agrees to contact Digline and establish EM² as City's representative for the System. EM² further agrees to respond to calls concerning the location of water lines and mark their locations as required by Digline.

(ix) At City's request, EM² shall advise City in regard to the availability of water service for proposed new developments within the geographical boundaries of the System, which geographical boundaries may be amended by City from time to time.

3. Paragraphs 3, 4, 9, and 16 of the Water Service Contract are hereby deleted and replaced as follows:

CITY'S OBLIGATIONS.

A. Rates. City, by resolution, shall provide for a schedule of minimum charges for water supply service as set forth in the Contract. The initial rates and charges to be charged hereunder for the various categories of service are shown on Exhibit B. The connection fee shall be a total of not less than \$850.00, paid upon customer request for service and \$200.00 of which connection fee shall be paid to the Eagle City domestic water system reserve fund. Nothing herein shall be construed to restrict City from setting and collecting rates beyond the minimum rates as set forth herein. The rates shown on Exhibit B do not include any rate increases and/or increases in connection fees which may be required for additional capital improvements, repairs, investments and/or expenditures as necessitated by the terms of the Contract. The parties shall renegotiate the rates and attach a new Exhibit B hereto and shall continue this practice every five (5) years hereafter. Such revision of the fees and charges shall be based on all relevant factors and shall include, without limitation, the product of such previously adopted rates and fees multiplied by two percent (2%) per annum plus an additional five percent (5%) of the last previously adopted fees and charges.

B. Licenses. City, except as set forth as part of EM²'s obligations, shall obtain and/or continue to maintain existing and contractually contemplated ownership, easements, licenses, equipment, warranties, franchises, and permits for the mutual benefit of both parties.

C. Owner's Insurance. City shall insure that commercial general liability and hazard insurance policies are maintained, with limits not less than those required of EM², for the mutual benefit of the parties herein, naming EM² as an additional insured, to the extent permitted by law.

D. Collections. City agrees to cooperate in collection matters and to use statutory powers pertaining to any and all remedies granted to municipalities for purposes of collection.

E. Right of Access. City shall provide EM², its employees, agents, and subcontractors, with any and all rights of access necessary for the operation, repair, and maintenance of the System.

F. Repair Procedures. Repairs shall be made in accordance with existing City, County, State, and Federal laws and ordinances. EM² shall not incur expenses for items such as street openings. Similarly, if, during the course of EM²'s work necessary to make improvements or repairs, hazardous waste or materials are discovered, it shall not be the obligation of EM² to remove and/or dispose of such hazardous waste or materials.

G. Private Law. City shall advise EM² of any private (for example, homeowners' associations) conditions, covenants, restrictions and/or easements affecting the System and water use in connection with the System.

4. Paragraph 7 of the Water Service Contract is hereby deleted in its entirety and replaced as follows:

INDEMNITY.

EM² agrees to, and shall indemnify and hold harmless City, its elective and appointive officers, and its duly authorized agents, servants, and employees from any liability, including liability to third parties, for personal injury, including death, and/or property damage which are caused by or arise from the sole negligence of EM² or any subcontractor selected by EM² in connection with the operation of the System.

EM², its employees, subcontractors, and agents shall not be responsible for any liability for personal injury, including death, and/or claims for property damages arising out of circumstances which are beyond the control of, or which were not caused by, the negligence of EM², its employees, subcontractors or agents.

City agrees to hold harmless and indemnify EM² for any loss, damage, liability or expense due to claims by third parties for property damage or personal injury arising from the normal operation of the System, as well as any loss, damage, liability or expense due to the negligent or improper design or construction of the System not otherwise caused by EM², its employees and/or agents.

In the event EM² and/or its subcontractors, together with City or any third party, are negligent, and the negligence of each is the proximate cause of such damage(s), then each party shall be responsible for the portion of the liability or damages equal to that party's comparative share of the total negligence. EM² reserves the right to conduct its own defense and settle any claims made against it or for which it will be responsible.

5. Paragraph 14 of the Water Service Contract is hereby deleted in its entirety and replaced as follows:

REPRESENTATIONS AND WARRANTIES.

A. City is a municipal corporation under the laws of the State of Idaho and has the requisite power and authority to enter the Contract.

B. City has the exclusive legal capacity and authority to assess the rates and revenues established and to be established and assigned to EM² pursuant hereto, and warrants and represents that no prior liens, notes, bonds, mortgages, encumbrances or other entitlements have been imposed or will be imposed thereon, which have or will have priority over the entitlement of EM² pursuant to the Contract.

C. City is not aware of any claims, suits, actions or judgments which, if successful, would create an encumbrance upon EM²'s entitlements herein or otherwise have a material adverse effect on the Contract.

D. City is in compliance with, will remain in compliance with and will ensure the

compliance of any and all separate and existing contracts and/or agreements in connection with the System, specifically including, and without limitation, that certain Agreement for Transfer and Operation of Domestic Water, dated May 20, 1992, as amended from time to time (the "Lexington Hills Agreement").

6. Paragraph 10 of the Water Service Contract is hereby deleted in its entirety and replaced as follows:

NOTICES.

All notices, demands, requests, and other communications under the Contract shall be in writing and shall be deemed properly served or delivered, if delivered by hand to the party to whose attention it is directed, or when sent, three (3) days after deposit in the U.S. mail, postage prepaid, by registered or certified mail, return receipt requested, or if sent by facsimile to the party to whose attention it is directed, addressed as follows:

If to City: The City of Eagle
 Attn: Mayor
 City Hall
 310 E. State Street
 Eagle, ID 83616
 (208) 939-6813
 (208) 939-6827(facsimile)

If to EM²: Engineering, Management and Maintenance, Inc.
 Attn: Katherine Shiflet
 8248 W. Victory Road
 Boise, Idaho 83707
 (208) 362-1799
 (208) 362-3858 (facsimile)

or at such other address or to such other party which any party entitled to receive notice hereunder designates to the other in writing as provided above.

INABILITY TO PROCEED.

A. Wrongful Acts or Omissions. Wrongful, willful or negligent acts of City, through its officers, agents or employees, and wrongful, willful or negligent acts or omissions of third parties, or Acts of God, including lightning, flood, drought, fire, theft, or damage caused by anyone other than the personnel of EM² or its subcontractors or agents, which cause damage to the System or to other parties or properties shall not be the responsibility of EM².

B. Unforeseen Costs. Unforeseen costs associated with Acts of God, or wrongful acts or omissions described herein, including those which increase maintenance expense, repair costs or other expenses beyond the control of EM² are the responsibility of City.

C. Labor Stoppage. In the event a labor action, stoppage or dispute which disrupts or prevents EM²'s employees or its subcontractor's employees from entering upon and working on any part of the System, City, with EM²'s assistance, or EM² at its own option, shall seek appropriate legal injunctions, remedies or court orders. During such a designated period, EM² shall operate the System on a best effort basis until labor relations are normalized and shall not be liable for any fines or penalties. In any event, EM² shall continue to operate the System through the use of office personnel, management or other resources at its disposal, to the best of its ability.

D. Force Majeure. If EM² is prevented or delayed by force majeure from performing any part of the Contract, such failure to perform shall not be deemed a breach of the Contract; provided, however, that failure to make any payment when due shall not be excused by force majeure.

7. Paragraph 19 of the Water Service Contract is hereby deleted in its entirety and replaced as follows:

GENERAL PROVISIONS.

A. New Equipment. Any new equipment installed in the System by EM² during the Term hereof shall become the property of City. EM² shall maintain books and records regarding any such equipment. Prior to making any significant change to the System or expenditures of its own, EM² shall consult with City, as provided further herein.

B. Independent Contractor. EM² is an independent contractor, and City is the principal, and nothing herein contained shall be construed to create a joint venture, partnership or other similar relationship which might subject either party to liability for the debts or obligations of the other.

C. City Meetings. Upon reasonable request by City, EM² shall send a representative to any particular meeting of City's City Council and shall provide City with quarterly reports of activities in connection with the System.

D. Enforcement. The failure on the part of either party to enforce its rights as to any provision of the Contract shall not be construed as a waiver of its rights to enforce such provision in the future.

E. Assignment. EM² shall be permitted to make an assignment to any affiliated company of EM², or EM² may assign to any other company with the City's consent, which shall not be unreasonably held.

F. Equal Opportunity. EM² is an equal opportunity employer.

G. Default. If any party shall fail to perform such party's obligation(s) contemplated herein for any reason, one or more of the other parties may pursue any and all remedies at law or equity; provided, however, all parties affected by any default agree to attempt to mediate a settlement in good faith prior to initiating litigation. In the event litigation is filed, the prevailing party or parties shall be entitled to an award of reasonable costs and attorneys' fees.

H. Access. City officials and representatives will have access to the System in connection with the Contract during normal working hours and at other times with reasonable notice.

I. Public Notices. City shall issue all public notices associated with non-compliance with regulatory requirements for drinking water standards, and EM² shall provide all necessary support which City may reasonably require.

J. Severability. If any section, subsection, sentence, clause, phrase or portion of the Contract is for any reason held invalid, preempted or unconstitutional by any court or by any Federal or State agency of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision of the Contract, and such holding shall not affect the validity of the remaining portions hereof.

K. Application of Law. The Contract is subject to all applicable laws of the State of Idaho and ordinances of the municipality of Eagle City.

L. Survival. The terms, representations, provisions, covenants, agreements and indemnities

shall remain binding upon and for the parties hereto until fully observed, kept or performed.

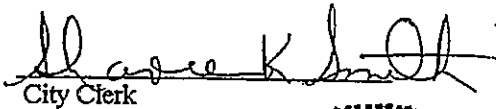
M. Captions. The captions at the beginning of the several paragraphs, respectively, are for convenience in locating the context, but are not part of the text.

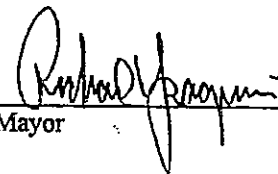
N. Inconsistencies. In the event of any inconsistency between the terms and conditions of the Amendment and the Water Service Contract, the terms and conditions of the Amendment shall control.

IN WITNESS WHEREOF, the undersigned have duly executed this First Amendment to Water Service Contract as of the date first above written.

ATTEST:

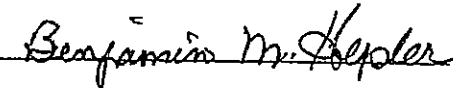
CITY OF EAGLE, an Idaho municipal corporation


City Clerk

By: 
Mayor



ENGINEERING, MANAGEMENT AND MAINTENANCE,
INC., an Idaho corporation

By: 
Its: VICE PRES.

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

CLAIM TO A WATER RIGHT



Under the provisions of Section 42-243, Idaho Code, any person using or claiming rights to the public waters of Idaho established by diversion and application to a beneficial use must file a claim with the Department of Water Resources on or before June 30, 1983. Exempted from this filing are single family domestic uses as defined in Section 42-230(d), Idaho Code. Also exempted are rights represented by a permit, license, decree, adjudicated right, or a previously filed claim.

The filing of this claim does not confirm the water right claimed but failure to file may result in forfeiture of a water right.

Notice is hereby given that Eleanor J. Chase

Floating Feather Rd.

(Name of Claimant)

Route 3 Eagle, Idaho

(Mailing Address)

83616

(Zip Code)

Telephone No. 939-6226

claims a right to the diversion and beneficial use of the surface or ground water. The extent and nature of said claim is as follows:

- (1) Date of priority: (When was the water first applied to a beneficial use) 1872
A claim is not acceptable on a ground water source with a priority later than March 25, 1963 or on a surface water source with a priority later than May 20, 1971. An exception is that a claim may be filed on single family domestic use from a ground water source.
- (2) Describe the source of water: (Name of stream, lake, spring, etc., or ground water)
WASTE WATER tributary to DEY CREEK
- (3) Describe the purpose for which the water has been used and the time during the year when you have used the right claimed:

Quantity	(cfs, gpd, AFA)	Use	(Domestic, Irrigation, Stock, Etc.)	(Both dates inclusive)	
				(Mo., Day)	(Mo., Day)
Quantity <u>.40 CFS</u>		Use <u>IRRIGATION</u>		Period of Use From <u>3-15</u>	To <u>11-15</u>
Quantity <u>.02 CFS</u>		Use <u>STOCK</u>		Period of Use From <u>1-1</u>	To <u>12-31</u>
Quantity _____		Use _____		Period of Use From _____	To _____
Quantity _____		Use _____		Period of Use From _____	To _____

- (4) .42 TOTAL QUANTITY USED.
(cfs, gpd, AFA)

- (5) A) Point of diversion: (Location of point where water is diverted from its source)
SE 1/4 SE 1/4, Sec. 5 Twp. 4N Rge. 1E B.M., County of Ada
Additional points of diversion: (2 PTS)

B) Describe means of diversion of water: (Pump and pipeline, well, diversion dam, reservoir, length of ditch and field, etc.). Give sizes and capacities: be as specific as possible. Describe any changes in the system and give the date of the change. Ditch

- (6) A) Describe location of use by listing number of irrigated acres within each 40-acre tract in appropriate box. If use is not for irrigation, place an "X" in appropriate box to show location.

T	R	SEC.	NE1/4				NW1/4				SW1/4				SE1/4				TOTAL
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
4N	1E	5																20	20

No. of acres 20

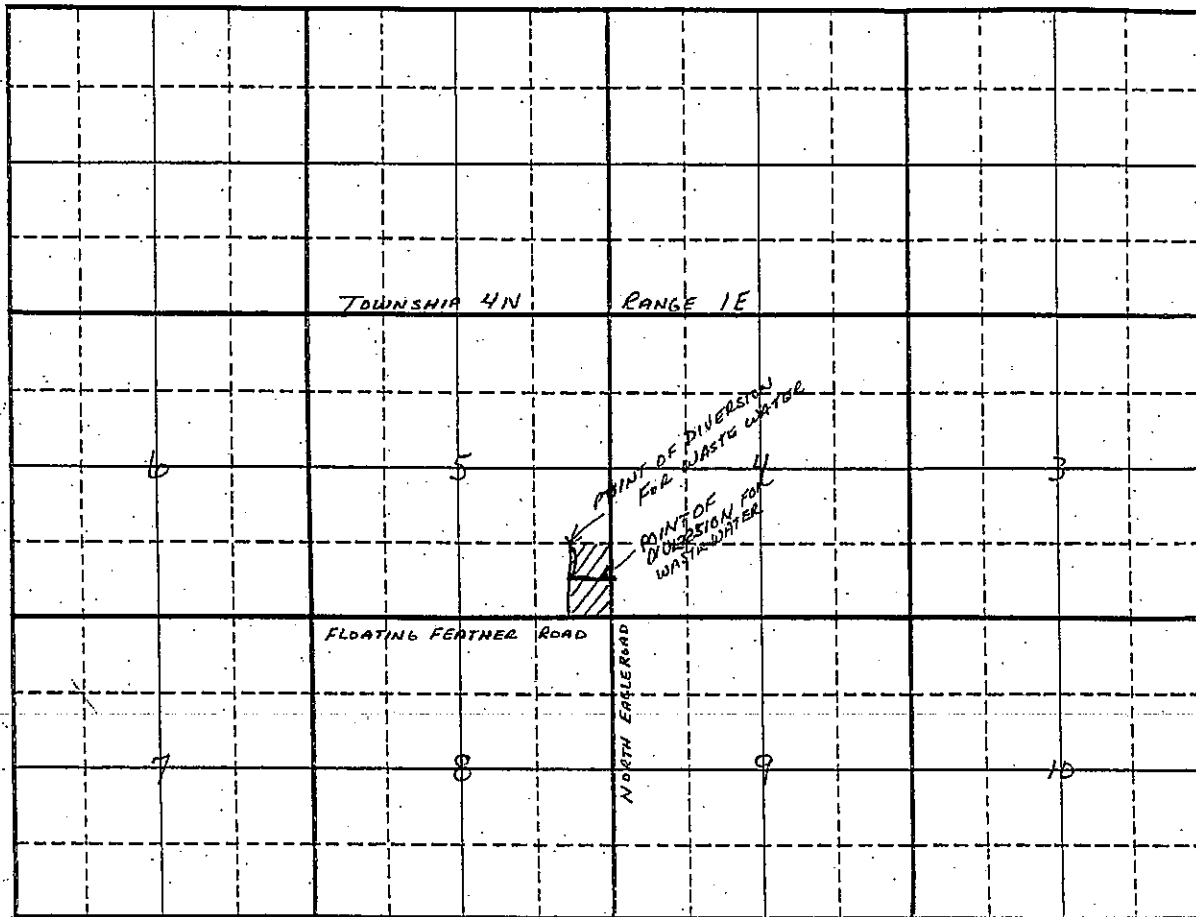
- B) If water is used for other than irrigation, fully describe that use, being as specific as possible:
Supplementary water for cattle when turned out
for pasture mostly during spring and summer
months but sometimes during fall & winter

NOTE: Include here the type and number of stock watered: Dairy & Beef animals up to 100 head

- (7) If you are claiming water as a member of an organization, list name of organization: _____

FILM

(8) Remarks I, ELMOR CHASE HAVE PERSONALLY SAW THIS WATER USED FOR IRRIGATION IN 1950 WHEN I FIRST MOVED ONTO THE PROPERTY. IT HAS BEEN USED SINCE IT WAS FIRST HOMESTEADED AS THERE NATURAL DRAINS COMING INTO THE AREA.



Scale: 2 inches equal 1 mile.

Map should show the location of the point of diversion and the place of use of the water by 40-acre subdivisions, section, township and range of the public land survey system.

State of Idaho)
County of ADA) ss.

Be it known that the undersigned, being duly sworn, deposes and says that he, she, they subscribed the foregoing claim to a water right, together with all attached information, and that the matters and facts therein are true to the best of the affiant's knowledge.

Sworn to before me this 30 day of JUNE, 1983

Elmore L. Chase
(Claimant)
Donald Shiff
Notary Public
Residing at BOISE, ID

My commission expires LIFE

FOR DEPARTMENT USE ONLY

Received by JG Date 6/30/83 Exception filed by: 32278 Forwarded to: 32278 Date: 6/28/83
Prelim. check by JG Date 6/30/83
Published in Idaho Statesman Date 6/30/83
Dates 12/29 & 1/5/84



TO WATER RIGHTS

The following claim(s) have been filed on water right(s) created by diversion and beneficial use:

63-5120

CHAPMAN, GAIL F.
2610 HOLDEN LN., BOISE, ID 83706
Source: GROUNDWATER
Priority Date: 04/01/1945
Diversion Point: SESW Sec 24 T 03N R 02E
Use: IRRIGATION (0.02 CFS)
In: SESW Sec 24 T 03N R 02E FOR 1 ACRES

63-5220

VETERANS ADMINISTRATION
MEDICAL CENTER
C/O ENGINEERING SERVICE
5TH & FORT ST., BOISE, ID 83702
Source: GROUNDWATER
Diversion Point: SWSW Sec 02 T 03N R 02E
Use: IRRIGATION (0.60 CFS)
INDUSTRIAL (0.10 CFS)
DOMESTIC (0.10 CFS)
In: NESW NWSW SWSW Sec 02 T 03N R 02E SESE Sec 03 T 03N R 02E
NENW NWNW Sec 11 T 03N R 02E FOR 33 ACRES

63-5221

VETERANS ADMINISTRATION
MEDICAL CENTER
C/O ENGINEERING SERVICE
5TH & FORT ST., BOISE, ID 83702
Source: GROUNDWATER
Priority Date: 12/01/1940
Diversion Point: NWSW Sec 02 T 03N R 02E
Use: IRRIGATION (0.60 CFS)
INDUSTRIAL (0.10 CFS)
DOMESTIC (0.10 CFS)
In: NWSW SWSW SESW Sec 02 T 03N R 02E SESE Sec 03 T 03N R 02E
NENW NWNW Sec 11 T 03N R 02E FOR 33 ACRES

63-5224

CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1972
Diversion Point: SESE Sec 05 T 04N R 01E
Use: IRRIGATION (0.03 CFS)
STOCKWATER (0.03 CFS)
DOMESTIC (0.04 CFS)
In: SESE Sec 05 T 04N R 01E FOR 1 ACRES

63-5225

CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1970
Diversion Point: SWSE Sec 05 T 04N R 01W
Use: STOCKWATER (0.23 CFS)
DOMESTIC (0.04 CFS)
In: SWSE Sec 05 T 04N R 01W

63-5226

CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1970
Diversion Point: SESE Sec 05 T 04N R 01E
Use: STOCKWATER (0.23 CFS)
COMMERCIAL (0.04 CFS)
DOMESTIC (0.04 CFS)
In: SESE Sec 05 T 04N R 01E

63-5227

CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: WASTE WATER trib. to DRY CREEK
Priority Date: 01/01/1972
Diversion Point: SESE Sec 05 T 04N R 01E
Use: IRRIGATION (0.40 CFS)
STOCKWATER (0.02 CFS)
In: SESE Sec 05 T 04N R 01E FOR 2 ACRES

63-5229

CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1972
Diversion Point: SESE Sec 05 T 04N R 01E
Use: IRRIGATION (0.40 CFS)
STOCKWATER (0.02 CFS)
In: SESE Sec 05 T 04N R 01E FOR 20 ACRES

63-5231

INDEPENDENT SCHOOL DIST.
BOISE CITY
PIERCE PARK ELEMENTARY
SCHOOL, 1207 FORT ST.
BOISE, ID 83702
Source: GROUNDWATER
Priority Date: 01/01/1937
Diversion Point: SWSW Sec 19 T 04N R 02E
Use: DOMESTIC (0.11 CFS)
In: SWSW Sec 19 T 04N R 02E

Exceptions to a claim may be filed with the Director, Department of Water Resources, Western Region, Statehouse, Boise, Idaho 83720.
A. KENNETH DUNN
Director
Pub. Dec. 29, 1983;
Jan. 5, 1984

3863

STATE OF IDAHO)

) ss.

COUNTY OF ADA)

Lucan L. Moore, being duly sworn, deposes and says: That she is the Principal Clerk of The Idaho Statesman, a daily newspaper printed and published at Boise, Ada County, State of Idaho, and having a general circulation therein and which said newspaper has been continuously and uninterruptedly published in said County during a period of twelve consecutive months prior to the first publication of the notice, a copy of which is attached hereto; that said notice was published in the regular edition of The Idaho Statesman for

two

insertions, beginning with the

issue of December 29, 19 83, and ending with the issue of January 5, 19 84.

Subscribed and sworn to before me this 5th

day of January, 19 84.

Shirley Engstrom
Notary Public for Idaho Residing at Boise, Idaho

Department of Water Resources
Western Regional Office

State of Idaho
Department of Water Resources

CLAIM ANALYSIS SHEET

INITIAL REVIEW BY:

Right Number

63-5227

Applicant

Chase

NOTE: IF ANY OF THE ITEMS BELOW ARE MISSING, THE CLAIM IS INCOMPLETE AND MUST BE RETURNED IMMEDIATELY TO THE CLAIMANT ALONG WITH THE APPROPRIATE COVER LETTER.

CHECK:

- ☒ Name and address.
- ☒ Date of priority. (Check for a date past the mandatory filing dates.) (One date only.)
- ☒ Source.
- ☒ Quantity, use, period.
- ☒ Point(s) of diversion.
- ☒ Location of use.
- ☒ Signature/notarization/fee.

FINAL REGIONAL PROCESSING REVIEW:

- ☒ Affidavit of publication received. 11/2/84
- ☒ Claim published correctly. IA. Shademan
12/29 & VS/84 20/32278
- ☒ Exceptions processed.

By

DBS

Date

1/16/84

STATE OFFICE PROCESSING:

- ☒ Claim review complete.

By

AC

Date

1/18/84

MICROFILMED

RECEIVED
JAN 18 1984

Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
Western Region

Statehouse
Boise, Idaho 83720
(208) 334-2190

JANUARY 18, 1984

ELEANOR I. CHASE
RT. 3
FLOATING FEATHER RD.
EAGLE ID 83616

RE: Claim No. 63-5227

Dear Claimant:

The Department of Water Resources has completed the advertising of your claim to a water right, and no further action is authorized under Section 42-243 and 42-244, IDAHO CODE. Your claim will be retained in our files and will be available at any time for use by you or the court.

The filing and advertising of the claim does not confirm the water right claimed, but will serve to record and preserve the information and the evidence which you included in your claim.

If, at a later date, you find that you have additional information or supporting evidence that you would like to have included with the claim, you may have that information or evidence added at any time. Please refer to the claim identification number when corresponding with this office.

We are enclosing a copy of your claim for your records. If you have questions, or if this office may be of further assistance, please feel free to contact us.

Yours truly,

DAVID B. SHAW
Western Region Supervisor

Enclosure

MICROFILMED

63-5222

CHASE, ELEANOR I.

RT. 3. FLOATING FEATHER RD., EAGLE, ID 83616

Source: WASTE WATER trib. to DRY CREEK

Priority Date: 01/01/1872

Diversion Pt: SESE Sec 05 T 04N R 01E

Use: IRRIGATION (0.40 CFS)
STOCKWATER (0.02 CFS)

In: SESE Sec 05 T 04N R 01E FOR 2 ACRES

MICROFILMED

Under the provisions of Section 42-243, Idaho Code, any person using or claiming rights to the public waters of Idaho established by diversion and application to a beneficial use must file a claim with the Department of Water Resources on or before June 30, 1983. Exempted from this filing are single family domestic uses as defined in Section 42-230(d), Idaho Code. Also exempted are rights represented by a permit, license, decree, adjudicated right, or a previously filed claim.

The filing of this claim does not confirm the water right claimed but failure to file may result in forfeiture of a water right.

(Name of Claimant)
Route 3-Floating Feather Rd, Eagle, Idaho
 (Mailing Address) 83616 Telephone No. 939-6226
 (Zip Code)

(1) Date of priority: (When was the water first applied to a beneficial use) 1927

(2) Describe the source of water: (Name of stream, lake, spring, etc., or ground water)

(cls. af) (Domestic, Irrigation, Stock, Etc.) (Both dates inclusive)
(Mo., Day) (Mo., Day)

Quantity	Use	Period of Use From	To
Quantity <u>1.40 CFS</u>	Use <u>Irrigation</u>	Period of Use From <u>3-15</u>	To <u>11-15</u>
Quantity <u>0.2 CFS</u>	Use <u>Stock water</u>	Period of Use From <u>1-1</u>	To <u>12-31</u>
Quantity _____	Use _____	Period of Use From _____	To _____
Quantity _____	Use _____	Period of Use From _____	To _____

(4) 42 TOTAL QUANTITY USED.
(cfs. af)

(5) A) Point of diversion: (Location of point where water is diverted from its source)
SE ¼ SE ¼, Sec. 5 Twp. 4N Rge. 1E B.M., County of ADA
 Additional points of diversion:

B) Describe means of diversion of water: (Pump and pipeline, well, diversion dam, reservoir, length of ditch and field, etc.). Give sizes and capacities: be as specific as possible. Describe any changes in the system and give the date of the change. Well with a 2 HP Cent. Pump with 40' of steel pipe diverting water into irrigation ditch.

(6) A) Describe location of use by listing number of irrigated acres within each 40-acre tract in appropriate box. If use is not for irrigation, place an "X" in appropriate box to show location.

[illegible]

No. of acres 20

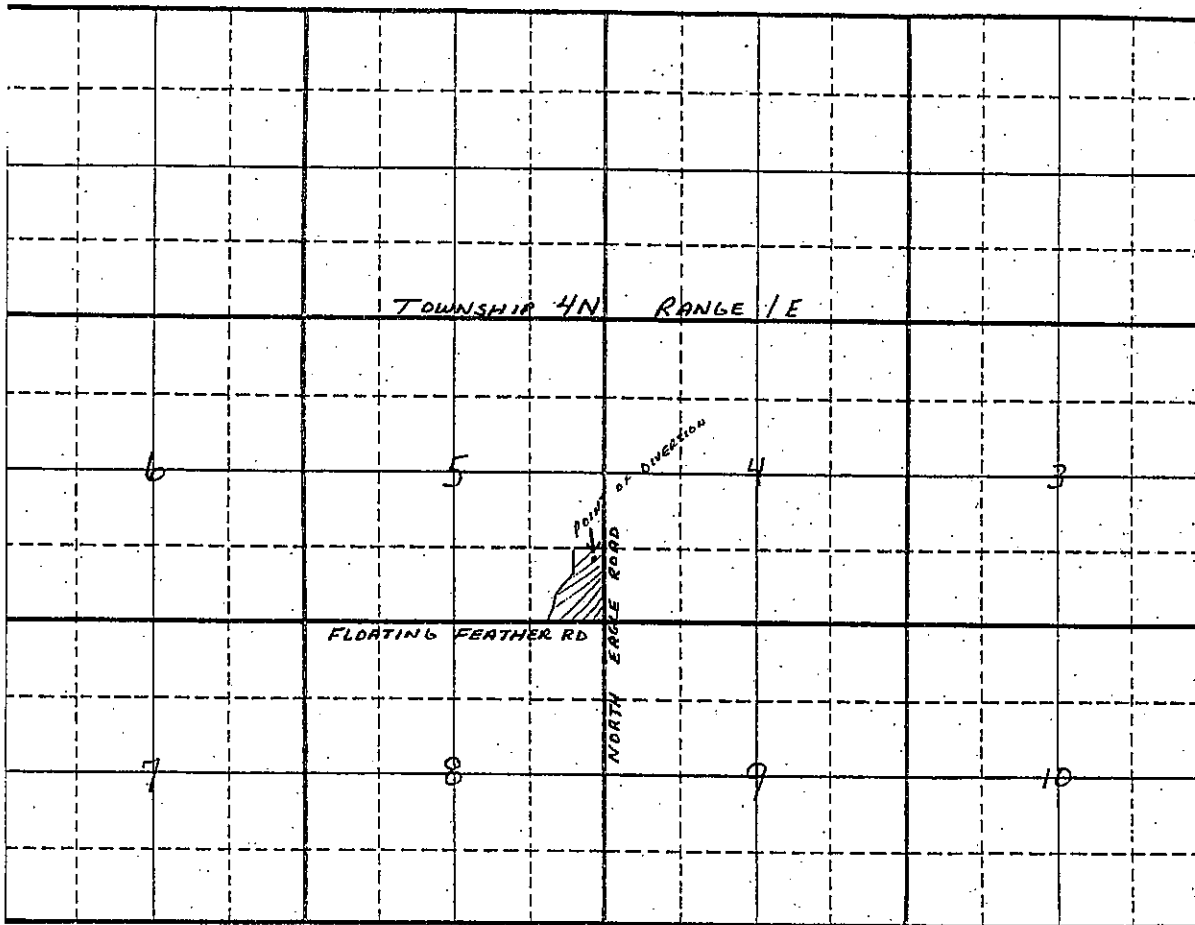
B) If water is used for other than irrigation, fully describe that use, being as specific as possible:
This water is occasionally used for stockwater for approximately
300 head of dairy cattle, as well as for domestic use.

NOTE: Include here the type and number of stock watered: WAS GRASSING ABOUT 100 HEAD STOCK
If you are claiming water as a resource: CATTLE NOW APPROXIMATELY 300 HEAD DAIRY.

(7) If you are claiming water as a member of an organization, list name of organization:

SECRET

(8) Remarks _____



Scale: 2 inches equal 1 mile.

Map should show the location of the point of diversion and the place of use of the water by 40-acre subdivisions, section, township and range of the public land survey system.

State of Idaho)
County of ADA) ss.

Be it known that the undersigned, being duly sworn, deposes and says that he, she, they subscribed the foregoing claim to a water right, together with all attached information, and that the matters and facts therein are true to the best of the affiant's knowledge.

Sworn to before me this 30 day of JUNE

Eleanor L. Chase
(Claimant)
Donald Shaff
Notary Public
Residing at BOISE, ID

My commission expires LIFE

FOR DEPARTMENT USE ONLY

Received by JG Date 6/30/83 Exception filed by: _____ Date _____
Prelim. check by JG Date 11-28-83 Forwarded to claimant by: _____
\$30.00 fee received by JG Date 6/30/83 # 32278
Published in Idaho Statesman
Dates 12/20 & 1/5/83



TO WATER RIGHTS

The following claim(s) have been filed on water right(s) created by diversion and beneficial use:

63-5128
CHAPMAN, GAIL F.
2610 HOLDEN LN., BOISE, ID 83706
Source: GROUNDWATER
Priority Date: 04/01/1943
Diversion Point: SESW Sec 24 T 03N R 02E
Use: IRRIGATION (0.02 CFS)
In: SESW Sec 24 T 03N R 02E FOR 1 ACRES

63-5220
VETERANS ADMINISTRATION
MEDICAL CENTER
C/O ENGINEERING SERVICE
5TH & FORT ST., BOISE, ID 83702
Source: GROUNDWATER
Diversion Point: SWSW Sec 02 T 03N R 02E
Use: IRRIGATION (0.60 CFS)
INDUSTRIAL (0.10 CFS)
DOMESTIC (0.10 CFS)
In: NESW NWSW SWSW Sec 02 T 03N R 02E SESE Sec 03 T 03N R 02E NENW NWNW Sec 11 T 03N R 02E FOR 33 ACRES

63-5221
VETERANS ADMINISTRATION
MEDICAL CENTER
C/O ENGINEERING SERVICE
5TH & FORT ST., BOISE, ID 83702
Source: GROUNDWATER
Priority Date: 12/01/1940
Diversion Point: NWSW Sec 02 T 03N R 02E
Use: IRRIGATION (0.60 CFS)
INDUSTRIAL (0.10 CFS)
DOMESTIC (0.10 CFS)
In: NWSW SWSW SESW Sec 02 T 03N R 02E SESE Sec 03 T 03N R 02E NENW NWNW Sec 11 T 03N R 02E FOR 33 ACRES

63-5224
CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1872
Diversion Point: SESE Sec 05 T 04N R 01E
Use: IRRIGATION (0.03 CFS)
STOCKWATER (0.03 CFS)
DOMESTIC (0.04 CFS)
In: SESE Sec 05 T 04N R 01E FOR 1 ACRES

63-5225
CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1900
Diversion Point: SWSE Sec 05 T 04N R 01W
Use: STOCKWATER (0.23 CFS)
DOMESTIC (0.04 CFS)
In: SWSE Sec 05 T 04N R 01W

63-5226
CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1950
Diversion Point: SESE Sec 05 T 04N R 01E
Use: STOCKWATER (0.23 CFS)
COMMERCIAL (0.04 CFS)
DOMESTIC (0.04 CFS)
In: SESE Sec 05 T 04N R 01E

63-5227
CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: WASTE WATER trib. to DRY CREEK
Priority Date: 01/01/1872
Diversion Point: SESE Sec 05 T 04N R 01E
Use: IRRIGATION (0.40 CFS)
STOCKWATER (0.02 CFS)
In: SESE Sec 05 T 04N R 01E FOR 2 ACRES

63-5229
CHASE, ELEANOR I.
RT. 3, FLOATING FEATHER RD.
EAGLE, ID 83616
Source: GROUNDWATER
Priority Date: 01/01/1927
Diversion Point: SESE Sec 05 T 04N R 01E
Use: IRRIGATION (0.40 CFS)
STOCKWATER (0.02 CFS)
In: SESE Sec 05 T 04N R 01E FOR 20 ACRES

63-5231
INDEPENDENT SCHOOL DIST.
BOISE CITY
PIERCE PARK ELEMENTARY
SCHOOL, 1207 FORT ST.
BOISE, ID 83702
Source: GROUNDWATER
Priority Date: 01/01/1937
Diversion Point: SWSW Sec 19 T 04N R 02E
Use: DOMESTIC (0.11 CFS)
In: SWSW Sec 19 T 04N R 02E

Exceptions to a claim may be filed with the Director, Department of Water Resources, Western Region, Statehouse, Boise, Idaho 83720.
A. KENNETH DUNN
Director
Pub. Dec. 29, 1983;
Jan. 5, 1984

STATE OF IDAHO)

) ss.

COUNTY OF ADA)

Lewon L. Moore, being duly sworn, deposes and says: That she is the Principal Clerk of The Idaho Statesman, a daily newspaper printed and published at Boise, Ada County, State of Idaho, and having a general circulation therein and which said newspaper has been continuously and uninterruptedly published in said County during a period of twelve consecutive months prior to the first publication of the notice, a copy of which is attached hereto; that said notice was published in the regular edition of The Idaho Statesman for

two

insertions, beginning with the

issue of December 29, 1983, and ending with the issue of January 5, 1984.

Subscribed and sworn to before me this 5th

day of January, 1984.

Shirley E. Egan
Notary Public for Idaho Residing at Boise, Idaho

Department of Water Resources
Western Region Office

State of Idaho
Department of Water Resources

CLAIM ANALYSIS SHEET

INITIAL REVIEW BY: Jan Quaver

Right Number

63-5229

Applicant

Chase

NOTE: IF ANY OF THE ITEMS BELOW ARE MISSING, THE CLAIM IS INCOMPLETE AND MUST BE RETURNED IMMEDIATELY TO THE CLAIMANT ALONG WITH THE APPROPRIATE COVER LETTER.

CHECK:

- ☒ Name and address.
- ☒ Date of priority. (Check for a date past the mandatory filing dates.) (One date only.)
- ☒ Source.
- ☒ Quantity, use, period.
- ☒ Point(s) of diversion.
- ☒ Location of use.
- ☒ Signature/notarization/fee.

FINAL REGIONAL PROCESSING REVIEW:

- ☒ Affidavit of publication received. 1/9/84
- ☒ Claim published correctly. Idaho Statesman 30/322-12 12/29 & 12/31/84
- ☒ Exceptions processed.

By

DBS

Date

1/16/84

STATE OFFICE PROCESSING:

- ☒ Claim review complete.

By

AC

Date

1/23/84

MICROFILMED

RECEIVED
JAN 18 1984

Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
Western Region

Statehouse
Boise, Idaho 83720
(208) 334-2190

JANUARY 18, 1984

ELEANOR I. CHASE
RT. 3
FLOATING FEATHER RD.
EAGLE ID 83616

RE: Claim No. 63-5229

Dear Claimant:

The Department of Water Resources has completed the advertising of your claim to a water right, and no further action is authorized under Section 42-243 and 42-244, IDAHO CODE. Your claim will be retained in our files and will be available at any time for use by you or the court.

The filing and advertising of the claim does not confirm the water right claimed, but will serve to record and preserve the information and the evidence which you included in your claim.

If, at a later date, you find that you have additional information or supporting evidence that you would like to have included with the claim, you may have that information or evidence added at any time. Please refer to the claim identification number when corresponding with this office.

We are enclosing a copy of your claim for your records. If you have questions, or if this office may be of further assistance, please feel free to contact us.

Yours truly,

DAVID B. SHAW
Western Region Supervisor

Enclosure

MAILED 1984

63-5229

CHASE, ELEANOR I.

RT. 3. FLOATING FEATHER RD., EAGLE, ID 83616

Source: GROUNDWATER

Priority Date: 01/01/1927

Diversion Pt: SESE Sec 05 T 04N R 01E

Use: IRRIGATION	(0.40 CFS)
STOCKWATER	(0.02 CFS)

In: SESE Sec 05 T 04N R 01E FOR 20 ACRES

APPROVED

Identification No. _____

Application No. 63-8663

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

APPLICATION FOR PERMIT

To Appropriates the Public Waters of the State of Idaho
(TYPE OR PRINT IN INK)

APPROVED

1. Name of applicant Eleanor I. Chase Phone: 939-6226
post office address Route 1, Eagle, ID

2. Source of water supply groundwater which is a tributary of _____

3. a. Location of point of diversion is NW $\frac{1}{4}$ of SE $\frac{1}{4}$ of Section 5 Township 4N
Range 1E B.M. Ada County; additional points of diversion if any: _____

b. If water is not consumed, it will be discharged into _____ at a point in _____ $\frac{1}{4}$
of _____ $\frac{1}{4}$ of Section _____ Township _____ Range _____ B.M. _____

4. Water will be used for the following purposes:

Amount 2.0 for irrigation purpose from Mar 15 to Nov 15 (both dates inclusive)
(cfs or acre-feet per annum)

Amount 0.04 for stockwater purpose from Jan 1 to Dec. 31 (both dates inclusive)
(cfs or acre-feet per annum)

Amount _____ for _____ purpose from _____ to _____ (both dates inclusive)
(cfs or acre-feet per annum)

5. Total quantity to be appropriated:

a. 2.0 cubic feet per second and/or

b. _____ acre feet per annum.

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. well, pump, & ditches

b. Height of storage dam _____ feet, active reservoir capacity _____ acre feet; total reservoir
capacity _____ acre feet, materials used in storage dam: _____

Period of year during which storage will occur _____ to _____ inclusive.
(Mo. Day) (Mo. Day)

c. Proposed well diameter is 12 inches; proposed depth of well is 200 feet.

7. a. Time required for the completion of the works and application of the water to the proposed beneficial use
is 5 years.

b. Estimated construction cost is \$ 6500

8. Description of proposed uses:

a. If water is not for irrigation:

(1) Give the place of use of water: Same as irrigated land
Same as irrigated land $\frac{1}{4}$ of _____ $\frac{1}{4}$ of Section _____ Township _____
Range _____ B.M. _____

(2) Amount of power to be generated: _____ hp under _____ feet of head.

(3) List number of each kind of livestock to be watered 200 head of cattle

(4) Name of municipality to be served _____, or number of families to be
supplied with domestic water _____

(5) If water is to be used for other purposes describe: _____

RECORDED

b. If water is for irrigation, indicate acreage in each subdivision in the tabulation below:

TWP.	RANGE	SEC.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTALS
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
4N	1E	5														40	40	20	100

Total number of acres to be irrigated 100

c. Describe any other water rights used for the same purposes as described above.

Farmers Union Ditch Co.

9. a. Who owns the property at the point of diversion Applicant

b. Who owns the land to be irrigated or place of use Applicant

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing

10. Remarks This is supplemental water to Farmers Union Water.

Proposed Priority 4/ 6/77

Received by DNA Date 4-6-77 Time 4:00

Preliminary check by GLS Fee \$ 35.00

Receipted by if Date 4-6-77 # 7124

Publication prepared by if Date 4-7-77

Published in Idaho Statesman

Publication dates April 14 & 21

Publication approved if Date 5-5-77

Priority reduced to _____ Reason _____

Protests filed by: _____

Copies of protests forwarded by _____

Hearing held by _____ Date _____

Recommended for approval denial by if

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Permit to appropriate the public waters of the State of Idaho No. 63-8663, and said application is hereby APPROVED.

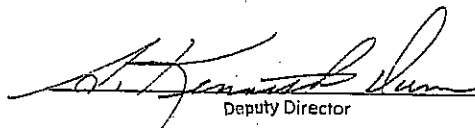
1. Approval of said application is subject to the following limitations and conditions:

a. SUBJECT TO ALL PRIOR WATER RIGHTS.

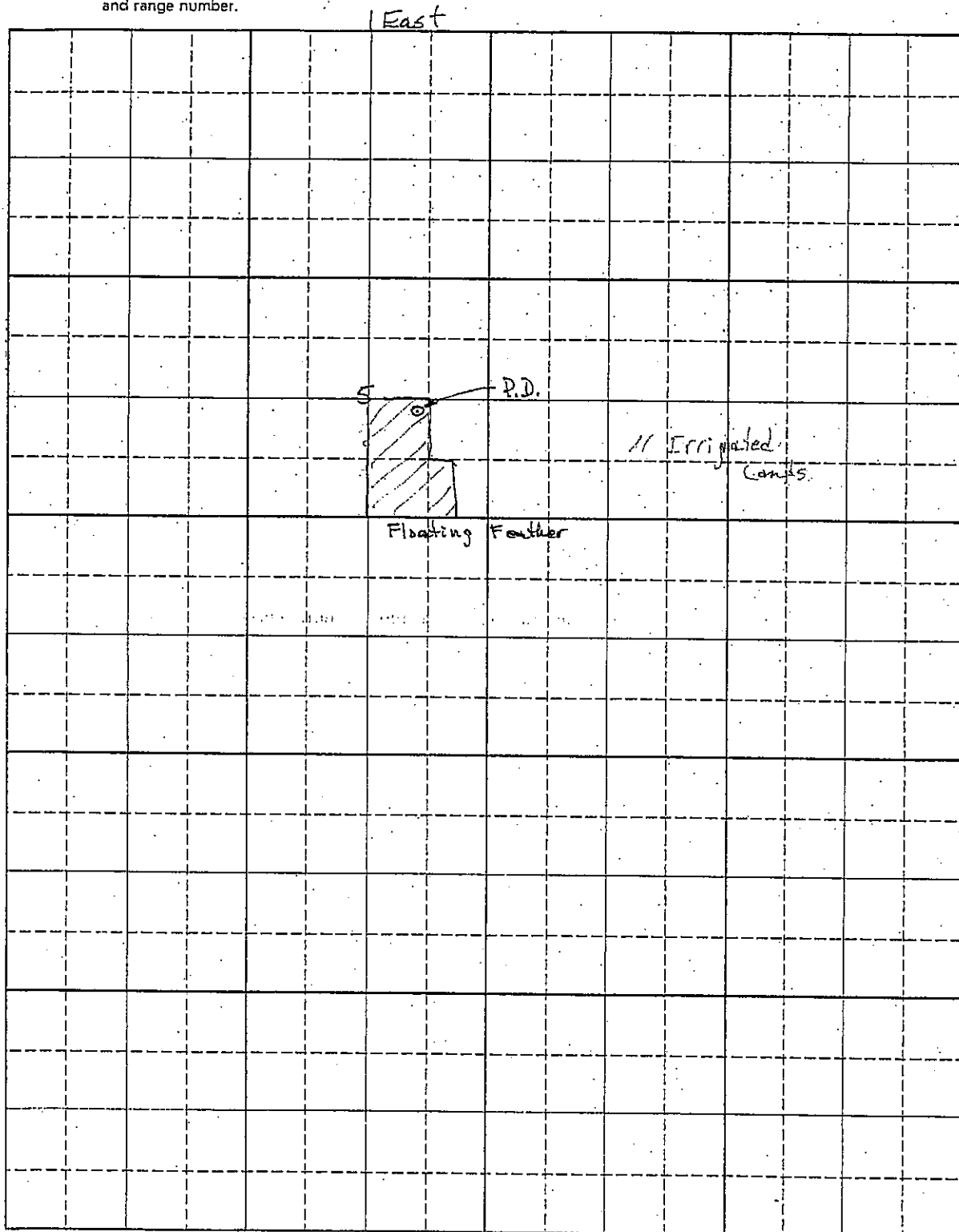
b. Proof of construction of works and application of water to beneficial use shall be submitted on or before May 1, 19 82.

c. Other: A measuring device of a type approved by the Director shall be permanently installed and maintained as part of the diverting works.
The rate of diversion of water for irrigation under this permit and all other water rights on the same land shall not exceed 0.02 cubic feet per second for each acre of land.

Witness my hand this 31 day of May, 19 77.


Deputy Director

11. Map of proposed project: show clearly the proposed point of diversion, place of use, section number, township and range number.



Scale: 2 inches equal 1 mile

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

Eleanor L. Chase
(Applicant)

Chase Dairy Well Pump Evaluation 11/13/03 by Terry M. Scanlan, P.E.

The Chase Dairy Well had a measured static water level of 20 feet, 10 inches in May 2003. The well is 3-inches in diameter and reported to be 240 feet deep. Pumping water level is unknown, but assumed to be above 26 feet.

The well is currently equipped with two $\frac{3}{4}$ hp pumps sharing a common suction line. The pumps are reported to be shallow well jet pumps. I am not aware of the pump make and model.

Shallow well jet pumps are inefficient at high suction lifts, as shown in the following table. For example, a $\frac{3}{4}$ -hp Goulds model JS+ will produce 21 gpm at 30 psi with 5 feet of suction lift, but only 10 gpm at 30 psi discharge pressure and 25 feet suction lift.

Shallow Well Jet Pump Make and Model	Discharge rate (gpm) at 30 psi pressure	
	5-foot suction lift	25-foot suction lift
Goulds JS+, $\frac{3}{4}$ -hp	21.3	10.0
Sta-Rite AND, $\frac{3}{4}$ -hp	15.3	7.4
Sta-Rite AND-25, $\frac{3}{4}$ -hp	18.3	8.8
Red Jacket 75RJ $\frac{3}{4}$ -hp	21.6	9.4

Based on the information provided above, the two pumps on the Chase Dairy Well probably produce a combined discharge of less than 30 gpm (less than 0.07 cfs).

If aquifer water levels fall (due to Brookwood Well or other influences) to the point that the pumping level is below 26 feet, there are two options to maintain the estimated current production rate.

Option 1 would be to install a 1.5-hp deep well jet pump. Such pumps are capable of producing approximately 23 gpm from a pumping water level of 35 feet.

Deep Well Jet Pump Make and Model	Discharge rate (gpm) at 30 psi pressure	
	35-foot pumping level	45-foot pumping level
Goulds J+, 1.5-hp	23.1	20.2
Sta-Rite HMS 1.5-hp	21.0	18.5

Option 2 would be to install a 1-hp submersible pump sized to fit a 3-inch well. The Grundfos Model 30SQ/SQE will produce 35 gpm at 30 psi from a pumping level of 30 feet, and 32 gpm at 30 psi from a pumping level of 50 feet.

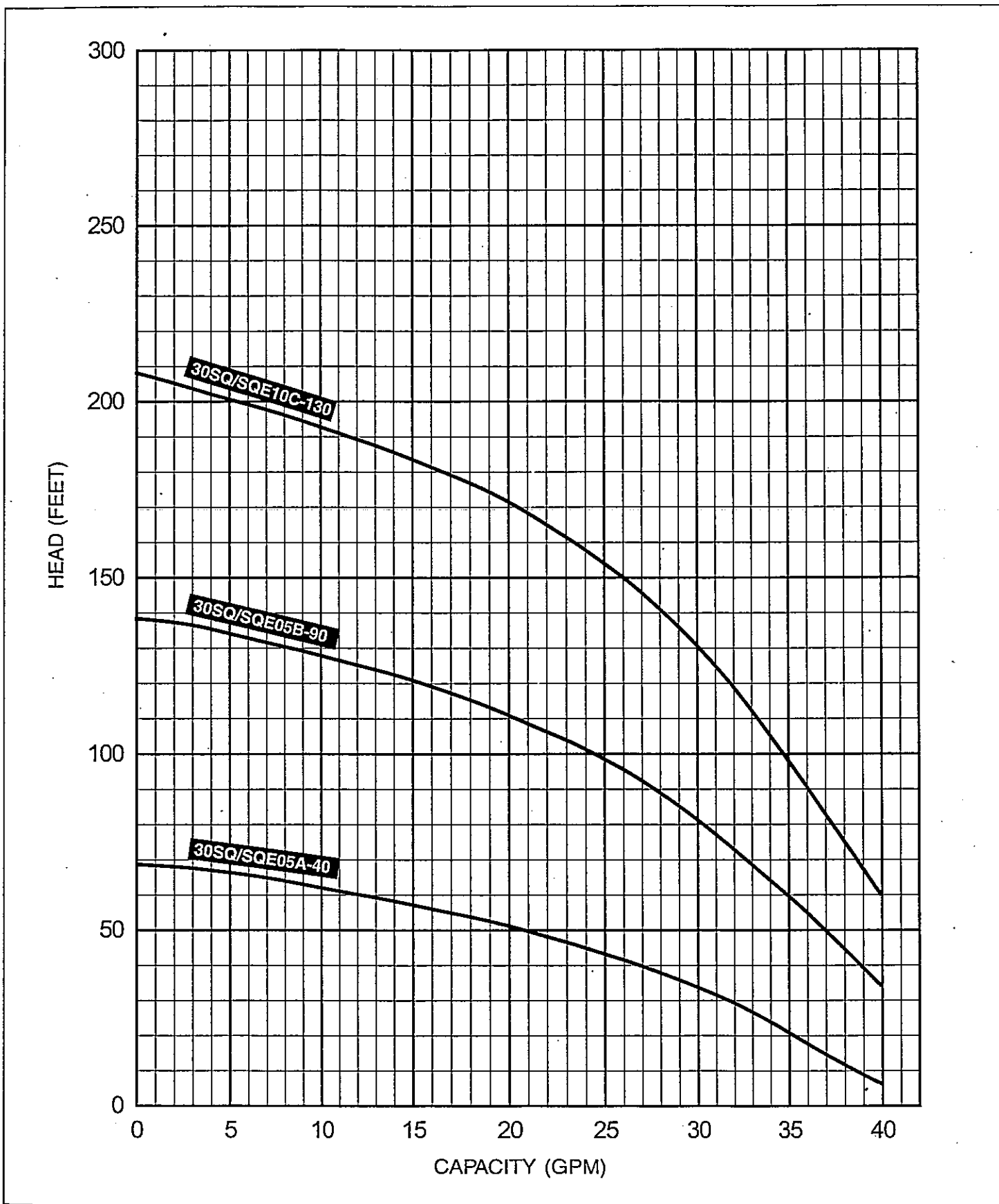
Conclusion: Production rates in the range of 20 to 35 gpm can be maintained if water levels at the Chase Dairy Well fall by 10 to 20 feet. These production rates are similar to the estimated rates being produced by the two shallow well jet pumps in May 2003.

3-inch Diameter Submersible Pump

FLOW RANGE: 8 - 42 GPM

OUTLET SIZE: 1 1/2" NPT

NOMINAL DIA. 3"



30 SQ/SQE EASY SELECTION CHART

SELECTION CHARTS

(Ratings are in GALLONS PER MINUTE GPM)

30 SQ/SQE

FLOW RANGE
(8 TO 42 GPM)

PUMP OUTLET
1 1/2" NPT

		(8 TO 42 GPM)																									
		DEPTH TO PUMPING WATER LEVEL (LIFT) IN FEET																									
PUMP MODEL	HP	PSI	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	340	400	460	520	600	700	800	900	1000	1100
30SQ/SQE05A 40	1/2	0	40.0	30.5	11.0																						
		20																									
		30																									
		40																									
		50																									
		60																									
SHUT OFF PSI:			20	11	2																						
30SQ/SQE05B 90	1/2	0		41.5	36.5	31.5	23.5	9.5																			
		20	35.5	29.5	20.5	14.5																					
		30	27.5	17.5																							
		40	17.5																								
		50																									
		60																									
SHUT OFF PSI:			48	39	30	22	13	4																			
30SQ/SQE10C 130	1	0			41.5	38.5	35.5	31.5	27.0	21.0	11.0																
		20	40.5	37.5	34.5	30.5	25.5	19.0	8.0																		
		30	37.0	33.5	29.5	24.0	17.0	4.0																			
		40	33.5	29.5	24.0	17.0	4.0																				
		50	28.5	22.5	14.0																						
		60	21.0	11.0																							
SHUT OFF PSI:			76	67	58	50	41	32	24	15	7																

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

SQ/SQE SUBMERSIBLE PUMPS

3-Inch SQ/SQE Submersible Well Pumps 3-Inch and Larger Wells

SQ/SQE pumps are suitable for both continuous and intermittent operation for a variety of applications:

- Domestic water supply
- Small waterworks
- Irrigation
- Tank applications

SQ, SQE pumps offer the following features:

- Dry-Run protection
- High efficiency pump and motor
- Excellent wear resistance, and sand handling capabilities
- Protection against up-thrust
- Soft-start
- Over-voltage and under-voltage protection
- Overload protection
- Over-temperature protection
- High starting torque

Additionally, the SQE pumps offer:

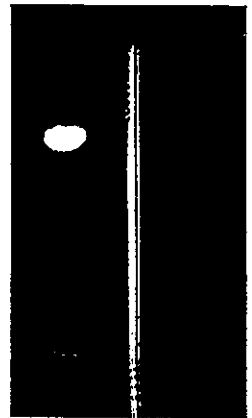
- Constant pressure control
- Variable speed
- Electronic control and communication

The SQ and SQE pump models incorporate a totally new motor design. With the use of permanent-magnet technology within the motor, the SQ/SQE pumps deliver unmatched performance. By combining permanent-magnet motors and Grundfos's own micro frequency converter, we

are now able to control and communicate with the pump in ways never before possible. A few of the features that come out this combination are Constant Pressure Control, Soft-Start, and integrated Dry-Run protection. These are just a few of the many features that the SQ/SQE pumps can offer.

The SQ pump models are a simple pump that operates at a constant speed much like today's conventional pumps. The difference between it and today's pumps is you get all the benefits of an electronically controlled permanent-magnet motor that cannot be accomplished with a conventional induction motor. The SQ pumps are available for single phase power. They use a simple 2-wire design making installation easy.

The SQE uses the Grundfos "Smart Motor". Like the SQ model, we still use the high efficiency permanent magnet motor, but we give this motor the ability to communicate. The "Smart Motor" communicates via the CU300 status box through the power leads. It is not necessary to run any additional wires down the well. By being able to communicate with the pump you can have Constant Pressure Control and the ability to change the pump performance while the pump is installed in the well. Like the SQ motor, this is also a 2-wire motor designed for single-phase operation.



MQ

The Grundfos MQ is an all in one, self-priming, multistage centrifugal pump. It self-primers from a well depth of down to 26 feet with a maximum time of 5 minutes. It has a built-in pressure tank and pressure switch and is made from weatherproof, corrosion-resistant materials.

CH

The Grundfos CH is a high performance, multi-stage centrifugal pump. Series CH features 304 stainless steel & cast iron construction, single phase & three phase TEFC motors, and bellows-type shaft seals.

BASIC LINE JET PUMPS

Basic Line Jet Pumps are a complete range of cast iron and stainless steel shallow and cast iron deepwell jet pumps. Grundfos Jet Pumps feature I.E.C. motors for better efficiency, longer life and quieter operation. Additionally, they are constructed with corrosion resistant materials for long life.

DISCHARGE SIZES

1" NPT 5SQ/SQE
1 1/4" NPT 10-15SQ/SQE
1 1/2" NPT 22-30 SQ/SQE

MATERIALS OF CONSTRUCTION

COMPONENT	SPLINED SHAFT
Valve Casing	Polyamide
Discharge Chamber	304 Stainless Steel
Valve Guide	Polyamide
Valve Spring	316LN Stainless Steel
Valve Cone	Polyamide
Valve Seat	NBR Rubber
O-ring	NBR Rubber
Lock Ring	310 Stainless Steel
Top Bearing	NBR Rubber
Top Chamber	Polyamide
Guide Vanes	Polyamide
Impeller	Polyamide w/tungsten carbide bearings
Bottom Chamber	Polyamide
Neck Ring	TPU/PBT
Bearing	Aluminum Oxide
Suction Interconnector	Polyamide
Ring	304 Stainless Steel
Pump Sleeve	304 Stainless Steel
Cone for Pressure Equalization	Polyamide
Spacer	Polyamide
Sand Trap	316 Stainless Steel
Shaft w/Coupling	304 Stainless Steel
Cable Guard	304 Stainless Steel

NOTES: Specifications subject to change without notice.

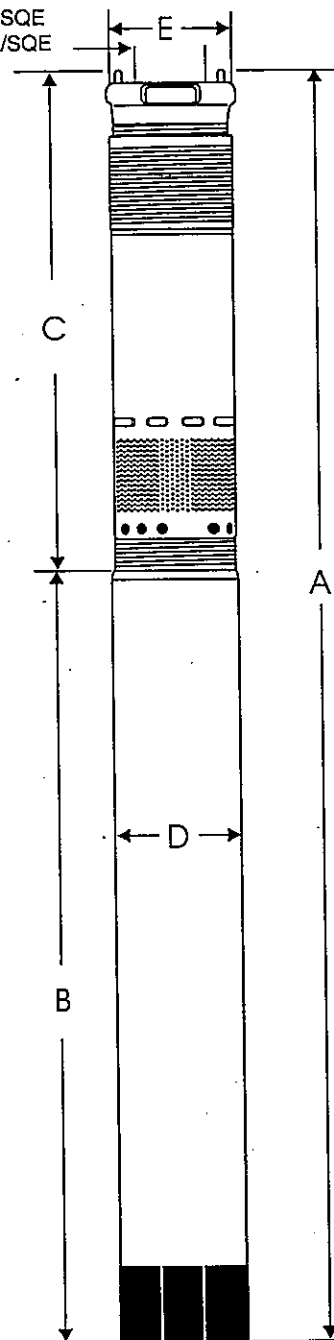
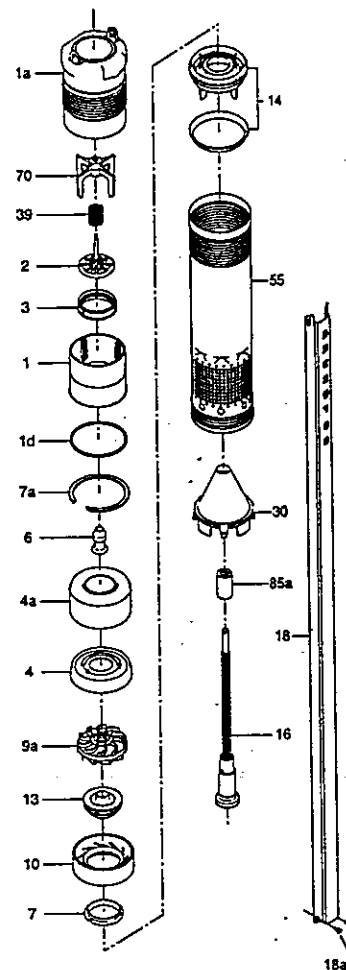


Fig. A

Material specification (Pump)

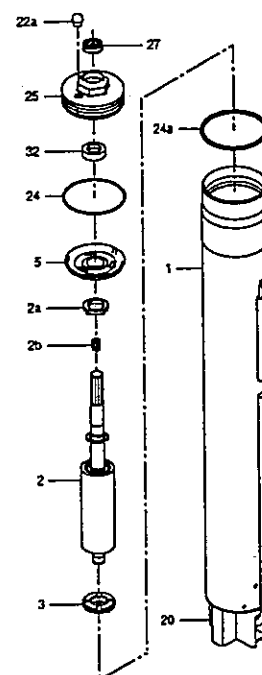
Pos.	Component	Material	DIN W.-Nr.	AISI
1	Valve casing	Polyamide		
1a	Discharge chamber	Stainless steel	1.4301	304
1d	O-ring	NBR rubber		
2	Valve cone	Polyamide		
3	Valve seat	NBR rubber		
4	Top chamber	Polyamide		
4a	Empty chamber	Polyamide		
6	Top bearing	NBR rubber		
7	Neck ring	TPU/PBT		
7a	Lock ring	Stainless spring steel	1.4310	310
9a	Guide vanes	Polyamide		
10	Bottom chamber	Polyamide		
13	Impeller with tungsten carbide bearing	Polyamide		
14	Suction interconnector	Polyamide		
14a	Ring	Stainless steel	1.4301	304
16	Shaft with coupling	Stainless steel Sintered steel	1.4301	304
18	Cable guard	Stainless steel	1.4301	304
18a	Screws for cable guard	Stainless steel	1.4401	316
30	Cone for pressure equalisation	Polyamide		
39	Valve spring	Stainless spring steel	1.4406	
55	Pump sleeve	Stainless steel	1.4301	304
70	Valve guide	Polyamide		
85a	Spacer	Polyamide		

Example: SQ



Material specification (Motor)

Pos.	Component	Material	DIN W.-Nr.	AISI
1	Stator	Stainless steel	1.4301	304
2	Rotor	Stainless steel	1.4301	304
2a	Stop ring	PP		
2b	Filter	Polyester		
3	Thrust bearing	Carbon		
5	Radial bearing	Ceramic/tungsten carbide		
20	Motor cable with plug	EPR		
22a	Filling plug	MS 3: NBR MSE 3: Fluoroelastomer		
24	O-ring	Fluoroelastomer		
24a	O-ring	Fluoroelastomer		
25	Top cover	PPS		
27	Filter	Polyester		
32	Shaft seal	MS 3: NBR MSE 3: Fluoroelastomer		
	Motor liquid	SML-2		



TM01 2746 2298 TM01 2745 2298

Dimensions and Weights

MODEL	FIG.	HP	MOTOR SIZE	DISCHARGE SIZE	DIMENSIONS IN INCHES					APPROX. SHIP WT.
					A	B	C	D	E	
5SQ/SQE03A-90	A	1/3 A	3"	1" NPT	30.4	19.8	10.6	2.6	2.9	12
5SQ/SQE03A-140	A	1/3 A	3"	1" NPT	30.4	19.8	10.6	2.6	2.9	12
5SQ/SQE05A-180	A	1/2 A	3"	1" NPT	31.5	19.8	11.6	2.6	2.9	12
5SQ/SQE05B-230	A	1/2 B	3"	1" NPT	33.6	19.8	13.7	2.6	2.9	13
5SQ/SQE05B-270	A	1/2 B	3"	1" NPT	33.6	19.8	13.7	2.6	2.9	13
5SQ/SQE07B-320	A	3/4 B	3"	1" NPT	34.6	19.8	14.8	2.6	2.9	13
5SQ/SQE10C-360	A	1 C	3"	1" NPT	38.2	21.3	16.9	2.6	2.9	16
5SQ/SQE10C-410	A	1 C	3"	1" NPT	38.2	21.3	16.9	2.6	2.9	16
5SQ/SQE10C-450	A	1 C	3"	1" NPT	39.3	21.3	18.0	2.6	2.9	16
10SQ/SQE03A-110	A	1/3 A	3"	1 1/4" NPT	30.4	19.8	10.6	2.6	2.9	12
10SQ/SQE05B-160	A	1/2 B	3"	1 1/4" NPT	30.4	19.8	10.6	2.6	2.9	12
10SQ/SQE05B-200	A	1/2 B	3"	1 1/4" NPT	31.5	19.8	11.6	2.6	2.9	13
10SQ/SQE10C-240	A	1 C	3"	1 1/4" NPT	33.6	19.8	13.7	2.6	2.9	13
10SQ/SQE10C-290	A	1 C	3"	1 1/4" NPT	35.0	21.3	13.7	2.6	2.9	16
10SQ/SQE10C-330	A	1 C	3"	1 1/4" NPT	36.14	21.3	14.8	2.6	2.9	16
15SQ/SQE03A-70	A	1/3 A	3"	1 1/4" NPT	30.4	19.8	10.6	2.6	2.9	12
15SQ/SQE05A-110	A	1/2 A	3"	1 1/4" NPT	30.4	19.8	10.6	2.6	2.9	12
15SQ/SQE05B-150	A	1/2 B	3"	1 1/4" NPT	31.5	19.8	11.6	2.6	2.9	13
15SQ/SQE07B-180	A	3/4 B	3"	1 1/4" NPT	33.6	19.8	13.7	2.6	2.9	13
15SQ/SQE10C-220	A	1 C	3"	1 1/4" NPT	35.0	21.3	13.7	2.6	2.9	16
15SQ/SQE10C-250	A	1 C	3"	1 1/4" NPT	36.1	21.3	14.8	2.6	2.9	16
15SQ/SQE15C-290	A	1 1/2 C	3"	1 1/4" NPT	38.2	21.3	16.9	2.6	2.9	16
22SQ/SQE03A-40	A	1/3 A	3"	1 1/2" NPT	30.4	19.8	10.6	2.6	2.9	12
22SQ/SQE05A-80	A	1/2 A	3"	1 1/2" NPT	30.4	19.8	10.6	2.6	2.9	12
22SQ/SQE05B-120	A	1/2 B	3"	1 1/2" NPT	31.5	19.8	11.6	2.6	2.9	13
22SQ/SQE10C-160	A	1 C	3"	1 1/2" NPT	33.6	19.8	13.7	2.6	2.9	13
22SQ/SQE10C-190	A	1 C	3"	1 1/2" NPT	38.2	21.3	16.9	2.6	2.9	16
22SQ/SQE15C-220	A	1 1/2 C	3"	1 1/2" NPT	38.2	21.3	16.9	2.6	2.9	16
30SQ/SQE05A-40	A	1/2 A	3"	1 1/2" NPT	30.4	19.8	10.6	2.6	2.9	12
30SQ/SQE05B-90	A	1/2 B	3"	1 1/2" NPT	30.4	19.8	10.6	2.6	2.9	13
30SQ/SQE10C-130	A	1 C	3"	1 1/2" NPT	35.0	21.3	13.7	2.6	2.9	13

ELECTRIC

Supply Voltage:	1x200-240V +6%/-10%, 50/60 Hz, PE 1x100-115V +6%/-10%, 50/60 Hz, PE
Operation Via Generator:	As a minimum, the generator output must be equal to the motor P1[kw] + 10%
Starting Current:	The motor starting current is equal to the highest value stated on the motor nameplate
Starting:	Soft Start
Run-up Time:	Maximum: 2-seconds
Motor Protection:	Motor is protected against: Dry running, overvoltage, undervoltage, overload, overtemperature
Power Factor:	PF=1
Motor Cable:	3 Wire, 14AWG XLPE
Motor Liquid:	Type SML 2
pH Values:	SQ and SQE: 5 to 9
Liquid Temperature:	The temperature of the pumped liquid must not exceed 104°F

Note: If liquids with a viscosity higher than that of water are to be pumped, please contact Grundfos

PIPING CONNECTION

Discharge Port:	5SQ/SQE - 1" NPT 10-15SQ/SQE - 1-1/4" NPT 22-30SQ/SQE - 1-1/2" NPT
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STORAGE CONDITIONS

Minimum Ambient Temperature:	-4°F
Maximum Ambient Temperature:	+140°F
Frost Protection:	If the pump has to be stored after use, it must be stored at a frost-free location or it must be ensured that the motor liquid is frost proof. The motor must be stored without being filled with motor liquid.

OPERATING CONDITIONS

Minimum Ambient Fluid Temperature:	- 34°F
Maximum Ambient Fluid Temperature:	+140°F

APPROXIMATE DIMENSIONS AND WEIGHT

Motor Dimensions (MS 3 & MSE 3): 0.33 - 0.50A [Hp] 0.50 - 0.75B [Hp] 1.0 - 1.5C [Hp]	20.9" length x 2.68 diameter 20.9" length x 2.68 diameter 22.3" length x 2.68 diameter
Motor Weights (MS3 & MSE3) 0.33 - 0.50A [Hp] 0.50 - 0.75B [Hp] 1.0 - 1.5C [Hp]	6.0 lbs 7.1 lbs 8.2 lbs
Pump End Dimensions: Pump Diameter: Pump Diameter, incl cable guard	2.68 2.91
Pump End Dimensions (min. and max.): 5SQ/SQE 10SQ/SQE 15SQ/SQE 22SQ/SQE	10.6" to 18.0" 10.6" to 16.9" 10.6" to 16.9" 10.6" to 13.7"
Pump End Weights (min. and max.): All SQ/SQE Models	2.2 lbs to 3.5 lbs
Well Diameter:	3-inch or larger
Installation Depth (maximum)	500 feet below static water level

Deep Well Jet Pumps

Horizontal Multi-Stage Jet/Centrifugal Pumps

HMS

Design Series

Pump Performance

Deep Well 3" Single Pipe (CP) & 4" Double Pipe (EP) (Capacity in Gallons Per Minute)

HP	Cat. No.	Well Size			Use Venturi	Disch. Press. PSI	Pumping Depth in Feet															
		3"	4"				20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'	160'	
		Jet No.	Old Jet No.	New Jet No.																		
1	HMSE	29CP	42EP	CK1	J32P-20	20											5.0	4.5	3.9	3.5	3.0	
						30											5.0	4.5	3.9	3.5	3.0	
						40											5.0	4.5	3.9	3.5	3.0	
						50											4.8	4.3	3.8	3.4	2.9	
						60											4.1	3.7	3.3	2.8	2.4	
						D.P.											48	48	48	48	54	
						S.O.											120	114	108	102	96	
1-1/2	HMSF	10CP	9EP	CK4	J32P-38	20	26.0	23.0	20.0	17.0	14.3	11.0	8.0									
						30	24.2	22.0	20.0	17.0	14.3	11.0	8.0									
						40	21.7	19.7	17.9	15.9	14.0	11.0	8.0									
						50	18.6	17.0	15.3	13.3	11.5	9.1	7.1									
						60	15.5	13.6	12.0	10.2	8.1	6.1	4.1									
						D.P.	42	42	42	48	48	48	48									
						S.O.	102	96	90	84	78	78	72									
1-1/2	HMSF	9CP	8EP	CK3	J32P-26	20					11.3	11.0	10.7	9.8	8.9	7.5	6.5	5.5				
						30					11.2	10.9	10.7	9.8	8.9	7.5	6.5	5.5				
						40					11.1	10.8	10.6	9.7	8.9	7.5	6.5	5.5				
						50					11.0	10.8	10.5	9.7	8.9	7.5	6.5	5.5				
						60					10.9	10.4	9.3	8.5	7.7	6.7	5.8	4.7				
						D.P.					54	54	54	60	60	60	60	60				
						S.O.					132	126	120	114	108	102	102	90				
1-1/2	HMSF	19CP	4EP	4SD	Factory Installed	20											6.9	6.1	5.3	4.6	4.1	
						30												6.9	6.1	5.3	4.6	4.1
						40												6.9	6.1	5.3	4.6	4.1
						50												6.9	6.1	5.3	4.6	4.1
						60												6.0	5.3	4.7	4.0	3.3
						D.P.												54	54	54	54	54
						S.O.												114	108	102	96	90

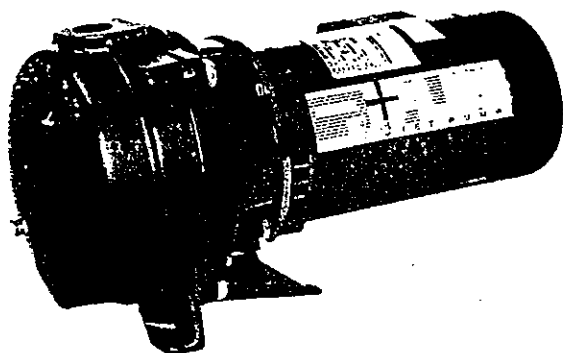
D.P. = Minimum Drive Pressure S.O. = Shut Off Pressure in PSI.

Tested and rated in accordance with Water Systems Council standards.

NOTE: Pumps installed with a CON-AIRE® tank require a 100 PSI relief valve. Pumps installed with a conventional tank require a 75 PSI relief valve. Relief valve must be capable of relieving entire flow of pump at relief pressure.

Specifications are subject to change without notice.





GOULDS 60 HZ

Convertible Jet Pumps

1/2, 3/4, 1 and 1 1/2 HP

MODEL



J+

J5, J5H, J7, J10, and J15

APPLICATIONS

Specifically designed for:

- Homes
- Farms
- Cottages
- Booster service

SPECIFICATIONS

Pump:

- Pipe connections:
1 1/4" NPT suction
1" NPT discharge
1" NPT pressure.
- Pressure switch:
J5 - AS3FX preset at
20-40 PSI.
J5H, J7, J10, J15 -
AS4FX preset at
30-50 PSI.

Motor:

- NEMA standard.
- 60 Hz.
- 1/2 - 1 1/2 HP, 115/230 V
capacitor start.
- Single phase.
- 3500 RPM.
- Built-in overload with
automatic reset.
- Stainless steel shaft.
- Rotation: clockwise when
viewed from motor end.
- UL778 listed.

Maximum temperature: 140°F

FEATURES

■ **Convertible:** May be used on shallow or deep well applications using appropriate Goulds fittings. See the performance charts on the following pages for fitting order numbers.

■ Serviceable:

- Back pullout design allows disassembly of pump for service without disturbing piping.
- Two compartment motor for easy access to motor wiring and replaceable components.
- Nozzle clean out plug in shallow well adapter.
- Corrosion resistant, engineered plastic tubing and fittings are easily removed for cleaning. Premium O-ring design fittings need only be hand tight to seal.

■ **Impeller:** F.D.A. compliant, glass filled Noryl®. Corrosion and abrasion resistant.

■ **Diffuser (Guide Vane):** Bolt down diffuser provides positive alignment with impeller. Diffuser also has stainless wear ring for extended performance in abrasive conditions. F.D.A. compliant, injection molded, food grade, glass filled Lexan® for durability and abrasion resistance.

■ **Tubing and Fittings:** F.D.A. compliant engineered plastic is corrosion and U.V. resistant.

■ **Powered for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits. Can be operated continuously without damage.

■ Corrosion Resistant:

Electro-coated paint process is applied inside and out, then baked on.

■ Protected Mechanical Seal:

Special diaphragm design retains water in the casing at all times to ensure the mechanical seal can never run dry.

■ Exclusive Air Handling Ability:

When pump is primed it never needs priming again even if water level drops below end of the foot valve. It resumes pumping as soon as water level rises again. Gas or air in the water will not airbind the pump.

SYSTEM COMPONENTS

■ **Basic Pump Unit:** Includes pump and motor, pressure gauge and bushing, pressure switch with tubing and fittings.

NOTE: THE TUBING IS CONNECTED TO THE PUMP, AT THE FACTORY, FOR SHALLOW WELL USE. A DEEP WELL SET UP REQUIRES A JDW FITTINGS PACKAGE OR A AV22KIT.

These both include additional fittings and a 24" tubing to connect to a pressure control valve.

ADDITIONAL COMPONENTS REQUIRED

■ Shallow Well Package:

Includes shallow well adapter, nozzle, venturi (diffuser), gasket, bolts, and pipe plugs

or

■ Deep Well Package:

Choose either a twin pipe or packer style.

- Twin pipe includes jet body, nozzle, venturi (diffuser) and foot valve.
- Packer includes packer body, nozzle, venturi (diffuser), and built-in check valve.

NOTE: Packer systems also require a packer adapter on the wellhead.

■ Deep well systems require a pressure control valve.

NOTE: YOU MUST HAVE A JDW OR AV22KIT TO MAKE THE PRESSURE SWITCH CONNECTION.

■ Pressure tank required on all systems.

AGENCY LISTINGS

CSA Canadian Standards Association

UL Underwriters Laboratories

Convertible Jet Pumps

1/2, 3/4, 1 and 1 1/2 HP

MODEL



J+

J5, J5H, J7, J10, and J15

TWIN PIPE PERFORMANCE RATINGS

HP/Model	1/2 HP - J5				3/4 HP - J7				1 HP - J10				1 1/2 HP - J15			
Well Casing min. I.D.	4		4 1/2		4		4 1/2		4		4 1/2		4 1/2		4 1/2	
Pressure	1		1 1/2		1		1 1/2		1		1 1/2		1 1/2		1 1/2	
Suction Pipe Size (in.)	1 1/4		1 1/2		1 1/4		1 1/2		1 1/4		1 1/2		1 1/2		1 1/2	
① Jet Assembly Package	FT4-13	FT4-31	FT4-08	FT5-14	FT4-14	FT4-34	FT4-18	FT5-47	FT5-48	FT4-44	FT4-43	FT4-18	FT5-49	FT5-11	FT5-12	FT5-11
Jet Body (only)	AT4		AT5		AT4		AT5		AT4		AT5		AT5		AT5	
Nozzle	AN017	AN016	AN015	AN018	AN017	AN016	AN016	AN018	AN017	AN017	AN017	AN016	AN019	AN018	AN019	AN018
Venturi	AD726	AD723	AD720	AD724	AD729	AD725	AD722	AD730	AD725	AD730	AD727	AD722	AD732	AD727	AD734	AD727
Control Valve Setting (PSI)	20	20	20	20	28	29	30	28	30	31	33	35	30	32	35	40
Feet	20-40 PSI				[Gallons Per Minute (GPM)] 30-50 PSI Pressure Switch Setting											
Depth to Jet Assembly (based on submergence of 5 feet)	30	13.7	11.6		15.8			16.6		17.0			19.3		21.2	
	40	12.4	9.5		15.7			16.0		16.6			18.0		20.0	
	50		8.0		13.2			15.0		14.4			16.0		16.1	
	60		7.4	5.5	6.7	10.2		13.0		11.5	11.2		14.3		15.0	
	70			4.9	5.9		8.2	11.0	10.0		9.3		12.6		14.0	11.2
	80			4.0	5.0		6.5		8.6		7.3	6.2	10.0	10.0		10.6
	90			3.3	4.3		5.0	5.0	7.3			6.1		8.7		9.0
	100							4.4	6.0			5.4		7.0		7.6
	110							3.5	5.0			4.5		5.7		6.2
	120													4.5		5.2
	130															4.0
	140															2.8
	150															1.5
	160															
	170															

① Jet assembly package includes: jet body, nozzle, Venturi, and foot valve.

PACKER SYSTEM PERFORMANCE RATINGS

HP/Model	1/2 HP - J5					3/4 HP - J7				1 HP - J10				1 1/2 HP - J15			
Well Casing	2		3			2		3		2		3		3			
Suction Pipe Size (in.)	1 1/4		1 1/2			1 1/4		1 1/2		1 1/4		1 1/2		1 1/2			
① Jet Assembly Package	FP2-13	FP2-31	FP2-08	FP3-36	FP3-24	FP2-40	FP2-47	FP3-53	FP3-54	FP2-48	FP2-43	FP3-55	FP3-14	FP3-16	FP3-18	FP3-21	FP3-24
Jet Body (only)	AP2		AP3			AP2		AP3		AP2		AP3		AP3			
Nozzle	AN017	AN016	AN015	AN021	AN018	AN015	AN015	AN018	AN017	AN016	AN016	AN019	AN018	AN019	AN021	AN023	AN018
Venturi	AD726	AD723	AD720	AD730	AD724	AD727	AD723	AD730	AD725	AD729	AD725	AD732	AD727	AD735	AD723	AD731	AD724
Control Valve Setting (PSI)	20	20	20	20	20	30	32	27	30	35	36	28	32	34	34	34	39
Feet	20-40 PSI					[Gallons Per Minute (GPM)] 30-50 PSI Pressure Switch Setting											
Depth to Jet Assembly (based on submergence of 5 feet)	30	12.5	10.0		13.8			16.8		16.7		19.3		24.4			
	40	11.2	8.3		13.3			16.8		14.6		19.3		23.1			
	50		8.0		11.3	7.3	11.5	15.3		13.5		18.0		20.2			
	60		7.0	5.0	9.3	6.8	9.0	7.8	13.5	11.0	9.2	15.3		16.9	15.0		
	70			4.5	7.7	5.9		7.1	11.5	9.8		9.0	12.7		14.4		
	80			3.7		5.1		5.1		8.6		7.3	10.2	10.3		12.9	
	90						4.3			7.3		5.6		8.8		10.9	10.3
	100								6.2		4.2		7.2			9.6	7.3
	110								5.0				5.8			8.2	6.5
	120												4.5			6.9	5.8
	130															5.8	5.0
	140															4.7	4.5
	150															3.4	4.0
	160																3.3
	170																2.8

① Jet assembly package includes: jet body, Venturi, nozzle, built-in check valve, leather crimps, spacer and fitting.

GOULDS PUMPS
ITT Industries

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BJ+PG2

Shallow Well Jet Pumps

How to select the Quick-Set jet model that matches your needs.

Quick-Set™ Shallow Well Performance

MODEL	H.P.	DEPTH TO WATER FEET	INJECTOR STYLE	APPROXIMATE CAPACITY (GPH) AT DISCHARGE PRESSURES					SHUT OFF PSI	PRESS. SWITCH SETTING	SUCTION AND DISCH. SIZE
				20PSI	30PSI	40PSI	50PSI	60PSI			
33RJ 33RJB	1/8	5'	HIGH PRESSURE	510	480	420	210	—	63	20-40	1 1/4" x 1"
			HIGH CAPACITY	750	660	342	—	—	52		
		15'	HIGH PRESSURE	378	372	342	162	—	60	20-40	
			HIGH CAPACITY	576	504	216	—	—	48		
		25'	HIGH PRESSURE	246	246	234	78	—	55	20-40	
			HIGH CAPACITY	372	342	72	—	—	44		
50RJ 50RJB	1/2	5'	HIGH PRESSURE	540	522	498	432	264	78	20-40	
			HIGH CAPACITY	996	990	702	300	—	57		
		15'	HIGH PRESSURE	396	390	378	360	216	75	20-40	
			HIGH CAPACITY	744	738	540	150	—	53		
		25'	HIGH PRESSURE	264	264	264	252	132	69	20-40	
			HIGH CAPACITY	450	444	300	—	—	48		
75RJ 75RJB	3/4	5'	COMBINATION	1320	1296	972	576	192	64	30-50	1 1/4" x 1"
		15'	COMBINATION	1008	978	828	384	—	59	30-50	
		25'	COMBINATION	570	564	528	192	—	54	30-50	
100RJ 100RJB	1	5'	COMBINATION	1362	1350	1296	960	582	74	30-50	1 1/4"x 1"
		15'	COMBINATION	1032	996	942	768	384	69	30-50	
		25'	COMBINATION	606	594	582	540	216	64	30-50	

Quick-Set™ Deep Well Performance

4" DOUBLE PIPE			DEPTH TO WATER-GALLONS PER HOUR											PRESS. CONTROL VALVE SETTING	PRESS. SWITCH SETTING	SUCTION AND DISCH. SIZE
MODEL	H.P.	INJECTOR	30	40	50	60	70	80	90	100	110	120	130			
33RJ 33RJB	1/8	E24-4 E25-4	480	438	372 342	282 300	246	180						20 20	20-40	1 1/4" x 1"
50RJ 50RJB	1/2	E10-4 E25-4	792	624	480	360	264 318	252	198	156	126	72		27 30;	20-40	1 1/4" x 1"
75RJ 75RJB	3/4	E11-4 E24-4 E13-4	930	726	558 456	390	324	246	180 240	192	144			30 31 31	30-50	1 1/4" x 1"
100RJ 100RJB	1	E16-4 E15-4 E14-4	930	750	582 480	432	372	312	240 210	180	144	114	72	35 38 40	30-50	1 1/4" x 1"
2" SINGLE PIPE																
33RJ 33RJB	1/8	A10-2 A12-2	498	420	348 336	270	210							19 19	20-40	1 1/4" x 1"
50RJ 50RJB	1/2	A13-2 A12-2	804	642	480	348 318	264	204	156	102				27 28	20-40	1 1/4" x 1"
75RJ 75RJB	3/4	A14-2 A10-2 A15-2	804	660	522 468	384	300	210 192	156	120	60			30 32 30	30-50	1 1/4" x 1"
100RJ 100RJB	1	A16-2 A17-2 A18-2	918	732	564 456	396 384	312	240	174 186	138	90			38 39 39	30-50	1 1/4" x 1"

3" DOUBLE PIPE			DEPTH TO WATER (GPH)							PRESS. CONTROL VALVE SETTING	PRESS. SWITCH SETTING	SUCTION AND DISCH. SIZE
MODEL	H.P.	INJECTOR	30	40	50	60	70	80	90			
33RJ 33RJB	1/8	E1-3	420	336	258	186				20	20-40	1 1/4" x 1"
50RJ 50RJB	1/2	E1-3	582	450	330	222				28	20-40	1 1/4" x 1"
		E2-3				258	180	108		28		
75RJ 75RJB	3/4	E1-3	582	480	378	270				30	30-50	1 1/4" x 1"
		E2-3				294	228	150		30		
100RJ 100RJB	1	E1-3	618	528	432	336				37	30-50	1 1/4" x 1"
		E2-3				318	264	210	156	37		

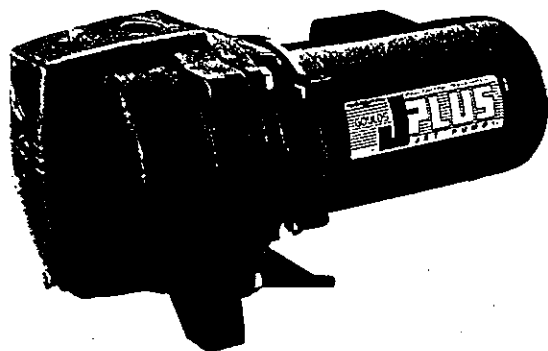


RED JACKET
PUMPS

Marley Pump
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Marley Pump
A United Dominion Company



GOULDS 60 HZ

Shallow Well Jet Pumps

1/2, 3/4, 1 and 1 1/2 HP

MODEL



JS+

J5S, J5SH, J7S, J10S, and J15S

APPLICATIONS

Specifically designed for:

- Homes
- Cottages
- Booster service

SPECIFICATIONS

Pump:

- Pipe connections:
1 1/4" suction
1" discharge.
- Pressure switch:
J5S – AS3FX preset
(20-40 PSI).
J5SH, J7S, J10S,
J15S – AS4FX preset
(30-50 PSI).

Motor:

- NEMA standard.
- 60 Hz.
- 1/2 – 1 1/2 HP, 115/230 V
capacitor start.
- Single phase.
- 3500 RPM.
- Built-in overload with
automatic reset.
- Stainless steel shaft.
- Rotation: clockwise when
viewed from motor end.
- UL778 listed.

Maximum temperature: 140°F.

FEATURES

■ **Compact:** Rugged, new design has an integral shallow well adapter built into the casing, which eliminates the need for a separate shallow well adapter.

■ Serviceable:

- Back pullout design allows disassembly of pump for service without disturbing piping.
- Two compartment motor for easy access to motor wiring and replaceable components.
- Nozzle clean out plug in shallow well adapter.
- Corrosion resistant, engineered plastic tubing and fittings are easily removed for cleaning. Premium O-ring design fittings need only be hand tight to seal.

■ **Impeller:** F.D.A. compliant, glass filled Noryl®. Corrosion and abrasion resistant.

■ Diffuser (Guide Vane):

Bolt down diffuser provides positive alignment with impeller. Diffuser also has stainless wear ring for extended performance in abrasive conditions. F.D.A. compliant, injection molded, food grade, glass filled Lexan® for durability and abrasion resistance.

■ Tubing and Fittings:

F.D.A. compliant engineered plastic is corrosion and U.V. resistant.

■ Powered for Continuous

Operation: Pump ratings are within the motor manufacturer's recommended working limits. Can be operated continuously without damage.

■ Corrosion Resistant:

Electro-coated paint process is applied inside and out, then baked on.

■ Protected Mechanical

Seal: Special diaphragm design retains water in the casing at all times to ensure the mechanical seal can never run dry.

■ Exclusive Air Handling

Ability: When pump is primed it never needs priming again even if water level drops below end of the foot valve. It resumes pumping as soon as water level rises again. Gas or air in the water will not airbind the pump.

SYSTEM COMPONENTS

■ **Basic Pump Unit:** Includes pump with integral shallow well adapter, motor, pressure switch, tubing, nozzle and diffuser. Exclusive to JS+.

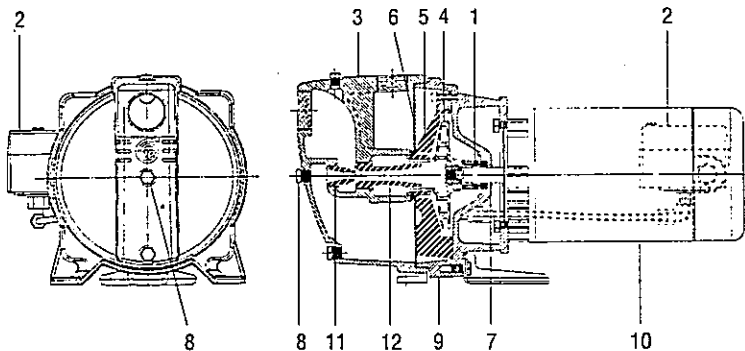
AGENCY LISTINGS



Canadian Standards Association



Underwriters Laboratories



Goulds 60 Hz Shallow Well Jet Pumps 1/2, 3/4, 1 and 1 1/2 HP

MODEL

JS+

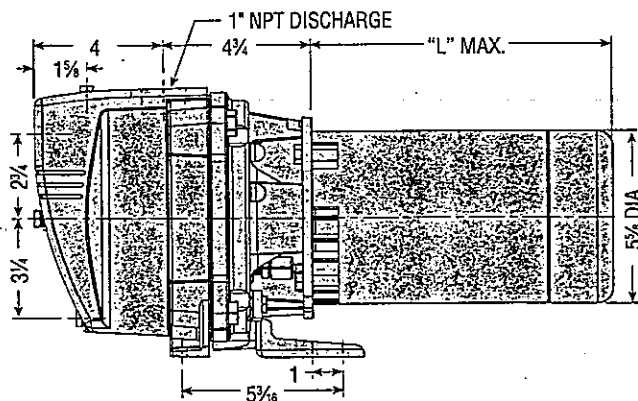
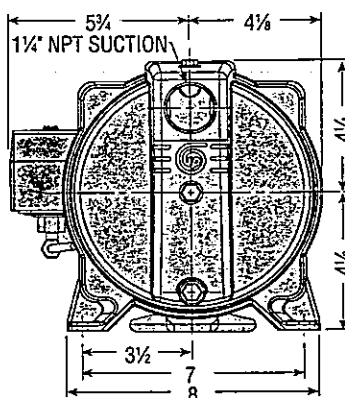
J5S, J5SH, J7S, J10S, and J15S

COMPONENTS

Item No.	Description
1	Mechanical seal
2	Pressure switch
3	Casing
4	Impeller
5	Diffuser (Guide vane)
6	Diaphragm
7	Stainless steel shaft
8	Nozzle clean-out plug
9	Motor adapter
10	Motor
11	Nozzle
12	Venturi (diffuser)

DIMENSIONS AND WEIGHTS

Model	J5S	J5SH	J7S	J10S	J15S
Wt. (lbs.)	43	43	47	50	60
Length	17 1/4	17 1/4	18 1/4	18 1/4	19 1/4
Width	9 1/8				
Height	8 3/4				
HP	1/2	1/2	3/4	1	1 1/2
"L" Max.	8 1/2	8 1/2	9 1/2	10	10 1/2



(All dimensions are in inches and weights in lbs. Do not use for construction purposes.)

SHALLOW WELL PERFORMANCE RATINGS

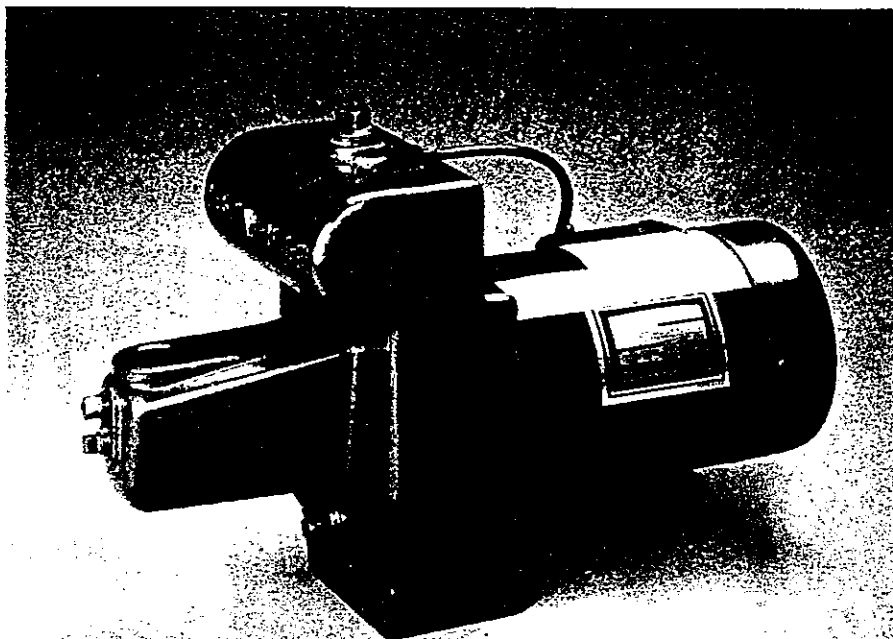
HP/Model	½ HP – J5S					½ HP – J5SH					¾ HP – J7S					1 HP – J10S					1½ HP – J15S					
Nozzle	AN017					AN019					AN018					AN018					AN022					
Venturi	AD3332					AD3328					AD3336					AD3339					AD3342					
	Discharge Pressure – PSI					Discharge Pressure – PSI					Discharge Pressure – PSI					Discharge Pressure – PSI					Discharge Pressure – PSI					
Total Suction Lift (feet)	20	30	40	50	Max. Shut off (PSI)	20	30	40	50	60	Max. Shut off (PSI)	30	40	50	60	Max. Shut off (PSI)	30	40	50	60	Max. Shut off (PSI)	30	40	50	60	Max. Shut off (PSI)
	Gallons per minute					Gallons per minute				Gallons per minute				Gallons per minute				Gallons per minute								
5	17.5	16.5	10.2	5.0	63	11.5	11.3	11.0	7.7	4.8	83	21.3	18.3	12.5	6.6	70	24.8	24.4	16.6	9.9	74	26.6	26.3	25.0	15.6	80
10	15.7	14.4	9.2	4.3	61	10.3	10.0	9.6	7.0	4.2	81	18.8	17.3	11.3	5.0	68	22.9	22.2	15.8	8.6	72	24.7	24.3	22.6	13.9	77
15	13.7	12.5	8.0	3.6	59	8.8	8.6	8.3	6.3	3.7	79	16.4	15.5	9.6	3.7	66	19.8	19.5	13.8	6.9	70	21.6	21.5	20.4	12.9	75
20	11.5	10.4	7.1	2.3	57	7.0	7.0	6.8	5.8	3.2	76	13.6	13.2	8.3	2.0	63	16.6	16.6	12.2	5.6	67	18.1	18.0	17.6	12.0	73
25	8.7	8.6	6.2	1.3	54	5.3	5.2	5.2	5.0	2.8	73	10.0	9.9	6.4	1.0	59	12.5	12.4	10.4	3.6	65	14.0	14.0	14.0	10.1	71

Self-Priming Shallow Well Jet Pumps

AN

Design Series

SHALLOW WELL JET PUMPS



This product is Listed to UL Standards for Safety by Underwriters Laboratories Inc. (UL).



AN models provide superior performance with more pressure for wells to 25' deep. Self-priming after the priming chamber has been filled with water. Available in models from 1/3 to 1-1/2 HP, they offer unusually high capacities to 45 GPM. Basic pump is available for installation with existing pressure tanks. 1 and 1-1/2 HP models have bolt-on jets and are not convertible for deep well applications.

Applications

Water systems and sprinkling for homes, farms and cottages

Materials

Body and base – close-grained cast iron

Nozzle – glass-filled Noryl®

Venturi – Noryl®

Impeller – Noryl®

Diffuser – reinforced polypropylene

Shaft – one-piece threaded

Ordering Information

HP	Catalog No.	High Volume Catalog No.	Description	Pipe Tapping Sizes		Motor Voltage	Approx. Wt. Lbs.
				Suct.	Disch.		
1/3	ANB	ANB-25	Base Mounted Pump	1"	3/4"	115	44
1/2	ANC	ANC-25	Base Mounted Pump	1"	3/4"	115/230	46
3/4	AND	AND-25	Base Mounted Pump	1"	3/4"	115/230	50
1	ANE	ANE-24	Base Mounted Pump	1-1/2"	1-1/4"	115/230	80
1-1/2	ANF	ANF-24	Base Mounted Pump	1-1/2"	1-1/4"	115/230	85

If you are ordering the optional, high volume model, be sure to specify the -24 or -25 numbers shown. If no dash number is stated on the order, the standard 30-50 PSI version will be supplied by the factory.

Features

Quality Construction – Cast iron body and base treated for corrosion resistance. Drain port provided for easy winterizing.

Built-in Jet – Glass-filled Noryl® nozzle and venturi for maximum resistance to corrosion and abrasion.

Pressure Switch – High quality. Differential and cut-in/cut-out settings are adjustable.

Noryl® Impellers – Precision-molded for perfect balance... ultra-smooth for highest performance and efficiency.

Precision Molded Diffuser – Pump primes faster, handles more air, with multi-port, precision-molded, reinforced polypropylene diffuser.

Mechanical Shaft Seal – Precision lapped and highly polished carbon-ceramic, stainless steel construction. Internal design guarantees continuous water lubrication for maximum protection.

Motor Windings – Superior insulation materials protect against excessive moisture and contaminants... assures prolonged motor life.

Balanced Rotor – Die cast under high pressures for uniform performance and greater efficiency, then dynamically balanced.

Heavy-duty Ball Bearings – Shielded, permanently lubricated bearings, extensively tested to ensure extended life and smooth, quiet operation.

Pump and Motor Shaft – Stainless steel for maximum corrosion resistance; one-piece threaded shaft for positive impeller drive and alignment.

Dustproof Cover – Dustproof canopy protects all electrical components from dirt, dust and insects; ventilating air cannot contaminate vital switching components.

® Noryl is a registered trademark of General Electric Co.



STA-RITE. Built On Commitment.

Pump Performance

Standard High Pressure Pumps (Capacity in Gallons Per Minute)

HP	Cat. No.	Disch. Press.	Pumping Depth in Feet					Shut Off Pressure
			5'	10'	15'	20'	25'	
1/3	ANB	30	8.0	7.3	6.3	5.1	3.9	69
		40	7.3	6.6	5.8	4.8	3.9	
		50	3.8	3.2	2.5	2.1	1.7	
1/2	ANC	30	9.4	8.5	7.4	6.0	4.6	69
		40	8.5	7.8	6.8	5.6	4.6	
		50	4.4	3.8	3.0	2.5	1.9	
3/4	AND	30	15.3	13.5	12.0	9.5	7.4	70
		40	14.4	12.8	11.8	9.4	7.3	
		50	9.0	8.3	7.0	6.1	5.5	
1	ANE	30	21.5	19.3	16.8	13.3	9.5	70
		40	21.5	18.8	16.7	13.2	9.3	
		50	15.0	12.8	10.8	8.2	3.3	
1-1/2	ANF	30	29.8	25.7	22.1	17.8	13.0	70
		40	29.7	25.4	21.6	17.7	13.0	
		50	24.2	20.3	17.2	12.6	4.7	

Pump will operate at all depths shown, with pressure switch set at 30-50 PSI. Tested and rated in accordance with Water Systems Council Standards.

Pump Performance

Optional High Volume Pumps (Capacity in Gallons Per Minute)

HP	Cat. No.	Disch. Press.	Pumping Depth in Feet					Shut Off Pressure
			5'	10'	15'	20'	25'	
1/3	ANB-25	20	13.0	11.4	9.8	8.0	5.6	56
		30	10.2	9.3	8.2	7.5	5.0	
		40	4.5	3.8	2.8	2.1	1.0	
1/2	ANC-25	20	13.7	12.3	10.6	8.8	6.3	56
		30	10.8	10.2	8.8	8.2	6.2	
		40	5.3	4.5	3.5	2.5	1.0	
3/4	AND-25	20	20.7	19.0	16.5	13.7	9.8	54
		30	18.3	16.7	15.5	12.7	8.8	
		40	11.5	9.2	7.7	4.0	1.5	
1	ANE-24	20	35.0	30.8	26.7	22.5	16.7	58
		30	30.2	26.5	24.0	20.7	16.2	
		40	18.3	15.7	12.8	9.8	6.3	
1-1/2	ANF-24	20	45.0	40.0	35.8	30.8	22.5	58
		30	37.5	34.2	30.8	28.3	20.0	
		40	25.0	21.7	19.2	15.8	11.7	

Pump will operate at all depths shown, with pressure switch set at 20-40 PSI. Tested and rated in accordance with Water Systems Council Standards.

NOTE: Pumps installed with a CON-AIRE® tank require a 100 PSI relief valve. Pumps installed with a conventional tank require a 75 PSI relief valve. Relief valve must be capable of relieving entire flow of pump at relief pressure.

Specifications are subject to change without notice.

Chase Small Irrigation Well Suction Lift Evaluation 11/13/03 by Terry M. Scanlan, P.E.

NPSHA = Net Positive Suction Head Available (a function of the system and location)

NPSHR = Net Positive Suction Head Required (a function of the pump)

For a pump to operate, the NPSHA must be greater than the NPSHR. NPSHR is always positive, and will typically range from 4 to 12 feet for an end-suction style pump. NPSHA is calculated as follows.

$$\text{NPSHA} = H_a - H_{vp} - H_f - H_s$$

Where

- H_a is atmospheric pressure at the pump elevation = 30.9 feet at elevation 2590 ft
- H_{vp} is the vapor pressure of water = 0.50 feet at 55 degrees F
- H_f is headloss due to friction. At 200 gpm is 2.9 feet in 25 feet of 3" suction pipe (new steel, $C=120$) plus 2 feet through a 3" inch fully open swing check foot valve for a total of 4.9 feet.
- H_s is suction lift = static water level plus pumping drawdown plus well casing friction. For zero drawdown, the suction lift will be 31.2 feet in the Chase Small Irrigation Well based on 20.5 feet static depth to water plus 10.7 feet friction loss in the well casing (4-inch old steel pipe, 250 feet long, $C=100$).

For zero drawdown, the NPSHA in the Chase small irrigation well will be
 $30.9 - 0.5 - 4.9 - 31.2 = -5.7$ feet

Since the NPSHA is negative, there is no suction pump that will work in this situation.

If the drawdown is 4 feet (specific capacity of 50 gpm/ft) the NPSHA will be -9.7. Again, no suction pump will operate. But if the static water level was 15 feet higher, the suction pipe 15 feet shorter, and drawdown is 4 feet, the NPSHA will be 7 feet. An end-suction pump with a NPSHR of 7 feet would operate under such condition.

Conclusion: The Chase Small Irrigation Well cannot be operated at 200 gpm with the 2003 measured static water level using a centrifugal suction-lift pump. A centrifugal suction-lift pump was capable of operating prior to 1983 when static water levels were likely 10 to 20 feet higher.

Ex. 24

Terminology (continued)

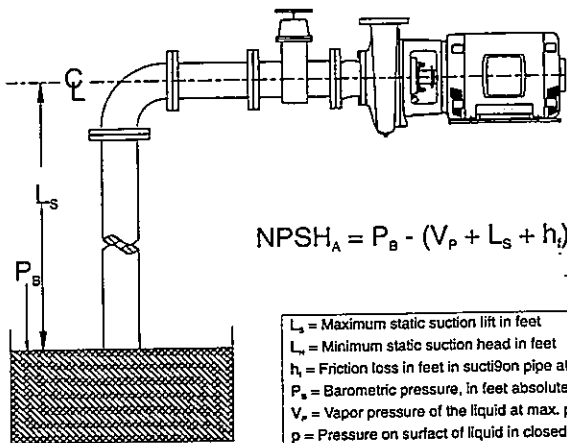
Hydraulics (continued)

Static Suction Lift: The vertical distance in feet from the surface of the liquid to the pump centerline when the source of supply is below the pump.

Suction Head (h_s): Exists when the liquid supply level is above the pump centerline or impeller eye. The total suction head is equal to the static height of static submergence in feet that the liquid supply level is above the pump centerline less all suction line losses including entrance loss plus any pressure (a vacuum as in a condenser hotwell being a negative pressure) existing at the suction supply source. Caution – even when the liquid supply level is above the pump centerline the equivalent of a lift will exist if the total suction line losses (and vacuum effect) exceed the positive static suction head. This condition can cause problems, particularly when handling volatile or viscous liquids (see Figure 4).

Suction Supply Open to Atmosphere

-- with suction lift

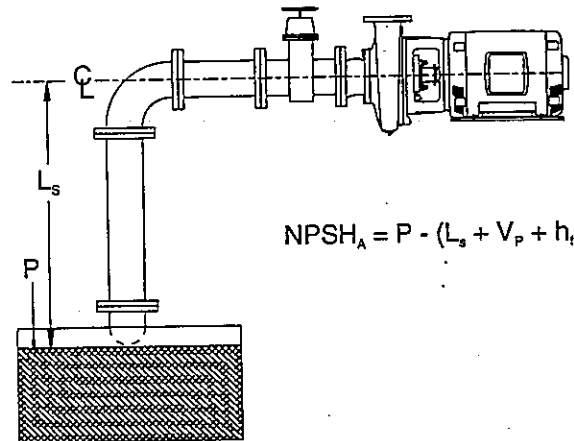


$$NPSH_A = P_B - (V_p + L_s + h_f)$$

L_s = Maximum static suction lift in feet
 L_n = Minimum static suction head in feet
 h_f = Friction loss in feet in suction pipe at required capacity
 P_B = Barometric pressure, in feet absolute
 V_p = Vapor pressure of the liquid at max. pumping temp., in feet absolute
 p = Pressure on surface of liquid in closed suction tank, in feet absolute

Closed Suction Supply

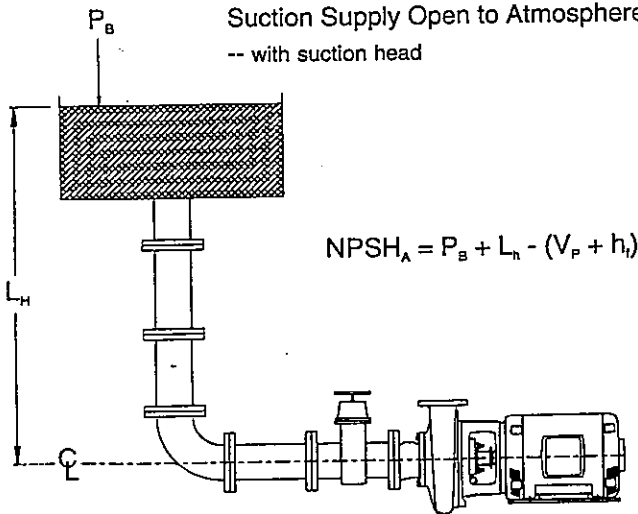
-- with suction lift



$$NPSH_A = P - (L_s + V_p + h_f)$$

Suction Supply Open to Atmosphere

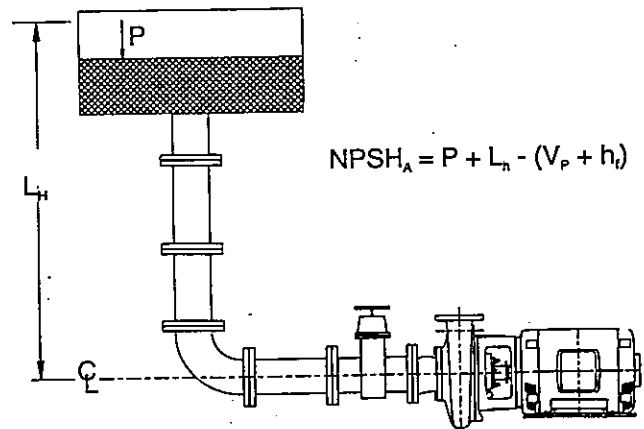
-- with suction head



$$NPSH_A = P_B + L_n - (V_p + h_f)$$

Closed Suction Supply

-- with suction head



$$NPSH_A = P + L_n - (V_p + h_f)$$

Figure 4

HYDRAULIC HANDBOOK

**Fundamental Hydraulics
and Data useful in the
solution of pump applica-
tion problems.**

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Referring to Fig. 8, the intersection, of the diagonal for 15 feet suction lift with the vertical line at total pump head of 100 feet, falls on the horizontal line corresponding to 2250 specific speed. The specific speed should not exceed this value.

Example II—Double suction pump.

Given a total head of 100 feet and a total suction lift of 15 feet, what is the safe upper limit of specific speed?

Referring to the first curve, Fig. 8, the intersection, of the diagonal for 15 feet suction lift with the vertical line for 100 feet total pump head, falls on the horizontal line corresponding to 3200 specific speed on the scale at the right side of the chart. This is the value of

$$\frac{\text{rpm} \sqrt{\text{gpm}}}{H^{\frac{3}{4}}} = N_s$$

in which the volume, or gpm, is the total gallons per minute capacity of the pumping unit including both suction; and is the highest value which should be used for this head and suction lift.

Example III—Single suction mixed flow or axial flow pump.

Given a total head of 35 feet and a total suction head of 10 feet, corresponding to a submerged impeller, what is the safe upper limit of specific speed?

Referring to the second curve, Fig. 9, the intersection, of the vertical line for 35 feet total pump head and the diagonal for 10 feet suction head, falls on the horizontal line corresponding to 9400 specific speed on the scale at the left side of the chart. The specific speed should not exceed this value.

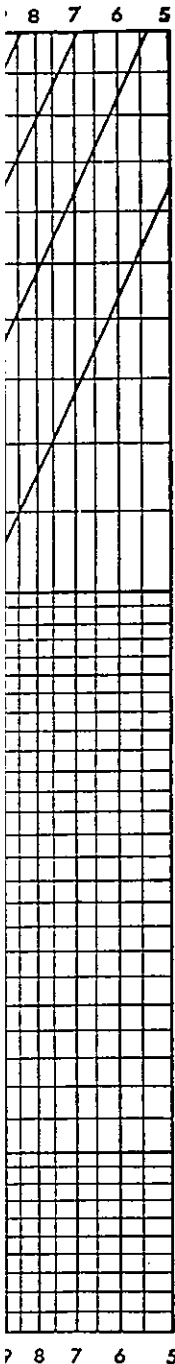
NET POSITIVE SUCTION HEAD (NPSH)

NPSH can be defined as the head that causes liquid to flow through the suction piping and finally enter the eye of the impeller.

This head that causes flow comes from either the pressure of the atmosphere or from static head plus atmospheric pressure. A pump operating under a suction lift has as a source of pressure to cause flow only the pressure of the atmosphere. The work that can be done, therefore, on the suction side of a pump is limited, so NPSH becomes very important to the successful operation of the pump. There are two values of NPSH to consider.

REQUIRED NPSH is a function of the pump design. It varies between different makes of pumps, between different pumps of the same make and varies with the capacity and speed of any one pump. This is a value that must be supplied by the maker of the pump.

AVAILABLE NPSH is a function of the system in which the pump operates. It can be calculated for any installation. Any pump installation, to operate successfully, must have an available NPSH



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equal to or greater than the required NPSH of the pump at the desired pump conditions.

When the source of liquid is above the pump:

$$\text{NPSH} = \text{Barometric Pressure, Ft.} + \text{Static Head on suction, ft.} - \text{friction losses in suction piping, ft.} - \text{Vapor Pressure of liquid, ft.}$$

When the source of liquid is below the pump:

$$\text{NPSH} = \text{Barometric Pressure, ft.} - \text{Static Suction lift, ft.} - \text{friction losses in Suction piping, ft.} - \text{Vapor Pressure of liquid, ft.}$$

To illustrate the use of these equations consider the following examples:

The required NPSH of a water pump at rated capacity is 17 ft. Water Temperature 85°F. Elevation 1000 ft. above sea level. Entrance and friction losses in suction piping calculated = 2 ft. What will be the maximum suction lift permissible?

To better visualize the problem the solution is presented graphically in Fig. 10. The two horizontal lines are spaced apart a distance equal to the barometric pressure in feet.

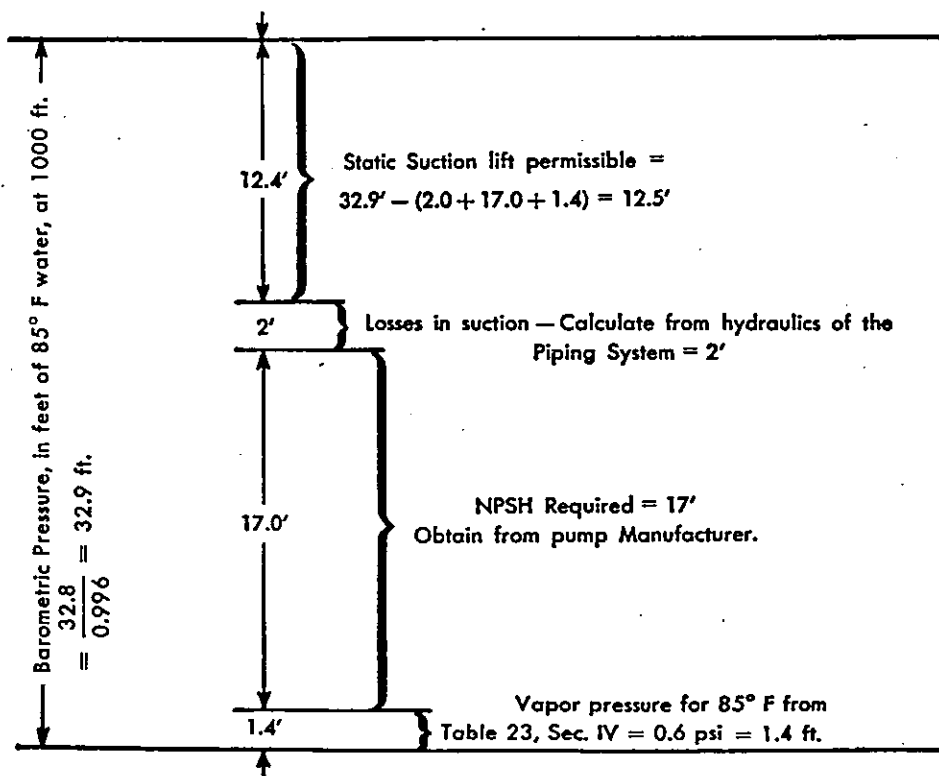


FIG. 10. Graphic solution NPSH problem for 85°F water.

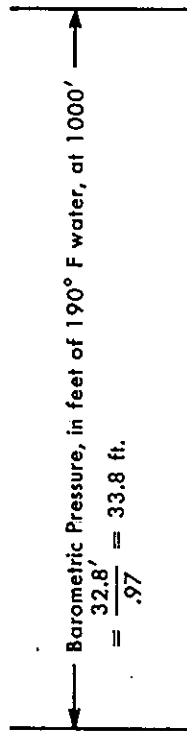


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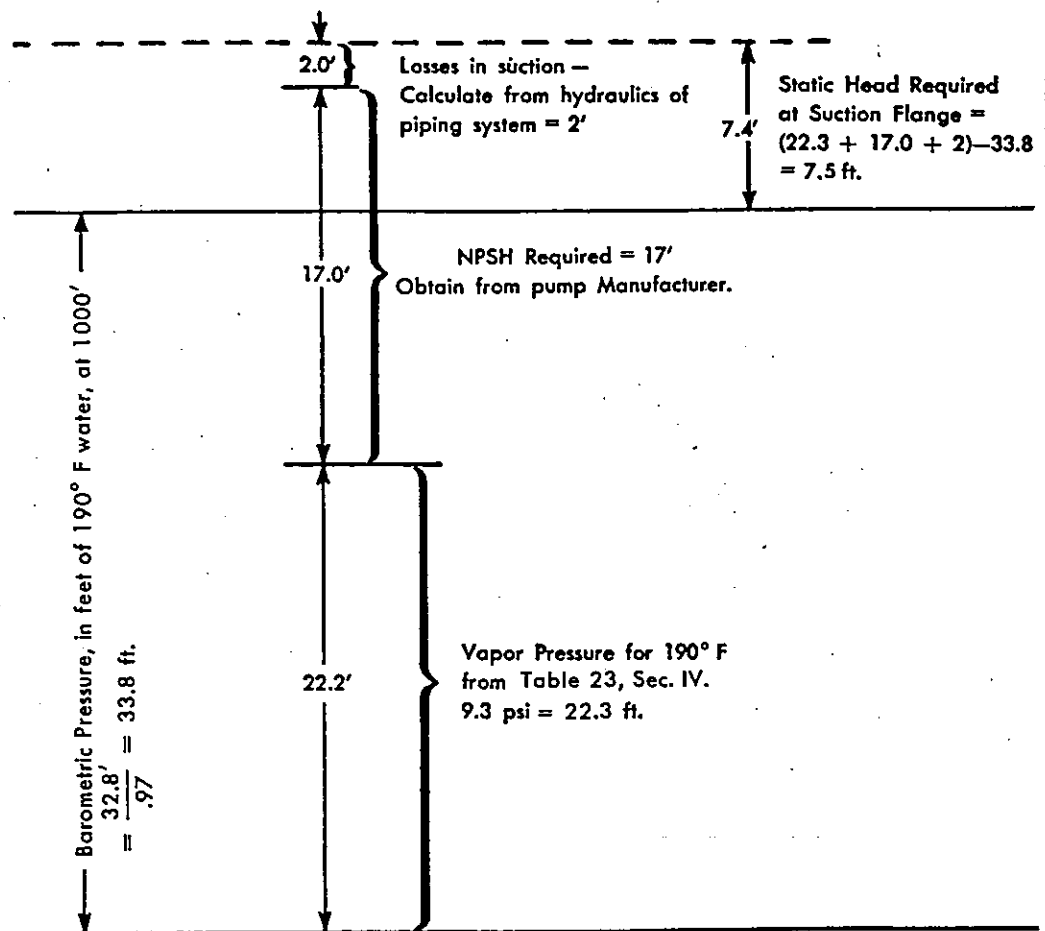


FIG. 11. Graphic solution NPSH problem for 190°F water.

As a further example consider the same data except that the water temperature is 190°F. What will be the suction lift or head required?

From Table 23 in Section IV water at 190° has a sg. of 0.97. The vapor pressure is 9.3 psi. In the graphic solution in Fig. 11 remember that all heads must be in feet of the liquid.

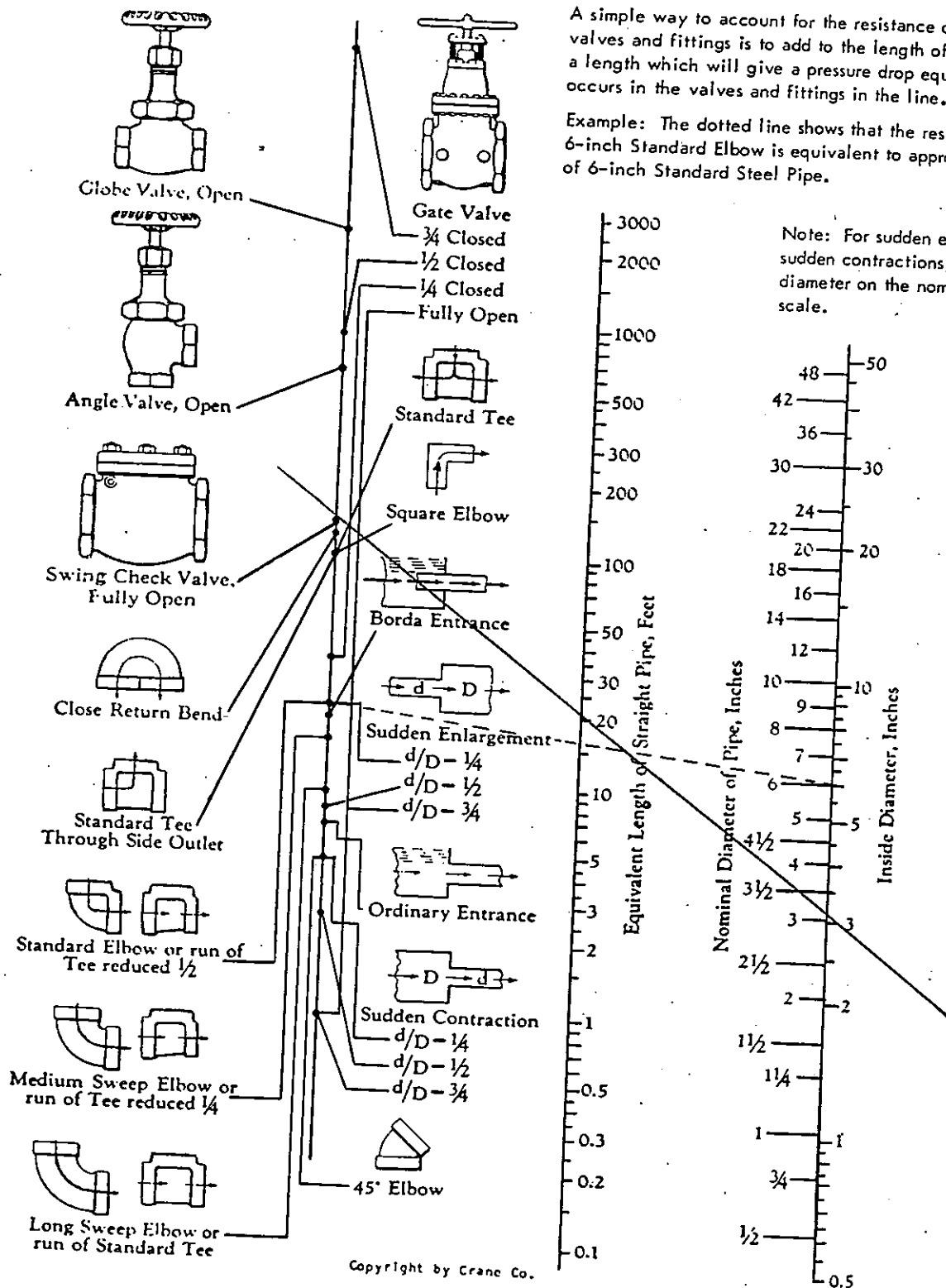
In this case because the sum of vapor pressure + NPSH required + losses in the suction system exceed the barometric pressure, a positive head or submergence must be provided to insure uninterrupted water flow to the pump.

This discussion of NPSH applies to any type of pump whether centrifugal, positive displacement, peripheral, angle or mixed flow or propeller. On centrifugal, angle or mixed-flow or propeller pumps the suction conditions must be correct or the pump will operate inefficiently or may fail to operate at all. However, the Westco peripheral type is more tolerant of improper suction conditions, for this type pump has the ability to pump both liquid and vapor without vapor binding. When pumping part vapor and part liquid the capac-

Resistance of valves and fittings to flow of fluids

A simple way to account for the resistance offered to flow by valves and fittings is to add to the length of pipe in the line a length which will give a pressure drop equal to that which occurs in the valves and fittings in the line.

Example: The dotted line shows that the resistance of a 6-inch Standard Elbow is equivalent to approximately 16 feet of 6-inch Standard Steel Pipe.



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Friction of water in pipes (continued)

Gallons Per Minute	Velocity Feet Per Second	Velocity Head In Feet	Head Loss In Feet Per 100 Ft.	Gallons Per Minute	Velocity Feet Per Second	Velocity Head In Feet	Head Loss In Feet Per 100 Ft.	Gallons Per Minute	Velocity Feet Per Second	Velocity Head In Feet	Head Loss In Feet Per 100 Ft.
2 1/2" Pipe (2.469" I.D.)				3" Pipe (3.068" I.D.)				4" Pipe (4.026" I.D.)			
20	1.34	.03	0.7	30	1.30	.03	.48	60	1.51	.04	.5
25	1.67	.05	1.1	35	1.52	.04	.64	80	2.02	.06	.8
30	2.02	.06	1.4	40	1.74	.05	.82	100	2.52	.10	1.2
35	2.35	.09	1.8	45	1.95	.06	1.0	120	3.02	.14	1.7
40	2.68	.11	2.4	50	2.17	.07	1.2	140	3.53	.19	2.2
45	3.02	.14	2.9	60	2.60	.11	1.7	160	4.03	.25	2.8
50	3.35	.17	3.6	70	3.04	.14	2.3	180	4.54	.32	3.5
55	3.69	.21	4.2	80	3.47	.19	3.0	200	5.05	.40	4.3
60	4.02	.25	5.0	90	3.99	.24	3.7	220	5.55	.48	5.1
65	4.36	.30	5.8	100	4.34	.29	4.5	240	6.05	.57	6.0
70	4.69	.34	6.6	120	5.21	.42	6.3	260	6.55	.67	7.0
75	5.03	.39	7.6	140	6.08	.57	8.3	280	7.06	.77	8.0
80	5.36	.45	8.5	160	6.94	.75	10.7	300	7.57	.89	9.1
85	5.70	.50	9.5	180	7.81	.95	13.2	320	8.07	1.01	10.2
90	6.03	.57	10.6	200	8.68	1.17	16.1	340	8.58	1.14	11.5
95	6.37	.63	11.7	220	9.55	1.42	19.2	360	9.08	1.28	12.7
100	6.70	.70	12.8	240	10.4	1.7	22.6	380	9.59	1.43	14.1
110	7.37	.84	15.3	260	11.3	2.0	26.2	400	10.1	1.6	15.5
120	8.04	1.00	18.0	280	12.2	2.3	30.0	420	10.6	1.7	16.9
130	8.71	1.18	20.9	300	13.0	2.6	34.1	460	11.6	2.1	20.0
140	9.38	1.37	23.9	320	13.9	3.0	38.4	500	12.6	2.5	23.4
160	10.7	1.8	30.7	340	14.8	3.4	43.0	550	13.9	3.0	27.9
180	12.1	2.3	38.1	360	15.6	3.8	47.8	600	15.1	3.5	32.8
200	13.4	2.8	46.3	380	16.5	4.2	52.8	650	16.4	4.2	38.0
220	14.7	3.4	55.3	400	17.4	4.7	58.0	700	17.6	4.8	43.6
240	16.1	4.0	66.4	420	18.2	5.1	63.5	750	18.9	5.6	49.5
4" O.D. Pipe (3.826" I.D.)				5" Pipe (5.047" I.D.)				5" O.D. Pipe (4.813" I.D.)			
60	1.67	.04	.6	100	1.60	.04	.4	100	1.76	.05	.5
80	2.23	.08	1.0	120	1.92	.06	.6	120	2.11	.07	.7
100	2.79	.12	1.5	160	2.56	.10	1.0	160	2.82	.12	1.2
120	3.35	.17	2.1	200	3.20	.16	1.4	200	3.52	.19	1.8
140	3.91	.24	2.8	250	4.02	.25	2.2	250	4.41	.30	2.7
160	4.47	.31	3.6	300	4.81	.36	3.0	300	5.29	.43	3.8
180	5.02	.39	4.5	350	5.61	.49	4.0	350	6.18	.60	5.1
200	5.58	.48	5.5	400	6.41	.64	5.2	400	7.05	.77	6.5
220	6.14	.59	6.5	450	7.22	.81	6.4	450	8.43	.98	8.0
240	6.70	.70	7.7	500	8.02	1.00	7.8	500	8.82	1.21	9.8
260	7.27	.82	8.9	550	8.82	1.21	9.3	550	9.70	1.46	11.7
280	7.82	.95	10.2	600	9.62	1.49	10.9	600	10.6	1.7	13.7
300	8.38	1.09	11.6	650	10.4	1.7	12.6	650	11.5	2.1	15.9
320	8.94	1.24	13.1	700	11.2	1.9	14.5	700	12.3	2.4	18.3
340	9.50	1.40	14.7	750	12.0	2.2	16.5	750	13.2	2.7	20.8
360	10.0	1.6	16.3	800	12.8	2.5	18.6	800	14.1	3.1	23.4
380	10.6	1.7	18.0	850	13.6	2.9	20.8	850	15.0	3.5	26.5
400	11.2	1.9	19.8	900	14.4	3.2	23.1	900	15.9	3.9	29.1
420	11.7	2.1	21.7	950	15.2	3.6	25.5	950	16.7	4.3	32.2
460	12.8	2.5	25.7	1000	16.0	4.0	28.1	1000	17.6	4.8	35.4
500	14.0	3.0	30.0	1100	17.6	4.8	33.5	1100	19.4	5.8	42.2
550	15.3	3.6	35.7	1200	19.2	5.7	39.3	1200	21.1	6.9	49.5
600	16.7	4.3	42.0	1300	20.8	6.7	45.6	1300	22.9	8.2	57.4
650	18.1	5.1	48.7	1400	22.4	7.8	52.3	1400	24.7	9.5	65.9
700	19.5	5.9	55.8	1500	24.0	9.0	59.4	1500	26.4	10.8	74.8
750	20.9	6.8	63.4	1600	25.6	10.2	66.9	1600	28.2	12.4	84.3

Friction of water in pipes

Gallons Per Minute	Velocity Per Sec.	Velocity Head Feet	Head Loss Ft. Per 100 Feet	Gallons Per Minute	Velocity Per Sec.	Velocity Head Feet	Head Loss Ft. Per 100 Feet	Gallons Per Minute	Velocity Per Sec.	Velocity Head Feet	Head Loss Ft. Per 100 Feet
1/2" Pipe (.622" I.D.)				3/4" Pipe (.824" I.D.)				1" Pipe (1.049" I.D.)			
0.5	.52	.00	.6	1.5	.90	.01	1.1	2	.74	.01	.6
1.0	1.06	.02	2.1	2.0	1.20	.02	1.9	3	1.11	.02	1.3
1.5	1.58	.04	4.4	2.5	1.51	.04	2.9	4	1.49	.03	2.1
2.0	2.11	.07	7.6	3.0	1.81	.05	4.1	5	1.86	.05	3.2
2.5	2.64	.11	11.4	3.5	2.11	.07	5.4	6	2.23	.08	4.5
3.0	3.17	.16	16.0	4.0	2.41	.09	6.9	8	2.97	.14	7.7
3.5	3.70	.21	21.3	4.5	2.71	.11	8.6	10	3.71	.21	11.7
4.0	4.23	.28	27.3	5	3.01	.14	10.5	12	4.46	.31	16.4
4.5	4.75	.35	33.9	6	3.61	.20	14.7	14	5.20	.42	21.8
5.0	5.28	.43	41.2	7	4.21	.28	19.6	16	5.94	.55	27.9
5.5	5.81	.52	49.2	8	4.84	.36	25.0	18	6.68	.69	34.7
6.0	6.34	.62	57.8	9	5.42	.46	31.1	20	7.43	.86	42.1
6.5	6.87	.73	67.0	10	6.02	.56	37.8	22	8.17	1.04	50.2
7.0	7.39	.85	76.8	11	6.62	.68	45.1	24	8.91	1.23	59.0
7.5	7.92	.97	87.3	12	7.22	.81	53.0	26	9.66	1.45	68.4
8.0	8.45	1.11	98.3	13	7.82	.95	61.5	28	10.4	1.7	78.5
8.5	8.98	1.25	110.	14	8.43	1.10	70.5	30	11.1	1.9	89.2
9.0	9.51	1.4	122.	16	9.63	1.44	90.2	35	13.0	2.6	119.
9.5	10.0	1.6	135.	18	10.8	1.8	112.	40	14.9	3.5	152.
10	10.6	1.7	149.	20	12.0	2.2	136.	45	16.7	4.3	189.
1 1/4" Pipe (1.380" I.D.)				1 1/2" Pipe (1.610" I.D.)				2" Pipe (2.067" I.D.)			
4	.86	.01	.6	6	.95	.01	.6	10	.96	.01	.4
5	1.07	.02	.9	8	1.26	.02	1.0	12	1.15	.02	.6
6	1.29	.03	1.2	10	1.58	.04	1.5	14	1.34	.03	.8
7	1.50	.04	1.6	12	1.89	.06	2.0	16	1.53	.04	1.0
8	1.72	.05	2.0	14	2.21	.08	2.7	18	1.72	.05	1.3
10	2.15	.07	3.1	16	2.52	.10	3.5	20	1.91	.06	1.6
12	2.57	.10	4.3	18	2.84	.13	4.3	22	2.10	.07	1.9
14	3.00	.14	5.7	20	3.15	.15	5.2	24	2.29	.08	2.2
16	3.43	.18	7.3	22	3.47	.19	6.3	26	2.49	.10	2.5
18	3.86	.23	9.1	24	3.78	.22	7.3	28	2.68	.11	2.9
20	4.29	.29	11.1	26	4.10	.26	8.5	30	2.87	.13	3.3
25	5.36	.45	16.8	28	4.41	.30	9.8	35	3.35	.17	4.4
30	6.43	.64	23.5	30	4.73	.35	11.1	40	3.82	.23	5.6
35	7.51	.88	31.2	32	5.04	.39	12.5	45	4.30	.29	7.0
40	8.58	1.14	40.0	34	5.36	.45	14.0	50	4.78	.36	8.5
50	10.7	1.8	60.4	36	5.67	.50	15.5	55	5.26	.43	10.1
60	12.9	2.6	84.7	38	5.99	.56	17.2	60	5.74	.51	11.9
70	15.0	3.5	114.	40	6.30	.62	18.9	65	6.21	.60	13.7
80	17.2	4.6	144.	42	6.62	.68	20.7	70	6.69	.70	15.8
90	19.3	5.8	179.	44	6.93	.75	22.5	75	7.17	.80	17.9
				46	7.25	.82	24.5	80	7.65	.91	20.2
				48	7.57	.89	27.1	85	8.13	1.03	22.6
				50	7.88	.97	28.5	90	8.61	1.15	25.1
				55	8.67	1.17	34.0	95	9.08	1.28	27.7
				60	9.46	1.39	40.0	100	9.56	1.42	30.5
				65	10.2	1.6	46.4	110	10.5	1.7	36.4
				70	11.0	1.9	53.2	120	11.5	2.1	42.7
				75	11.8	2.2	60.4	130	12.4	2.4	49.6
				80	12.6	2.5	68.1	140	13.4	2.8	56.9
				85	13.4	2.8	76.2	150	14.3	3.2	64.7
				90	14.2	3.1	84.7				

Friction head loss in pipes from William and Hazen for co-efficient of 100 corresponding to 10 year old steel or 18 year old C.I. pipe.

Table 2-18: Properties of Water from 32°F to 300°F
(Vapor Pressure and Specific Gravity vs. Temperature)

Temp. °F	Vapor Pressure		Specific Gravity	Temp. °F	Vapor Pressure		Specific Gravity
	psia	ft.-Hd			psia	ft.-Hd	
32	.0885	.20	.9999	64	.2951	.68	.9987
33	.0922	.21	.9999	66	.3164	.73	.9985
34	.0960	.22	.9999	68	.3390	.79	.9982
35	.1000	.23	1.0000	70	.3631	.84	.9980
36	.1040	.24	1.0000	75	.4298	.99	.9974
37	.1082	.25	1.0000	80	.5069	1.17	.9966
38	.1126	.26	1.0000	85	.5959	1.39	.9959
39	.1171	.27	1.0000	90	.6982	1.62	.9950
40	.1217	.28	1.0000	95	.8153	1.89	.9941
41	.1265	.29	1.0000	100	.9490	2.21	.9931
42	.1315	.30	1.0000	110	1.275	2.98	.9906
43	.1367	.32	1.0000	120	1.692	3.96	.9888
44	.1420	.33	.9999	130	2.223	5.21	.9857
45	.1475	.34	.9999	140	2.889	6.79	.9833
46	.1532	.35	.9999	150	3.718	8.75	.9803
47	.1593	.37	.9999	160	4.741	11.20	.9773
48	.1653	.38	.9998	170	5.992	14.2	.9738
49	.1716	.40	.9998	180	7.510	17.9	.9702
50	.1781	.41	.9997	190	9.339	22.3	.9667
51	.1849	.43	.9997	200	11.53	27.7	.9632
52	.1918	.44	.9996	210	14.12	34	.9592
53	.1990	.46	.9996	220	17.19	42	.9952
54	.2064	.48	.9995	230	20.78	50	.9512
55	.2141	.50	.9994	240	24.97	61	.9467
56	.2220	.51	.9994	250	29.83	73	.9423
57	.2302	.53	.9993	260	35.43	87	.9373
58	.2386	.55	.9992	270	41.85	104	.9331
59	.2473	.57	.9991	280	49.20	123	.9281
60	.2563	.59	.9990	290	57.56	144	.9232
62	.2751	.64	.9989	300	67.01	168	.9180

- Note: 1. The specific gravity (sg) is referenced to water at 39.2°F (4°C) at 1000', which is the point of maximum density. A sg reference value between 39.2°F and 70°F makes no practical difference in pumping problems.
2. Calculated from data in ASME steam tables.
3. Kinematic viscosity ranges from 33.0 (1.93 EE-5 ft /sec.) to 29.3 SSU's (3.19 EE-6 ft /sec.) for the temperature range of 32° to 212°F respectively. Viscosity variations can decrease or increase friction losses as much as 40% between the two temperature extremes.
4. The specific weight of water at 32°F is 62.42 lbs/ft. (8.34 lbs./gal.).

2E ENGINEERING PROPERTIES OF WATER

Table 2-15: Altitude vs. Barometric Pressure and Boiling Point of Water

Altitude		Barometer Reading		Atm. Pressure		Boiling Point °F
Feet (ft.)	Meters (m)	in.-Hg	mm-Hg	psia	ft. Water	
- 1000	- 304.8	31.0	788	15.2	35.2	213.8
- 500	- 152.4	30.5	775	15.0	34.6	212.9
0	0.0	29.9	760	14.7	33.9	212.0
+ 500	+ 152.4	29.4	747	14.4	33.3	211.1
1000	304.8	28.9	734	14.2	32.8	210.2
1500	457.2	28.3	719	13.9	32.1	209.3
2000	609.6	27.8	706	13.7	31.5	208.4
2500	762.0	27.3	694	13.4	31.0	207.4
3000	914.4	26.8	681	13.2	30.4	206.5
3500	1066.8	26.3	668	12.9	29.8	205.6
4000	1219.2	25.8	655	12.7	29.2	204.7
4500	1371.6	25.4	645	12.4	28.8	203.8
5000	1524.0	24.9	633	12.2	28.2	202.9
5500	1676.4	24.4	620	12.0	27.6	201.9
6000	1828.8	24.0	610	11.8	27.2	201.0
6500	1981.2	23.5	597	11.5	26.7	200.1
7000	2133.6	23.1	587	11.3	26.2	199.2
7500	2286.0	22.7	577	11.1	25.7	198.3
8000	2438.4	22.2	564	10.9	25.2	197.4
8500	2590.8	21.8	554	10.7	24.7	196.5
9000	2743.2	21.4	544	10.5	24.3	195.5
9500	2895.6	21.0	533	10.3	23.8	194.6
10000	3048.0	20.6	523	10.1	23.4	193.7
15000	4572.0	16.9	429	8.3	19.2	184.0

Table 2-16: Elevations for Various Municipalities (U.S. & Canada)

City	Approx. Alt. (ft.)	City	Approx. Alt. (ft.)	City	Approx. Alt. (ft.)
Albuquerque	5200	Edmonton	2200	Phoenix	1100
Amarillo	3700	Fresno	380	Pittsburgh	800
Atlanta	1100	Ft. Worth	700	Regina	1900
Calgary	3440	Idaho Falls	4700	Roswell	3570
Cheyenne	6100	Kansas City	800	Reno	4500
Chicago	600	Minneapolis	900	Salt Lake City	4250
Cincinnati	550	Montreal	100	Spokane	1900
Cleveland	700	Nashville	500	Toronto	350
Denver	5270	Omaha	1000	Tulsa	800
Detroit	580	Ottawa	290	Winnipeg	760

FLOMATIC

OPERATION:

Foot valves are designed to be installed on the suction side of a pump. The purpose of a foot valve is to maintain pump prime between pumping cycles. A strainer prevents debris from entering the piping system. Foot valves are designed to minimize headloss and optimize pumping efficiency.

APPLICATIONS:

Foot valves are usually positioned at the lowest point of the intake (suction) piping, below the water level, and often near the bottom of lakes, rivers, storage tanks and pits.

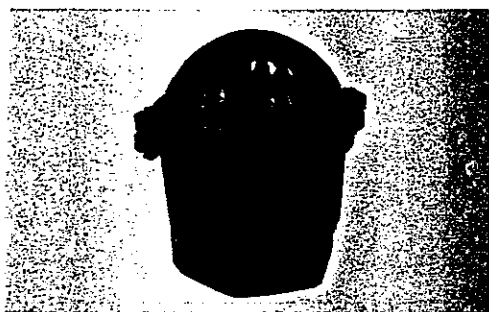
- Municipal Water Treatment
- Rural Fire Pumps
- Irrigation
- Industrial
- HVAC
- Car Wash Systems

BENEFITS:

- Low Headloss
- Strainer Protects Pump from Debris
- Maintains Pump Prime
- Silent Operation

MODEL 357

Designed for use in irrigation and other pumping applications where water may be dirty due to suspended silt and sand. This foot valve offers extremely low headloss. Female NPT threads for easy installation.



SIZE	PART NO.	WEIGHT
1"	4961	2.0
1 1/4"	4962	3.0
1 1/2"	4963	3.0
2"	4964	6.0
2 1/2"	4965	13.0
3"	4966	13.0
4"	4967	20.0
5"	4968	28.0
6"	4969	45.0
8"	4970	99.0

MATERIALS:

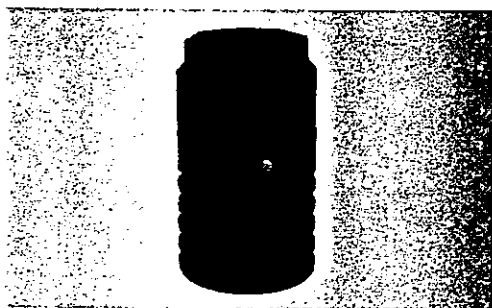
- | | |
|------------|-------------|
| 1 Body | Cast Iron |
| 2 Strainer | Cast Iron |
| 3 Seat | Cast Iron |
| 4 Weight | Cast Iron |
| 5 Seal | Leather |
| 6 Bolt | Zinc Plated |
| 7 Nut | Zinc Plated |

PRESSURE/TEMPERATURE:

Pressure Max: 75 PSI
Temperature Max: 180F (80C)

MODEL 63

Economical foot valve for irrigation, small water systems, and industrial pumping applications. Female NPT threaded connection.



SIZE	PART NO.	WEIGHT
2"	4764*	4.0
2 1/2"	4765	5.0
3"	4766	9.0
4"	4767	17.0
6"	4789**	63.0

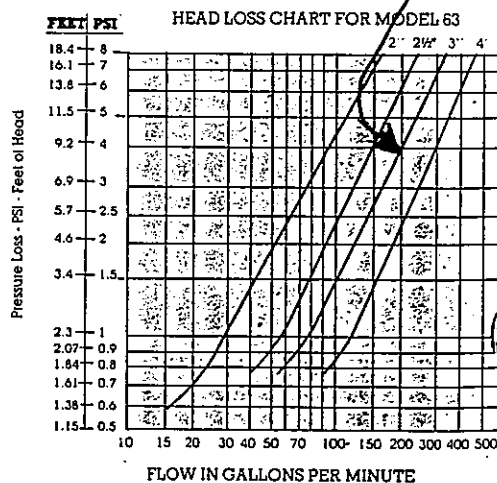
* Non-Metal Poppet
** Galvanized screen

MATERIALS:

- | | |
|-------------|--------------------|
| 1 Body | Cast Iron |
| 2 Bolt | Stainless Steel |
| 3 Disc | Stainless Steel |
| 4 Seal | Buna-N |
| 5 Nut | Stainless Steel |
| 6 Spring | Stainless Steel |
| 7 Poppet | Delrin/Bronze/D.I. |
| 8 Strainer | Polyethylene |
| 9 Fasteners | Plated |

PRESSURE/TEMPERATURE:

Pressure Max: 200 PSI
Temperature Max: 180F (80C)



MODEL 302BT

Specifically designed for municipal and industrial applications where a heavy duty, extremely reliable valve may be required. 125 # flanged connection.



PRESSURE/TEMPERATURE:

Pressure Max: 200 PSI
Temperature Max: 180F (80C)

SIZE	PART NO.	WEIGHT
2"	4763BT	23.0
2½"	4768BT	30.0
3"	4769BT	37.0
4"	4770BT	63.0
5"	4771BT	80.0
6"	4772BT	100.0
8"	4774BT	160.0
10"	4775BT	260.0
12"	5416BT	410.0
14"	5417BT	500.0
16"	5418BT	650.00

MATERIALS:

- | | |
|-------------|-----------------|
| 1 Body | Cast Iron |
| 2 Bushing | Bronze |
| 3 Poppet | Bronze |
| 4 Seat | Buna-N |
| 5 Screen | Stainless Steel |
| 6 Fasteners | Stainless Steel |

MODEL 144

Full flow, heavy duty design for larger municipal and industrial pumping applications, 125 # flanged.



SIZE	PART NO.	WEIGHT
16"	5418	645.0
18"	5419	915.0
24"	5422	1675.0

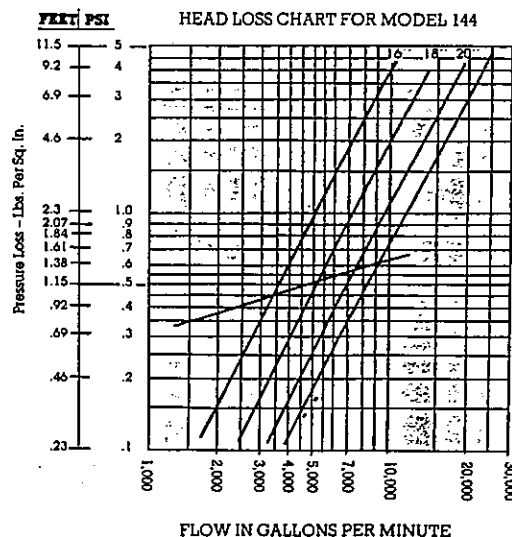
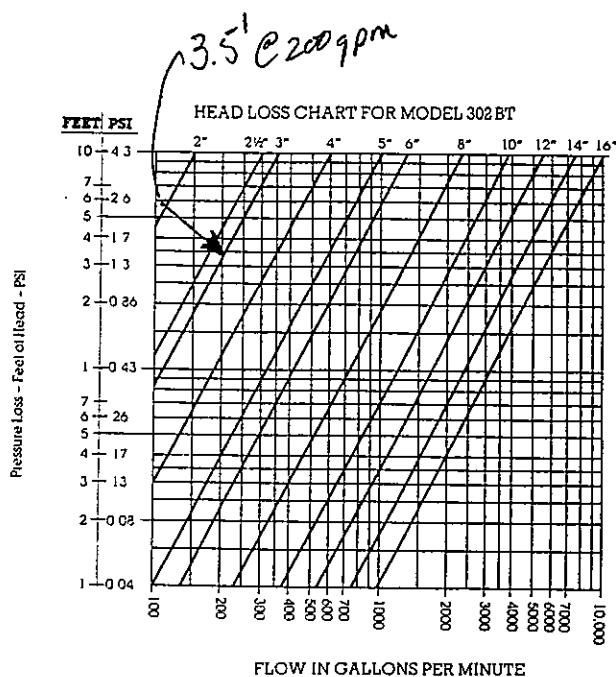
MATERIALS:

- | | |
|----------------|---------------------|
| 1 Body | Cast Iron |
| 2 Seat | Cast Iron |
| 3 Contact Seal | Buna-N Rubber |
| 4 Assembly Rod | Stainless Steel |
| 5 Fasteners | Cadium Plated Steel |
| 6 Strainer | Galvanized Steel |

For complete specifications and dimensional information consult your local representative.

PRESSURE/TEMPERATURE:

Pressure Max: 16" — 100 PSI
18" & Larger — 75 PSI
Temperature Max: 180F (80C)



**HOLLADAY ENGINEERING CO.**

ENGINEERS • CONSULTANTS

32 N. Main P.O. Box 235 Payette, ID 83661
(208) 642-3304 • Fax # (208) 642-2159

January 9, 2001

Charles Ariss, P.E.
Manager of Permits and Certifications
Division of Environmental Quality
1445 North Hilton
Boise, ID 83706

Re: **Revision to Well Site Evaluation-Proposed Brookwood Subdivision Well, City of Eagle**
Project No. 014100

Dear Mr. Ariss:

Enclosed is a revised well site evaluation for the above referenced project. The revision pertains to a buried storm water drain pipe within 50 feet of the proposed well site as noted in the original report and shown on the site map. I have subsequently learned that this connecting pipe, which I had taken from an early plan set, was not approved and hence omitted from construction. As a result, the 50-foot setback issue of the connecting pipe does not exist and this report and site map reflects the revision. I apologize for any inconvenience but I felt the matter should be set straight prior to your site inspection and review. Thanks.

Sincerely,
HOLLADAY ENGINEERING CO.

By: Bill Strowd
Bill Strowd, P.G.

Enclosure

c: Mike Hormaechea, Brookwood Subdivision
Rick Yzaguirre, Mayor

Ex. 25

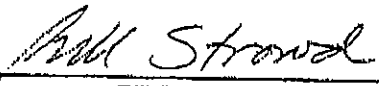
**SITE EVALUATION for the BROOKWOOD SUBDIVISION WELL
CITY of EAGLE and ARIES DEVELOPMENT, L.L.C.
(REVISED JANUARY 9, 2001)**

Prepared by Holladay Engineering Company
Project No. 014100

To assure that a thorough well site evaluation has been prepared, the following information is presented in the same format as requested in the April 1998, IDEQ well site evaluation checklist.

- ☐ The name of this project is the Brookwood Subdivision Well.
- ☐ Mr. Stephen Rae, representing IDEQ (State of Idaho Department of Environmental Quality), was contacted by phone by Holladay Engineering Company, on December 27, 2000 to discuss the proposed public water supply well, its location and the existing site conditions.
 - ☐ The well site location was selected based on property ownership, proximity to the Brookwood Subdivision, and existing agreements with and water rights owned by the City of Eagle.
 - ☐ The proposed site is located in the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 4, T4N, R1E, Boise Meridian. The location is depicted on Eagle, Idaho, 7 $\frac{1}{2}$ -minute quadrangle, topographic map, of which a copy is attached to this report. The site is accessed by traveling north on Eagle Road from the City of Eagle, and hence to the west entrance of the Brookwood Subdivision located near the northeast corner of the intersection with Floating Feather Road. The proposed site is located near the entrance on the right (south).
 - ☐ The well site is currently owned by Aries Development, L.L.C. (P.O. Box 6887, Boise, ID 83707), however ownership and title of the well lot and water system will be transferred to the City of Eagle following completion of the system as stipulated within an existing purchase agreement.
 - ☐ The local terrain consists of low, undulating topography with the well site located atop a small hill. The ground surface has been landscaped to slope away from the well site in all directions affording good surface drainage. The site is accessible to a truck-mounted drill.
 - ☐ The existing grade at the site has been raised by fill to an elevation above the base flood as displayed on FIRM Map, Panel 16001C0153 G (see attached map) and subsequently removed from the designated floodplain by LOMR (Letter of Map Revision) on 4/25/00 according to Toothman - Ortman Engineering Company, Boise.
 - ☐ Land use is mixed in the vicinity. Residential use predominates to the east, agricultural and residential use to the south, agricultural use to the west, and open space to the north.
 - ☐ Soils at the site are fill composed predominately of clay, sandy clay, and clayey silt with a native hardpan horizon two to four feet below original ground surface. Below ten feet the lithology is dominated by alternating beds of gravel, sand and clay extending to depths exceeding 200 feet according to the attached driller's logs of local wells.
 - ☐ The well's planned production capacity is 1,000 gpm based on the capacity of several existing municipal wells in the vicinity of Eagle.
 - ☐ The anticipated minimum depth to the well screen is 200 feet. A granular bentonite seal will be poured from the surface to an anticipated depth of 160 feet. These planned depths are nominal pending encountered subsurface conditions.

- ☐ According to IDWR and IDEQ, ground water contamination within this aquifer has not been identified within one mile of the site. Laboratory test results on existing municipal supply wells developed within the target aquifer indicate water quality should comply with current public drinking water standards. Preliminary water quality testing is planned prior to well completion.
- ☐ A review of well driller's logs on file with the Idaho Department of Water Resources did not indicate the occurrence of another well within 500 feet of the proposed site.
- ☐ According to IDWR, no aquifer recharge projects are identified within one mile of the site.
- ☐ The wellhead will be enclosed within a locked well house to restrict access to authorized personnel. The well will be protected at the surface by a sanitary well cap located at a minimum height of 18 inches above a poured concrete slab which is underlain by naturally occurring clay soil extending to an approximate depth of ten feet. An annular bentonite seal is planned to be placed from the surface (below the concrete floor) to an approximate depth of 160 feet. No industrial activity involving hazardous waste is located in the area and uses other than water supply will be prohibited at the well site. Potential contaminants will not be stored at the site. According to United Water of Boise, a wellhead protection plan has not been implemented in this area.
- ☐ Surface water bodies do not occur within a distance of 200 feet from the site. A small storm water infiltration pond occurs approximately 250 feet south of the well site. A grazing pasture across Eagle Road to the west of the site is no longer irrigated; the ditch diversion from Dry Creek has been abandoned. Two surface water collection drains with shallow infiltration disposal structures are constructed within 100 feet to the northeast and northwest of the well site (see Site Map). As well water will be supplied from an anticipated depth exceeding 200 feet, with probable multiple intervening clay strata, potential is low for direct surface water influence. Subsurface lithology and groundwater conditions will be logged during drilling for characterizing hydrogeologic conditions.
- ☐ Other locations within subdivision property boundaries were considered but the proposed site was selected due to the combination of available property space, compatibility with the development plan, proximity to existing municipal water distribution system, and drill rig accessibility. Locating the well site outside subdivision property was not an option within the existing terms of the agreement between the developer and the City of Eagle.
- ☐ In consideration of available information, with noted exceptions to surface water disposal setback requirements, it is the opinion of this evaluator that the proposed location is suitable for a public water supply well.

☐

Bill Strowd, P.G.
Holladay Engineering Company

Date: 1-9-01

A site map is attached displaying the information listed below;

- ☐ The minimum distance of the well to any property line is 50 feet.
- ☐ The slope of land is depicted by topographic contours.
- ☐ The assumed direction of ground water flow is displayed.
- ☐ There are no surface water bodies present within 50 feet of the proposed well. The closest surface water is a storm water pond located approximately 230 feet south of the site which is beyond the map borders.
- ☐ A septic tank was thought to have occurred somewhere within the area a number of years ago but no septic tanks or drain fields are known to occur within 100 feet of the proposed well (verbal communication with land owner).
- ☐ No sewer lines, other non-potable mains, or service lines have been identified within 50 feet of the proposed well.
- ☐ Location of buried utilities are shown on the well site map. Field verification by Dig Line will be conducted prior to drilling.
- ☐ There are two subsurface storm water disposal facilities within 100 feet of the proposed well (see Site Map).
- ☐ According to IDWR, there are no injection wells known to exist in the area.
- ☐ There are no fuel tanks known to exist within 50 feet of the proposed well.
- ☐ There are no roads or parking areas within 50 feet of the proposed well.
- ☐ There are no buildings less than 50 feet of the proposed well.
- ☐ There are no livestock within 50 feet of the proposed well.
- ☐ There are no other known sources of contamination within 50 feet of the proposed well.



SITE EVALUATION-BROOKWOOD WELL