

STATE OF UTAH WATER WELL HANDBOOK

BASED ON THE ADMINISTRATIVE RULES
FOR WATER WELLS
(R655-4 UAC)

Adopted May 2018



UTAH DIVISION OF WATER RIGHTS
OFFICE OF THE UTAH STATE ENGINEER

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Water Rights Internet Home Page

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Division of Water Rights
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Salt Lake City UT 84114-6300

Office/Delivery Location

Department of Natural Resources
Division of Water Rights
1594 West North Temple #220
Salt Lake City UT 84116

Driller Licensing and Operator Registration Fees:

The fee structure is set annually by the State Legislature. Check with the
Division of Water Rights for current fee amounts.

PUBLIC SUPPLY WELL REQUIREMENTS

The Utah Division of Drinking Water (UDDW) Administrative Rules apply to wells drilled for public drinking water supply. If you plan to drill public supply wells, you will need to adhere to the State Engineer's well drilling rules **and** the UDDW's well drilling rules. If a requirement covers the same issue in both sets of rules, you must follow the requirement that is more stringent. Any enforcement of the public supply well rules is the responsibility of the UDDW and any questions relating to them should be directed to that agency. Plans and specifications pertaining to the protection (of the well and aquifer), drilling, and construction of a public supply well must be submitted, reviewed, and approved by the UDDW prior to commencement of drilling in accordance with UDDW Rules. One of the major differences between the UDDW requirements and the State Engineer's requirements is that UDDW requires a minimum 100-foot surface seal and a seal inspection on every surface seal installed on a public supply well in the State. The UDDW or an approved representative of the UDDW should be contacted prior to surface seal installation in order to coordinate the inspection.

For information regarding wells to be drilled for Public Water System Supply:

Department of Environmental Quality
Division of Drinking Water:
801-536-4200
www.deq.utah.gov/division-drinking-water

PO BOX 144830
150 North 1950 West
Salt Lake City UT 84114-4830

LOCAL HEALTH DEPARTMENT REQUIREMENTS

Many of the State's local health departments have also promulgated rules and requirements in addition to what the State requires related to aspects of well drilling. Moreover, setback requirements (distances from potential contamination sources, etc.) are almost always promulgated at the local health department level. Health departments should be contact to ensure that their requirements are being met. Links to health department websites and contact information can be found on the Utah Division of Drinking Water website listed above.

UTAH DIVISION OF WATER RIGHTS

SALT LAKE CITY MAIN OFFICE

**1594 W North Temple #220
Salt Lake City UT
Main Office (801) 538-7240
Kent L. Jones, State Engineer**

REGIONAL OFFICE LIST

CEDAR CITY OFFICE

Division of Water Rights
646 North Main Street
PO Box 506
Cedar City UT 84721-0506
(435) 586-4231 FAX(435) 586-2789
Areas 14,19,69,71,73,75,77,81,85,89,97

LOGAN OFFICE

Division of Water Rights
1780 N Research PKY STE 104
North Logan UT 84341
(435) 752-8755 FAX (435) 752-0062
Areas 11,13,21,23,25,29

PRICE OFFICE

Division of Water Rights
319 N. Carbonville Rd, Suite B
PO Box 718
Price UT 84501-0718
(435) 613-3750 FAX (435) 613-3755
Areas 47,91,92,93,94,99,01,05,09

RICHFIELD OFFICE

Division of Water Rights
2031 South Industrial Park Rd
Richfield UT 84701
(435) 896-2557 FAX (435) 896-0267
Areas 61,63,65,66,67,68,95

UTAH LAKE/JORDAN RIVER

Division of Water Rights
PO Box 146300
Salt Lake City UT 84114-6300
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Areas 51,53,54,55,57,59

VERNAL

Division of Water Rights
318 North Vernal Avenue
Vernal UT 84078
(435) 247-1514
Areas 41,43,45,49

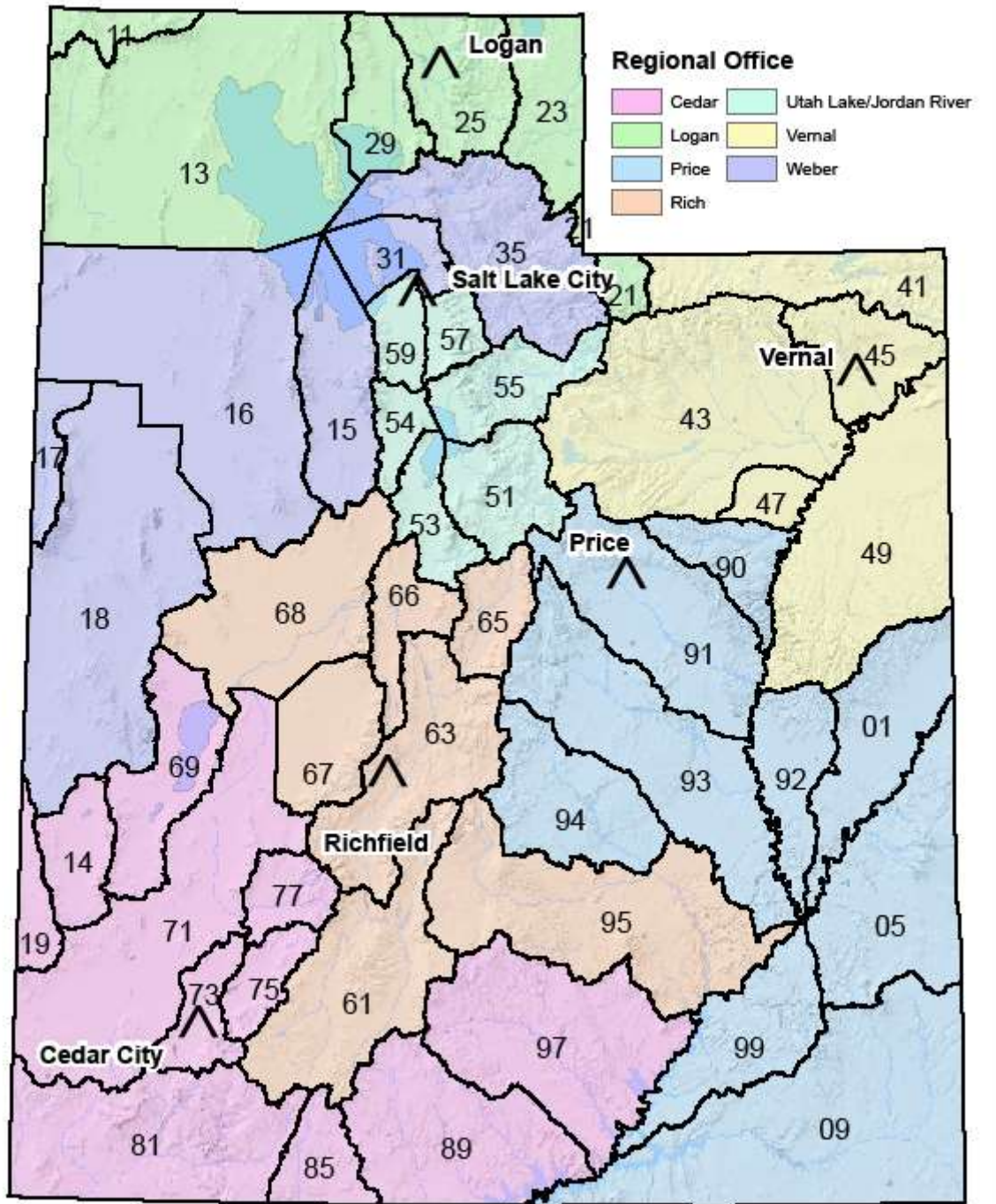
WEBER

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Areas 15,16,17,18,31,35

ENFORCEMENT ENGINEER

Division of Water Rights
646 North Main
PO Box 506
Cedar City, Utah 84721-0506
Phone: (435) 592-2337

State Of Utah



**ADMINISTRATIVE RULES
FOR
WATER WELLS**

TABLE OF CONTENTS

<u>RULE NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
<u>PART I - ADMINISTRATIVE REQUIREMENTS</u>		
R655-4-1	Purpose, Scope, and Exclusions	
1.1	Purpose	1
1.2	Scope	1
1.3	Exclusions	2
R655-4-2	Definitions	4
R655-4-3	Licenses and Registrations	
3.1	General	15
3.2	Well Driller's License	15
3.3	Drill Rig Operator's Registration	17
3.4	Pump Installer's License	17
3.5	Pump Rig Operator Registration	18
3.6	Conditional, Restricted, or Limited Licenses	19
3.7	Refusal to Issue a License or Registration	19
3.8	Falsified Applications	19
3.9	Well Driller/Pump Installer Bond	19
R655-4-4	Administrative Requirements and General Procedures	
4.1	Authorization to Drill	23
4.2	Start Cards	24
4.3	General Requirements During Construction	25
4.4	Removing Drill Rig From Well Site	27
4.5	Official Well Driller's Report (Well Log)	27
4.6	Official Well Abandonment Reports	28
4.7	Official Pump Installation Report	29
4.8	Incomplete or Incorrectly Completed Reports	30
4.9	Extensions of Time	30
4.10	Late Well Logs – Lapsed License	30

R655-4-5	Administrative Rule Infractions	
5.1	List of Infractions and Points	31
5.2	When Points are Assessed	34
5.3	Infraction Notice	34
5.4	Appeal of Infractions	34
5.5	Deleting Points from the Driller Record	35
5.6	Well Driller Hearings	35
5.7	Lack of Knowledge not an Excuse	35
R655-4-6	Administrative Penalties	
6.0	Administrative Penalties	36
6.1	Level I Administrative Penalties	36
6.2	Level II Administrative Penalties	37
6.3	Level III Administrative Penalties	37
6.4	Administrative Penalties – General	37
6.5	Probation	37
6.6	Suspension	38
6.7	Revocation	38
R655-4-7	Adjudicative Proceedings	
7.1	Designation of Presiding Officers	40
7.2	Disqualification of Presiding Officers	40
7.3	Informal Proceedings	40
7.4	Service of Notice of Orders	40
7.5	Computation of Time	41
7.6	Request for Hearing	41
7.7	Filings Generally	41
7.8	Motions	42
7.9	Conduct of Hearings	43
7.10	Rules of Evidence in Hearings	44
7.11	Transcript of Hearing	44
7.12	Procedures and Standards for Orders	45
7.13	Reconsideration	45
7.14	Amending Administrative Orders	44
7.15	Setting Aside a Final Judgment and Order	46
7.16	Judicial Review	47

R655-4-8	License and Operator Registration Renewal	
8.1	Well Driller and Pump Installer Licenses	48
8.2	Continuing Education	49
8.3	Operator's Registration	50
R655-4-9	The Approval Process for Non-Production Wells	
9.1	General	51
9.2	Approval to Construct or Replace	51
<u>PART II - MINIMUM WELL CONSTRUCTION STANDARDS</u>		
R655-4-10	General Requirements	
10.1	Standards	53
10.2	Well Site Locations	53
10.3	Unusual Conditions	53
R655-4-11	Well Drilling and Construction Requirements	
11.0	General	55
11.1	Approved Products, Materials, and Procedures	55
11.2	Well Casing - General	55
11.3	Casing Joints	59
11.4	Surface Seals and Interval Seals	59
11.5	Special Requirements for Oversized and Gravel Packed Wells	63
11.6	Protection of the Aquifer	65
11.7	Special Requirements	67
R655-4-12	Special Wells	
12.1	Construction Standards for Special Wells	75
R655-4-13	Deepening, Rehabilitation, and Renovation of Wells	
13.1	Sealing of Casing	81
13.2	Inner Casing	81
13.3	Outer Casing	81
13.4	Artesian Wells	81
13.5	Drilling in a Dug Well	81
13.6	Well Rehabilitation and Cleaning	81

R655-4-14.	Abandonment of Wells	
14.1	Temporary Abandonment	83
14.2	Permanent Abandonment	83
14.3	License Required	83
14.4	Acceptable Materials	83
14.5	Placement of Materials	84
14.6	Termination of Casing	85
14.7	Abandonment of Artesian Wells	85
14.8	Abandonment of Drilled and Jetted Wells	85
14.9	Abandonment of Gravel Packed Wells	85
14.10	Removal of Casing	85
14.11	Replacement Wells	86
14.12	Abandonment of Cathodic Protection Wells	86
R655-4-15	Monitor Well Construction Standards	
15.1	Scope	87
15.2	Installation and Construction	87
15.3	Minimum Surface Protection Requirements	89
15.4	Abandonment	90
R655-4-16	Pump Installation and Repair	
16.1	Pump Installation Practices	93
16.2	Surface Seal	93
16.3	Tools, Equipment, and Materials	93
16.4	Disinfection	93
16.5	Product, Material, and Process Standards	93
16.6	Surface Completions	93
16.7	Flowing Artesian Wells	94
16.8	Seals Between Casings	94
16.9	Water Level and Flow Measurement	94
16.10	Surface Security	94
16.11	Above-grade Connections	94
16.12	Pitless Connections	95
16.13	Backflow Protection	95
16.14	Hand Pumps	95
16.15	Pumping Water Level	95
16.16	Pump and Column/Drop Pipe Removal	95

PART III - APPENDICES

Appendix 1	Well Drilling Authorization Approval Processes	96
Appendix 2	Selected Water Laws of Utah	104
Appendix 3	Well Drilling Reporting Instructions	121
Appendix 4	Continuing Education Program Overview	141
Appendix 5	Helpful Contacts and References	147

TABLES AND FIGURES

Tables

Table 1	Level I Infractions	31
Table 2	Level II Infractions	31
Table 3	Level III Infractions	32
Table 4	Level IV Infractions	34
Table 5	Late Well Log Infraction Multipliers	36
Table 6	Steel Casing	57
Table 7	Well/Water Disinfection Quantities	67

Figures

Figure 1	Drilled Well with Driven Casing	70
Figure 2	Oversized Well Without Surface Casing	71
Figure 3	Oversized Well With Surface Casing	72
Figure 4	Oversized Well in Stratified Units	73
Figure 5	Well Completed with PVC	74
Figure 6	Cathodic Protection	80
Figure 7	Monitoring Well Above Ground	91
Figure 8	Monitoring Well - Flush-Mount	92

R655-4-1. Purpose, Scope, and Exclusions

1.1 Purpose.

Under Subsection 73-2-1(4)(b), the State Engineer, as the Director of the Utah Division of Water Rights, is required to make rules regarding well construction and related regulated activities and the licensing of water well drillers and pump installers.

These rules are promulgated pursuant to Section 73-3-25. The purpose of these rules is to assist in the orderly development of underground water; insure that minimum construction standards are followed in the drilling, construction, deepening, repairing, renovating, cleaning, development, testing, disinfection, pump installation/repair, and abandonment of water wells and other regulated wells; prevent pollution of aquifers within the state; prevent wasting of water from flowing wells; obtain accurate records of well construction operations; and insure compliance with the state engineer's authority for appropriating water.

These rules also establish administrative procedures for applications, approvals, hearings, notices, revocations, orders and their judicial review, and all other administrative procedures required or allowed by these rules. These rules shall be liberally construed to permit the Division to effectuate the purposes of Utah law.

1.2 Scope.

The drilling, construction, deepening, repair, renovation, replacement, or abandonment of the following types of wells are regulated by these administrative rules and the work must be permitted by the Utah Division of Water Rights and completed by a licensed well driller. The cleaning, development, testing, and disinfection, in the following types of wells is regulated by these administrative rules and the work must be completed by a licensed well driller or a licensed pump installer; however a permit is not required. Moreover, the installation and repair of pumps in the following types of wells are regulated by these administrative rules and the work must be completed by a licensed pump installer; however a permit is not required. Pursuant to Section 73-3-25(2)(a), a person conducting pump installation and repair work on their own well on their own property for their own use is exempt from these rules and is not required to have a pump installer's license. These rules apply to both vertical, angle and horizontal wells if they fall within the criteria listed below. The rules contained herein pertain only to work on or within the well itself. These rules do not regulate the incidental work beyond the well such as plumbing, electrical, and excavation work up to the well; and the building of well enclosures unless these activities directly impact or change the construction of the well itself. The process for an applicant to obtain approval to drill, construct, deepen, repair, renovate, clean, develop, abandon, or replace the wells listed below in 1.2.1, 1.2.2, 1.2.3, and 1.2.4 is outlined in Section R655-4-9 of these rules.

1.2.1 Cathodic protection wells which are completed to a depth greater than 30 feet.

1.2.2 Closed-loop and open-loop Heating and/or cooling exchange wells which

R655-4-1. Purpose, Scope, and Exclusions

are greater than 30 feet in depth and which encounter formations containing groundwater. If a separate well or borehole is required for re-injection purposes, it must also comply with these administrative rules.

1.2.3 Monitor, piezometer, and test wells designed for the purpose of testing and monitoring water level, pressure, quality and/or quantity which are completed to a depth greater than 30 feet.

1.2.4 Other wells (cased or open) which are completed to a depth greater than 30 feet that can potentially interfere with established aquifers such as wells to monitor mass movement (inclinometers), facilitate horizontal utility placement, monitor man-made structures, house instrumentation to monitor structural performance, or dissipate hydraulic pressures (dewatering wells).

1.2.5 Private water production wells which are completed to a depth greater than 30 feet.

1.2.6 Public water system supply wells.

1.2.7 Recharge and recovery wells which are drilled under the provisions of Title 73, Chapter 3b "Groundwater Recharge and Recovery Act" Utah Code Annotated.

1.3 Exclusions.

The drilling, construction, deepening, repair, renovation, replacement, cleaning, development, pump installation/repair, or abandonment of the following types of wells or boreholes are excluded from regulation under these administrative rules:

1.3.1 Any wells described in Section 1.2 that are constructed to a final depth of 30 feet or less. However, diversion and beneficial use of groundwater from wells at a depth of 30 feet or less shall require approval through the appropriation procedures and policies of the state engineer and Title 73, Chapter 3 of the Utah Code Annotated.

1.3.2 Geothermal wells. Although not regulated under the Administrative Rules for Water Wells, geothermal wells are subject to Section 73-22-1 "Utah Geothermal Resource Conservation Act" Utah Code Annotated and the rules promulgated by the state engineer including Section R655-1, Wells Used for the Discovery and Production of Geothermal Energy in the State of Utah. Moreover, those drilling and constructing geothermal wells must hold a current well driller's license in accordance with Sections R655-4-3 and R655-4-8 of these rules.

1.3.3 Temporary exploratory wells drilled to obtain information on the subsurface strata on which an embankment or foundation is to be placed or an area proposed to be used as a potential source of material for construction.

1.3.4 Wells or boreholes drilled or constructed into non-water bearing zones or which are 30 feet or less in depth for the purpose of utilizing heat from the surrounding earth.

1.3.5 Geotechnical borings drilled to obtain lithologic data which are not installed for the purpose of utilizing or monitoring groundwater, and which are properly sealed

R655-4-1. Purpose, Scope, and Exclusions

immediately after drilling and testing.

1.3.6 Oil, gas, and mineral/mining exploration/production wells. These wells are subject to rules promulgated under the Division of Oil, Gas, and Mining of the Utah Department of Natural Resources.

1.3.7 Well setback/separation and water quality testing requirements are generally regulated at the local health department level or by another state agency.

R655-4-2. Definitions

ABANDONED WELL - any well which is not in use and has been sealed or plugged with approved sealing materials so that it is rendered unproductive and shall prevent contamination of groundwater. A properly abandoned well will not produce water nor serve as a channel for movement of water from the well or between water bearing zones.

ADDRESS – the current residential or business address of a well driller as recorded in the Division's files.

ADJUDICATIVE PROCEEDING - means, for the purposes of this rule, an administrative action or proceeding commenced by the Division in conjunction with an Infraction Notice; or an administrative action or proceeding commenced in response to a well driller's appeal or a Cease and Desist Order or an appeal of a restriction or denial of a license renewal application.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) - a nationally recognized testing laboratory that certifies building products and adopts standards including those for steel and plastic (PVC) casing utilized in the well drilling industry. ANSI standards are often adopted for use by ASTM and AWWA. Current information on standards can be obtained from: ANSI, 1430 Broadway, New York, NY 10018 (ANSI.org).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) - an independent organization concerned with the development of standards on characteristics and performance of materials, products and systems including those utilized in the well drilling industry. Information may be obtained from: ASTM, 1916 Race Street, Philadelphia, PA 19013 (ASTM.org).

AMERICAN WATER WORKS ASSOCIATION (AWWA) - an international association which publishes standards intended to represent a consensus of the water supply industry that the product or procedure described in the standard shall provide satisfactory service or results. Information may be obtained from: AWWA, 6666 West Quincy Avenue, Denver CO 80235 (AWWA.org).

ANNULAR SPACE - the space between the outer well casing and the borehole or the space between two sets of casing.

AQUIFER - a porous underground formation yielding withdrawable water suitable for beneficial use.

R655-4-2. Definitions

ARTESIAN AQUIFER - a water-bearing formation which contains underground water under sufficient pressure to rise above the zone of saturation.

ARTESIAN WELL - a well where the water level rises appreciably above the zone of saturation.

BACKFLOW PREVENTER - means a safety device, assembly, or construction practice used to prevent water pollution or contamination by preventing flow of a mixture of water and/or chemicals from the distribution piping into a water well or in the opposite direction of that intended. This includes but is not limited to check valves, foot valves, curb stops, or air gaps

BENTONITE - a highly plastic, highly absorbent, colloidal swelling clay composed largely of mineral sodium montmorillonite. Bentonite is commercially available in powdered, granular, tablet, pellet, or chip form which is hydrated with potable water and used for a variety of purposes including the stabilization of borehole walls during drilling, the control of potential or existing high fluid pressures encountered during drilling below a water table, well abandonment, and to provide a seal in the annular space between the well casing and borehole wall.

BENTONITE GROUT - a mixture of bentonite and potable water specifically designed to seal and plug wells and boreholes mixed at manufacturer's specifications to a grout consistency which can be pumped through a pipe directly into the annular space of a well or used for abandonment. Its primary purpose is to seal the borehole or well in order to prevent the subsurface migration or communication of fluids.

CASH BOND - A type of well driller bond in the form of a certificate of deposit (CD) submitted and assigned to the State Engineer by a licensed driller to satisfy the required bonding requirements.

CASING - a tubular retaining and sealing structure that is installed in the borehole to maintain the well opening.

CATHODIC PROTECTION WELL - a well constructed for the purpose of installing deep anodes to minimize or prevent electrolytic corrosive action of metallic structures installed below ground surface, such as pipelines, transmission lines, well casings, storage tanks, or pilings.

R655-4-2. Definitions

CEASE AND DESIST ORDER - means an order issued by the State Engineer comprised of a red tag placed on a well rig at the well drilling location and a letter to the driller requiring that all well drilling activity at the well drilling location cease until such time as the order is lifted.

CLOSED-LOOP HEATING/COOLING EXCHANGE WELL – means the subsystem of a geothermal heat pump system that consists of the drilled vertical borehole into the Earth that is equipped with a heat exchange media conveyance tube (loop tube), and is grouted from the bottom of the vertical borehole to the Earth's surface at the drilling site. Construction of a geothermal heat pump loop well includes, in continuous order, drilling of the vertical borehole, placement of the loop tube to the bottom of the vertical borehole with the grout tremie, and grouting of the vertical borehole from the bottom of the vertical borehole to the Earth's surface at the drill site. Closed loop systems circulate a heat transfer fluid (such as water or a mixture of water and food grade/non-toxic anti-freeze) to exchange heat with the subsurface geological environment.

CONDUCTOR CASING - means the temporary or permanent casing used in the upper portion of the well bore to prevent collapse of the formation during the construction of the well or to conduct the gravel pack to the perforated or screened areas in the casing.

CONFINING UNIT - a geological layer either of unconsolidated material, usually clay or hardpan, or bedrock, usually shale, through which virtually no water moves.

CONSOLIDATED FORMATION - bedrock consisting of sedimentary, igneous, or metamorphic rock (e.g., shale, sandstone, limestone, quartzite, conglomerate, basalt, granite, tuff, etc.).

DEFAULT ORDER - means an order issued by the Presiding Officer after a well driller fails to attend a hearing in a well driller adjudicative proceeding. A Default Order constitutes a Final Judgment and Order.

DEWATERING WELL - a water extraction well constructed for the purpose of lowering the water table elevation, either temporarily or permanently, around a man-made structure or construction activity.

R655-4-2. Definitions

DISINFECTION - or disinfecting is the use of chlorine or other disinfecting agent or process approved by the state engineer, in sufficient concentration and contact time adequate to inactivate or eradicate bacteria such as coliform or other organisms.

DIVISION - means the Division of Water Rights. The terms Division and State Engineer may be used interchangeably in this rule.

DRAWDOWN - the difference in elevation between the static water level and the pumping water level in a well.

DRILL RIG - any power-driven percussion, rotary, boring, coring, digging, jetting, or augering machine used in the construction of a well or borehole.

EMERGENCY SITUATION - any situation where immediate action is required to protect life or property. Emergency status would also extend to any situation where life is not immediately threatened but action is needed immediately and it is not possible to contact the state engineer for approval. For example, it would be considered an emergency if a domestic well needed immediate repair over a weekend when the state engineer's offices are closed.

FILES - means information maintained in the Division's public records, which may include both paper and electronic information.

FINAL JUDGMENT AND ORDER - means a final decision issued by the Presiding Officer on the whole or a part of a well driller adjudicative proceeding. This definition includes "Default Orders."

GRAVEL PACKED WELL - a well in which filter material such as sand and/or gravel is placed in the annular space between the well intakes (screen or perforated casing) and the borehole wall to increase the effective diameter of the well and to prevent fine-grained sediments from entering the well.

GROUNDWATER - subsurface water in a zone of saturation.

GROUT - a fluid mixture of Portland cement or bentonite with water of a consistency that can be forced through a pipe and placed as required. Upon approval, various additives such as sand, bentonite, and hydrated lime may be included in the mixture to meet different requirements.

R655-4-2. Definitions

HEATING/COOLING EXCHANGE SYSTEM – also known as GeoExchange, ground-source heat pump, geothermal heat pump, and ground-coupled heat pump; a heat pump that uses the Earth itself as a heat source (heating) and heat sink (cooling). It is coupled to the ground by means of a closed loop heat exchanger installed vertically underground or by physically pumping water from a well with an open loop systems and utilizing the thermal properties of the water to heat or cool.

HYDRAULIC FRACTURING - the process whereby water or other fluid is pumped with sand under high pressure into a well to fracture and clean-out the rock surrounding the well bore thus increasing the flow to the well.

INFRACTION NOTICE - means a notice issued by the Division to the well driller informing him of his alleged act or acts violating the Administrative Rules for Water Drillers and the infraction points that have been assessed against him.

ISSUED - means a document executed by an authorized delegate of the State Engineer (in the case of an Infraction Notice) or by the Presiding Officer (in the case of a Hearing Notice, Final Judgment and Order or other order related to a well driller adjudicative proceeding) and deposited in the mail.

LICENSE - means the express grant of permission or authority by the State Engineer to carry on the activity of well drilling.

LICENSED PUMP INSTALLER - means a qualified individual who has obtained a license from the Division and who is engaged in the installation, removal, alteration, or repair of pumps and pumping equipment for compensation.

LOG - means an official document or report that describes where, when, and how a regulated well was drilled, constructed, deepened, repaired, renovated, cleaned, developed, tested, equipped with pumping equipment, and/or abandoned. A Log shall be submitted to the Division by a licensee on forms provided by the Division including a Well Driller's Report, Well Abandonment Report, or Pump Installer's Report.

MONITOR WELL - a well, as defined under "well" in this section, that is constructed for the purpose of determining water levels, monitoring chemical, bacteriological, radiological, or other physical properties of ground water or vadose zone water.

R655-4-2. Definitions

NATIONAL SANITATION FOUNDATION (NSF) - a voluntary third party consensus standards and testing entity established under agreement with the U. S. Environmental Protection Agency (EPA) to develop testing and adopt standards and certification programs for all direct and indirect drinking water additives and products. Information may be obtained from: NSF, 3475 Plymouth Road, P O Box 1468, Ann Arbor, Michigan 48106 (NSF.org).

NEAT CEMENT GROUT – cement (types I, II, III, V, high-alumina, or a combination thereof) conforming to the ASTM Standard C150 (standard specification of Portland cement), with no more than six gallons of water per 94 pound sack (one cubic foot) of cement of sufficient weight density of not less than 15 lbs/gallon. One cubic yard of neat cement grout contains 1993 pounds of Portland cement and not more than 127 gallons of clean water. Bentonite, controlled density fill (CDF), or fly ash shall not be added to neat cement grout unless state engineer approval is received.

NOMINAL SIZE - means the manufactured commercial designation of the diameter of a casing. An example would be casing with an outside diameter of 12 3/4 inches which may be nominally 12-inch casing by manufactured commercial designation.

OPEN-LOOP HEATING/COOLING EXCHANGE WELL – means a well system in which groundwater is extracted from a typical water production well and pumped through an above ground heat exchanger inside the heat pump system. Heat is either extracted or added by the primary refrigerant loop (primary loop refrigerant does not come into contact with the pumped water), and then the water is returned to the same aquifer by injection through the original extraction well or through a separate injection well.

OPERATOR - a drill rig operator or pump rig operator is an individual who works under the direct supervision of a licensed Utah Water Well Driller or Pump Installer and who can be left in responsible charge of regulated well drilling or pump installation/repair activity using equipment that is under the direct control of the licensee.

PARTY means the State Engineer, an authorized delegate of the State Engineer, the well driller, the pump installer, or the affected well owner.

PIEZOMETER - a tube or pipe, open at the bottom in groundwater, and sealed along its length, used to measure hydraulic head or water level in a geologic unit.

R655-4-2. Definitions

PITLESS ADAPTER - a commercially manufactured device designed for attachment to a well casing which allows buried pump discharge from the well and allows access to the interior of the well casing for installation or removal of the pump or pump appurtenances, while preventing contaminants from entering the well. Such devices protect the water and distribution lines from temperature extremes, permit extension of the casing above ground as required in Subsection R655-4-11.3.2 and allow access to the well, pump or system components within the well without exterior excavation or disruption of surrounding earth or surface seal.

PITLESS UNIT - a factory-assembled device with cap which extends the upper end of a well casing to above grade and is constructed as to allow for buried pump discharge from the well and allows access to the interior of the well casing for installation or removal of the pump or pump appurtenances, while preventing contaminants from entering the well. Such devices protect the water and distribution lines from temperature extremes, permit extension of the casing above ground as required in Subsection R655-4-11.3.2 and allow access to the well, pump or system components within the well without exterior excavation or disruption of surrounding earth or surface seal. **POLLUTION** - the alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water that renders the water harmful, detrimental, or injurious to humans, animals, vegetation, or property, or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any or reasonable purpose.

POTABLE WATER - water supplied for human consumption, sanitary use, or for the preparation of food or pharmaceutical products which is free from biological, chemical, physical, and radiological impurities.

PRESIDING OFFICER - means an authorized delegate of the State Engineer who conducts a well driller adjudicative proceeding.

PRESSURE GROUTING - a process by which grout is confined within the drillhole or casing by the use of retaining plugs or packers and by which sufficient pressure is applied to drive the grout slurry into the annular space or zone to be grouted.

PRIVATE WATER PRODUCTION WELL - a privately owned well constructed to supply water for any purpose which has been approved by the state engineer (such as irrigation, stockwater, domestic, commercial, industrial, etc.).

R655-4-2. Definitions

PROBATION - A disciplinary action that may be taken by the state engineer that entails greater review and regulation of well drilling activities but which does not prohibit a well driller from engaging in the well drilling business or operating well drilling equipment.

PROVISIONAL WELL - authorization granted by the state engineer to drill under a pending, unapproved water right, change or exchange application; or for the purpose of determining characteristics of an aquifer, or the existence of a useable groundwater source. Water from a provisional well cannot be put to beneficial use until the application has been approved.

PUBLIC WATER SYSTEM SUPPLY WELL - a well, either publicly or privately owned, providing water for human consumption and other domestic uses which has at least 15 service connections or regularly serves an average of at least 25 individuals daily for at least 60 days out of the year. Public Water System Supply Wells are also regulated by the Division of Drinking Water in the Utah Department of Environmental Quality (Section R309 of the Utah Administrative Code).

PUMP/PUMPING EQUIPMENT – means any equipment or materials utilized or intended for use in withdrawing or obtaining groundwater for any use.

PUMP INSTALLATION/REPAIR - means the procedure employed in the placement and preparation for operation of pumps and pumping equipment at the water well location, including all construction or repair involved in making entrance to the water well, which involves the breaking of the well seal.

PUMPING WATER LEVEL - the water level in a well after a period of pumping at a given rate.

RECORD - means the official collection of all written and electronic materials produced in a well driller adjudicative proceeding, including but not limited to Infraction Notices, pleadings, motions, exhibits, orders and testimony produced during the adjudicative proceedings, as well as the files of the Division as defined herein.

RED TAG - is a component of a “CEASE AND DESIST ORDER” in the form of a red colored tag placed on a well at a well drilling location

R655-4-2. Definitions

REGISTRATION - means the express grant of permission or authority by the State Engineer to carry on the activity of well drilling or pump installation under the supervision of a licensed well driller or pump installer.

REPAIRING, RENOVATING, & DEEPENING - means the deepening, hydrofracturing, re-casing, perforating, re-perforating, installation of packers or seals, and any other material change in the design or construction of a well. Material changes include but are not limited to casing installation or modification including casing extensions, installation or modification of liner pipe, reaming or under reaming of the borehole, pitless unit installation or re-sealing.

REVOCAION - A disciplinary action that may be taken by the state engineer that rescinds the well driller's Utah Water Well Driller's License

SAND - a material having a prevalent grain size ranging from 2 millimeters to 0.06 millimeters.

SAND CEMENT GROUT - a grout consisting of equal parts by volume of cement conforming to ASTM standard C150 and clean sand/aggregate with no more than six (6) gallons of water per 94 pound sack (one cubic foot) of cement.

STANDARD DIMENSION RATIO (SDR) - the ratio of average outside pipe diameter to minimum pipe wall thickness.

STATE ENGINEER - the director of the Utah Division of Water Rights or any employee of the Division of Water Rights designated by the state engineer to act in administering these rules. The terms Division and State Engineer may be used interchangeably in this rule.

STATIC LEVEL - stabilized water level in a non-pumped well beyond the area of influence of any pumping well.

SURETY BOND - an indemnity agreement in a sum certain and payable to the state engineer, executed by the licensee as principal and which is supported by the guarantee of a corporation authorized to transact business as a surety in the State of Utah.

R655-4-2. Definitions

SUSPENSION - A disciplinary action that may be taken by the state engineer that prohibits the well driller from engaging in the well drilling business or operating well drilling equipment as a registered operator for a definite period of time and /or until certain conditions are met.

TEST WELL - authorization granted by the state engineer to drill under a Non-production well approval for the purpose of determining characteristics of an aquifer, or the existence of a useable groundwater source. Water from a Test Well cannot be put to beneficial use.

TREMIE PIPE - a device that carries materials such as seal material, gravel pack, or formation stabilizer to a designated depth in a drill hole or annular space.

UNCONSOLIDATED FORMATION - loose, soft, incoherent rock material composed of sedimentary, igneous, or metamorphic rock which includes sand, gravel, and mixtures of sand and gravel. These formations are widely distributed and can possess good water storage and transmissivity characteristics.

UNHYDRATED BENTONITE - dry bentonite consisting primarily of granules, tablets, pellets, or chips that may be placed in a well or borehole in the dry state and hydrated in place by either formation water or by the addition of potable water into the well or borehole containing the dry bentonite. Unhydrated bentonite can be used for sealing and abandonment of wells.

VADOSE ZONE - the zone containing water under less than atmospheric pressure, including soil water, intermediate vadose water and capillary water. The zone extends from land surface to the zone of saturation or water table.

WATERTIGHT - a condition that does not allow the entrance, passage, or flow of water under normal operating conditions.

WELL - a horizontal or vertical excavation or opening into the ground made by digging, boring, drilling, jetting, augering, or driving or any other artificial method and left cased or open for utilizing or monitoring underground waters.

WELL DRILLER - any person who is licensed by the state engineer to construct water wells for compensation or otherwise. The licensed driller has total responsibility for the construction work in progress at the well drilling site.

R655-4-2. Definitions

WELL DRILLER BOND - A financial guarantee to the state engineer, in the form of a surety bond or cash bond, by which a licensed driller binds himself to pay the penal sum of \$5,000 to the state engineer in the event of significant noncompliance with the Administrative Rules for Water Wells.

WELL DRILLING - the act of drilling, constructing, deepening, replacing, repairing, renovating, cleaning, developing, or abandoning a well.

R655-4-3. Licenses and Registrations

3.1 General.

3.1.1 Section 73-3-25 of the Utah Code requires every person that drills, constructs, deepens, repairs, renovates, cleans, develops, tests, disinfects, installs/repairs pumps, and abandons a regulated well in the state to obtain a license from the state engineer. Licenses and registrations are not transferable. Applicants for well driller or pump installer licensure must meet all requirements in this subsection, and applicants cannot obtain a Utah license through reciprocity or comity with a similar license from other States or organizations.

3.1.2 Any person found to be performing regulated well activity without a valid license (well driller's license or pump installer's license, as applicable) or operator's registration will be ordered to cease and desist by the state engineer. The order may be made verbally but must also be followed by a written order. The order may be posted at an unattended well drilling site. A person found performing regulated well activities without a license will be subject to the state engineer's enforcement powers under Section 73-2-25 of the Utah Code (Related rules: Section R655-14 UAC) and subject to criminal prosecution under Section 73-3-26 of the Utah Code annotated, 1953.

3.2 Well Driller's License.

A Utah Well Driller's License allows an individual to perform regulated well activity including drilling, construction, deepening, repairing, renovating, cleaning, development, testing, disinfection, pump installation/repair, and abandonment of water wells and other regulated wells. An applicant must meet the following requirements to become licensed as a Utah Water Well Driller:

3.2.1 Applicants must be 21 years of age or older and be a citizen of the United States, or be lawfully entitled to remain and work in the United States in accordance with Section 63G-11-104 UCA (Applicants must file a Division Lawful Presence Affidavit with the license application);

3.2.2 Complete and submit the application form provided by the state engineer.

3.2.3 Pay the application fee approved by the state legislature.

3.2.4 Provide documentation of experience according to the following standards:

3.2.4.1 Water well drillers shall provide documentation of at least two (2) years of full time prior water well drilling experience utilizing the applied-for drilling methods with a licensed driller in good standing OR documentation of sixteen (16) applicable wells constructed by the applicant under the supervision of a licensed well driller in good standing.

3.2.4.2 Monitor well drillers shall provide documentation of at least two (2) years of full time prior monitor well drilling experience utilizing the applied-for

R655-4-3. Licenses and Registrations

drilling methods with a licensed driller in good standing OR documentation of thirty two (32) wells constructed by the applicant under the supervision of a licensed well driller in good standing.

3.2.4.3 Heating/cooling exchange and other non-production well drillers must provide documentation of at least six (6) months of full time prior well drilling experience utilizing the applied-for drilling methods with a licensed driller in good standing AND documentation of sixteen (16) well drilling projects constructed by the applicant under the supervision of a licensed well driller in good standing.

3.2.4.4 A copy of the well log for each well constructed must be provided. The documentation must also show the applicant's experience with each type of drilling rig to be listed on the license. Acceptable documentation will include registration with the Division of Water Rights, letters from licensed well drillers (Utah or other states), or a water well drilling license granted by another state, etc.

3.2.4.5 Successful completion of training/education in well drilling, geology, map reading, and other related subjects may be substituted for up to, but not exceeding, twenty five percent of the required drilling experience, and for up to, but not exceeding, twenty five percent of the required drilled wells or well drilling projects. The state engineer will determine the number of months of drilling experience and the number of drilled wells that will be credited for the classroom study.

3.2.4.6 A limited or restricted license can be obtained in subcategories of activity including well cleaning, well renovation, well abandonment, and well development/testing. Testing requirements for these license subcategories will be reduced or limited in accordance with the level of activity.

3.2.5 File a well driller bond in the sum of \$5,000 with the Division of Water Rights payable to the state engineer. The well driller bond must be filed under the conditions and criteria described in Section 4-3.9.

3.2.6 Obtain a score of at least 70% on each of the written licensing examinations required and administered by the state engineer. The required examinations test the applicant's knowledge of:

- a. The Administrative Rules for Water Wells and Utah water law as it pertains to underground water;
- b. The minimum construction standards established by the state engineer for water well construction;
- c. Geologic formations and proper names used in describing underground material types;
- d. Reading maps and locating points from descriptions based on section, township, and range;
- e. Groundwater geology and the occurrence and movement of groundwater;
- f. The proper operating procedures and construction methods associated with

R655-4-3. Licenses and Registrations

the various types of water well drilling rigs. (A separate test is required for each type of water well drilling rig to be listed on the license).

3.2.7 Demonstrate proficiency in resolving problem situations that might be encountered during the construction of a water well by passing an oral examination administered by the state engineer.

3.3 Drill Rig Operator's Registration.

An applicant must meet the following requirements to become registered as a drill rig operator:

3.3.1 Applicants must be 18 years of age or older and be a citizen of the United States, or be lawfully entitled to remain and work in the United States in accordance with Section 63G-11-104 UCA (Applicants must file a Division Lawful Presence Affidavit with the operator application).

3.3.2 Complete and submit the application form provided by the state engineer.

3.3.3 Pay the application fee approved by the state legislature.

3.3.4 Provide documentation of at least six (6) months of prior water well drilling experience with a licensed driller in good standing. The documentation must show the applicant's experience with each type of drilling rig to be listed on the registration. Acceptable documentation will include letters from licensed well drillers or registration as an operator in another state.

3.3.5 Obtain a score of at least 80% on a written examination of the minimum construction standards established by the state engineer for water well construction. The test will be provided to the licensed well driller by the state engineer. The licensed well driller will administer the test to the prospective operator and return it to the state engineer for scoring.

3.4 Pump Installer's License.

A Utah Pump Installer's License allows an individual to perform regulated pump activity including pump removal, installation, and repair in water wells and other regulated wells. A licensed pump installer can also clean, develop, pump test, and disinfect a regulated well. An individual (does not include entities such as businesses, corporations, governments, water systems, and municipalities) can perform pump installation and repair work on their own well on their own property without obtaining a Pump Installer's License. An applicant must meet the following requirements to become licensed as a Utah Pump Installer:

3.4.1 Applicants must be 21 years of age or older and be a citizen of the United States, or be lawfully entitled to remain and work in the United States in accordance with Section 63G-11-104 UCA (Applicants must file a Division Lawful Presence Affidavit with the license application).

R655-4-3. Licenses and Registrations

3.4.2 Complete and submit the application form provided by the state engineer.

3.4.3 Pay the application fee approved by the state legislature.

3.4.4 Provide documentation of experience of at least two (2) years of full time prior water well pump installation and repair experience with a driller or pump installer in good standing

3.4.4.4 The documentation must show the applicant's experience with each type of pump rig to be listed on the license. Acceptable documentation will include registration with the Division of Water Rights, reference letters from licensed well drillers/pump installers (Utah or other states), or a license granted by another state, etc.

3.4.4.5 Successful completion of training/education in pump installation/repair and other related subjects may be substituted for up to, but not exceeding, twenty five percent of the required pump experience. The state engineer will determine the number of months of drilling experience that will be credited for the classroom study.

3.4.5 File a pump installer bond in the sum of \$5,000 with the Division of Water Rights payable to the state engineer. The bond must be filed under the conditions and criteria described in Section 4-3.9.

3.4.6 Obtain a score of at least 70% on each of the written licensing examinations required and administered by the state engineer. The required examinations test the applicant's knowledge of:

a. The Administrative Rules for Water Wells and Utah water law as it pertains to underground water;

b. The minimum construction standards established by the state engineer pertaining to pump installation and repair;

c. Groundwater protection procedures and standards applicable to pump installation and repair work on wells;

d. The proper operating procedures and methods associated with pump installation and repair.

3.4.7 Demonstrate proficiency in resolving problem situations that might be encountered during pump installation and repair of a water well by passing an oral examination administered by the state engineer.

3.5 Pump Rig Operator's Registration.

An applicant must meet the following requirements to become registered as a pump rig operator:

3.5.1 Applicants must be 18 years of age or older and be a citizen of the United States, or be lawfully entitled to remain and work in the United States in accordance with Section 63G-11-104 UCA (Applicants must file a Division

R655-4-3. Licenses and Registrations

Lawful Presence Affidavit with the license application).

3.5.2 Complete and submit the application form provided by the state engineer.

3.5.3 Pay the application fee approved by the state legislature.

3.5.4 Provide documentation of at least six (6) months of prior pump installation and repair experience with a licensed driller or pump installer in good standing. Acceptable documentation will include letters from licensed well drillers or registration as an operator in another state.

3.5.5 Obtain a score of at least 80% on a written examination of the minimum construction standards established by the state engineer for pump installation and repair. The test will be provided to the licensed pump installer/well driller by the state engineer. The licensed pump installer/well driller will administer the test to the prospective operator and return it to the state engineer for scoring.

3.6 Conditional, Restricted, or Limited Licenses.

The state engineer may issue a restricted, conditional, or limited license to an applicant based on prior drilling experience.

3.7 Refusal to Issue a License or Registration.

The state engineer may, upon investigation and after a hearing, refuse to issue a license or a registration to an applicant if it appears the applicant has not had sufficient training or experience to qualify as a competent well driller, pump installer, or operator.

3.8 Falsified Applications.

The state engineer may, upon investigation and after a hearing, revoke a license or a registration in accordance with Section 5.6 if it is determined that the original application contained false or misleading information.

3.9 Well Driller/Pump Installer Bond.

3.9.1 General

3.9.1.1. In order to become licensed and to continue licensure, well drillers and pump installers must file a bond in the form of a surety bond or cash bond, approved by the state engineer, in the sum of five thousand dollars (\$5,000) with the Division of Water Rights, on a form provided by the Division, which is conditioned upon proper compliance with the law and these rules and which is effective for the licensing period in which the license is to be issued. The bond shall stipulate the obligee as the "Office of the State Engineer". The bond is penal in nature and is designed to ensure compliance by the licensed well driller or pump installer to protect the groundwater resource, the environment, and public health

R655-4-3. Licenses and Registrations

and safety. The bond may only be exacted by the state engineer for the purposes of investigating, repairing, or abandoning wells in accordance with applicable rules and standards. No other person or entity may initiate a claim against the bond. Lack of a current and valid bond shall be deemed sufficient grounds for denial or discontinuation of a driller's/pump installer's license. The well driller/pump installer bond may consist of a surety bond or a cash bond as described below.

3.9.2 Surety Bonds.

3.9.2.1. The licensee and a surety company or corporation authorized to do business in the State of Utah as surety shall bind themselves and their successors and assigns jointly and severally to the state engineer for the use and benefit of the public in full penal sum of five thousand dollars (\$5,000). The surety bond shall specifically cover the licensee's compliance with the Administrative Rules for Water Wells found in R655-4 of the Utah Administrative Code. Forfeiture of the surety bond shall be predicated upon a failure to drill, construct, repair, renovate, deepen, clean, develop, test, disinfect, perform pump work, or abandon a regulated well in accordance with these rules (R655-4 UAC). The bond shall be made payable to the 'Utah State Engineer' upon forfeiture. The surety bond must be effective and exactable in the State of Utah.

3.9.2.2. The bond and any subsequent renewal certificate shall specifically identify the licensed individual covered by the bond (company names may be included on the bond, but the licensed driller name must be included). The licensee shall notify the state engineer of any change in the amount or status of the bond. The licensee shall notify the state engineer of any cancellation or change at least thirty (30) days prior to the effective date of such cancellation or change. Prior to the expiration of the 30-days notice of cancellation, the licensee shall deliver to the state engineer a replacement surety bond or transfer to a cash bond. If such a bond is not delivered, all activities covered by the license and bond shall cease at the expiration of the 30 day period. Termination shall not relieve the licensee or surety of any liability for incidences that occurred during the time the bond was in force.

3.9.2.3. Before the bond is forfeited by the licensee and exacted by the state engineer, the licensee shall have the option of resolving the noncompliance to standard either by personally doing the work or by paying to have another licensee do the work. If the licensee chooses not to resolve the problem that resulted in noncompliance, the entire bond amount of five thousand dollars (\$5,000) shall be forfeited by the surety and expended by the state engineer to investigate, repair or abandon the well(s) in accordance with the standards in R655-4 UAC. Any excess there from shall be retained by the state engineer and expended for the purpose of investigating, repairing, or abandoning wells in accordance with applicable rules and standards. All claims initiated by the state engineer against the surety bond

R655-4-3. Licenses and Registrations

will be made in writing.

3.9.2.4. The bond of a surety company that has failed, refused or unduly delayed to pay, in full, on a forfeited bond is not approvable.

3.9.3 Cash Bonds.

3.9.3.1. The requirements for the well driller/pump installer bond may alternatively be satisfied by a cash bond in the form of a certificate of deposit (CD) for the amount of five thousand dollars (\$5,000) issued by a federally insured bank or credit union with an office(s) in the State of Utah. The cash bond must be in the form of a CD. Cash, savings accounts, checking accounts, letters of credit, etc., are not acceptable cash bonds. The CD shall specifically identify the licensed individual covered by that fund. The CD shall be automatically renewable and fully assignable to the state engineer. CD shall state on its face that it is automatically renewable.

3.9.3.2. The cash bond shall specifically cover the licensee's compliance with well drilling rules found in R655-4 of the Utah Administrative Code. The CD shall be made payable or assigned to the state engineer and placed in the possession of the state engineer. If assigned, the state engineer shall require the bank or credit union issuing the CD to waive all rights of setoff or liens against those CD. The CD, if a negotiable instrument, shall be placed in the state engineer's possession. If the CD is not a negotiable instrument, the CD and a withdrawal receipt, endorsed by the licensee, shall be placed in the state engineer's possession.

3.9.3.3. The licensee shall submit CDs in such a manner which will allow the state engineer to liquidate the CD prior to maturity, upon forfeiture, for the full amount without penalty to the state engineer. Any interest accruing on a CD shall be for the benefit of the licensee.

3.9.3.4. The period of liability for a cash bond is five (years) after the expiration, suspension, or revocation of the license. The cash bond will be held by the state engineer until the five year period is over, then it will be relinquished to the licensed driller. In the event that a cash bond is replaced by a surety bond, the period of liability, during which time the cash bond will be held by the state engineer, shall be five (5) years from the date the new surety bond becomes effective.

3.9.4 Exacting a Well Driller/Pump Installer Bond.

3.9.4.1. If the state engineer determines, following an investigation and a hearing in accordance with the process defined in Sections 4-5, 4-6, and 4-7, that the licensee has failed to comply with the Administrative Rules for Water Wells and refused to remedy the noncompliance, the state engineer may suspend or revoke a license and fully exact the well driller bond and deposit the money as a non-lapsing dedicated credit.

3.9.4.2. The state engineer may expend the funds derived from the bond to

R655-4-3. Licenses and Registrations

investigate or correct any deficiencies which could adversely affect the public interest resulting from non-compliance with the Administrative Rules by any well driller/pump installer.

3.9.4.3. The state engineer shall send written notification by certified mail, return receipt requested, to the licensee and the surety on the bond, if applicable, informing them of the determination to exact the well driller bond. The state engineer's decision regarding the noncompliance will be attached to the notification which will provide facts and justification for bond exaction. In the case of a surety bond exaction, the surety company will then forfeit the total bond amount to the state engineer. In the case of a cash bond, the state engineer will cash out the CD. The exacted well driller bond funds may then be used by the state engineer to cover the costs of well investigation, repair, and/or abandonment.

R655-4-4. Administrative Requirements and General Procedures

4.1 Authorization to Drill or Conduct Regulated Activity.

The well driller shall make certain that a valid authorization or approval to drill exists before engaging in regulated well drilling activity. Authorization to drill shall consist of a valid 'start card' based on any of the approvals listed below. Items 4.1.1 through 4.1.12 allow the applicant to contract with a well driller to drill, construct, deepen, replace, repair, renovate, or abandon exactly one well at each location listed on the start card or approval form. The drilling of multiple borings/wells at an approved location/point of diversion is not allowed without authorization from the state engineer's office. Most start cards list the date when the authorization to drill expires. If the expiration date has passed, the start card and authorization to engage in regulated drilling activity is no longer valid. If there is no expiration date on the start card, the driller must contact the state engineer's office to determine if the authorization to drill is still valid. When the work is completed, the permission to drill is terminated. Preauthorization or pre-approval of pump installation/repair work, well cleaning, development, testing, and disinfection is not required. A well renovation permit is required if an existing well is to be modified by activities such as deepening, casing/seal/gravel pack repair/renovation, liner installation, pitless adapter/unit installation, and perforating/screen installation. A well renovation permit is not required if the well is not modified by activities such as cleaning, development, testing, disinfection, and pump work.

4.1.1 An approved application to appropriate.

4.1.2 A provisional well approval letter (also known as a Rush Letter Approval).

An approved provisional well letter grants authority to drill but allows only enough water to be diverted to determine the characteristics of an aquifer or the existence of a useable groundwater source.

4.1.3 An approved permanent change application.

4.1.4 An approved exchange application.

4.1.5 An approved temporary change application.

4.1.6 An approved application to renovate or deepen an existing well.

4.1.7 An approved application to replace an existing well.

4.1.8 An approved monitor well letter.

An approved monitor well letter grants authority to drill but allows only enough water to be diverted to monitor groundwater.

4.1.9 An approved heat exchange well letter.

4.1.10 An approved cathodic protection well letter.

4.1.11 An approved non-production well construction application.

4.1.12 Any letter or document from the state engineer directing or authorizing a well to be drilled or work to be done on a well.

R655-4-4. Administrative Requirements and General Procedures

4.2 Start Cards.

4.2.1 Prior to commencing work to drill, construct, deepen, replace, repair, renovate, clean, or develop any well governed by these administrative rules, the driller must notify the state engineer of that intention by transmitting the information on the "Start Card" to the state engineer by telephone (leaving a voice mail is acceptable notification), by facsimile (FAX), by hand delivery, or by e-mail (with completed Start Card scanned and attached to e-mail). Thereafter, a completed original Start Card must be sent to the state engineer by the driller after it has been telephoned in (including voice mail). A completed original Start Card does not need to be sent to the state engineer by the driller after it has been faxed or E-mailed. A copy of the Start Card should be kept at the drill site at all times regulated activity is being conducted.

4.2.2 A specific Start Card is printed for each well drilling approval and is furnished by the state engineer to the applicant or the well owner. The start card is preprinted with the water right or non-production well number, owner name/address, and the approved location of the well. The state engineer marks the approved well drilling activity on the card. If a Start Card is stamped with 'Special Conditions', the licensee shall contact the state engineer's office to determine what the special drilling conditions or limitations are; then implement them in the drilling and construction of the well. The driller must put the following information on the card:

- a. The date on which work on the well will commence;
- b. The projected completion date of the work;
- c. The well driller's license number;
- d. The licensed well driller's signature.

4.2.3 When a single authorization is given to drill wells at more than one point of diversion, a start card shall be submitted for each location to be drilled.

4.2.4 Following the submittal of a start card, if the actual start date of the drilling activity is postponed beyond the date identified on the start card, the licensed driller must notify the state engineer of the new start date.

4.2.5 A start card is not required to abandon a well. However, prior to commencing well abandonment work, the driller is required to notify the state engineer by telephone, by facsimile, or by e-mail of the proposed abandonment work. The notice must include the location of the well. The notice should also include the water right or non-production well number associated with the well and the well owner if that information is available.

4.2.6 A start card or pre-notification is not required to perform pump installation and repair work on a well.

R655-4-4. Administrative Requirements and General Procedures

4.3 General Requirements During Construction.

4.3.1 The well driller or pump installer shall have the required penal bond continually in effect during the term of the license; otherwise the license will become inactive.

4.3.2 The well driller's/pump installer's license number or company name exactly as shown on the license must be prominently displayed on each well drilling/pump rig operated under the license. If the company name is changed the licensee must immediately inform the state engineer of the change in writing.

4.3.3 A licensed well driller or a registered drill rig operator must be at the well site whenever the following aspects of well construction are in process: advancing the borehole, setting casing and screen, placing a filter pack, constructing a surface seal, or similar activities involved in well deepening, renovation, repair, cleaning, developing, testing, disinfecting, capping, pitless installation, or abandoning. All registered drill rig operators working under a well driller's license must be employees of the well driller and must use equipment either owned by or leased by the licensed well driller.

4.3.3.1 A licensed pump installer or a registered pump rig operator must be at the well site whenever the following aspects of pump work are in process: pump removal, pump installation, modification to the well head including capping, sealing, and pitless adapter/unit installation, or similar activities on and within the well involving pump installation/repair. Inasmuch as a licensed pump installer is allowed to clean, develop, test, and disinfect a regulated well, these activities must be performed in the presence of a licensed pump installer or registered pump rig operator. All registered pump rig operators working under a pump installer's license must be employees of the pump installer and must use equipment either owned by or leased by the licensed pump installer.

4.3.3.2 A registered drill rig operator who is left in responsible charge of advancing the borehole, setting casing and screen, placing a filter pack, constructing a surface seal, or similar activities involved in well deepening, renovation, repair, cleaning, developing, testing, disinfecting, capping, pitless installation, or abandoning must have a working knowledge of the minimum construction standards and the proper operation of the drilling rig. The licensed well driller is responsible to ensure that a registered operator is adequately trained to meet these requirements.

4.3.3.3 A registered pump rig operator who is left in responsible charge of pump installation or repair must have a working knowledge of the minimum construction standards and the proper operation of the pump rig. The licensed well driller or pump installer is responsible to ensure that a registered operator is adequately trained to meet these requirements.

4.3.4 State engineer provisions for issuing cease and desist orders (Red Tags)

R655-4-4. Administrative Requirements and General Procedures

4.3.4.1 Construction Standards: The state engineer or staff of the Division of Water Rights may order that regulated work on a well cease if a field inspection reveals that the construction does not meet the minimum construction standards to the extent that the public interest might be adversely affected.

4.3.4.2 Licensed Drilling Method: A cease work order may also be issued if the well driller is not licensed for the drilling method being used for the well construction.

4.3.4.3 Incompetent Registered Operator: If, during a field inspection by the staff of the Division of Water Rights, it is determined that a registered operator in responsible charge does not meet these requirements, a state engineer's red tag (see Section 4.3.4) shall be placed on the drilling rig or pump rig and the drilling/pump operation shall be ordered to shut down. The order to cease work shall remain effective until a qualified person is available to perform the work.

4.3.4.4 No licensee or registered operator on site: If, during a field inspection by the staff of the Division of Water Rights, it is determined that neither a licensee or registered operator are on site when regulated well activity is occurring, the state engineer may order regulated well work to cease.

4.3.4.5 General: The state engineer's order shall be in the form of a red tag which shall be attached to the drilling/pump rig. A letter from the state engineer shall be sent to the licensee to explain the sections of the administrative rules which were violated. The letter shall also explain the requirements that must be met before the order can be lifted.

4.3.4.6 A licensee may appeal a Cease and Desist order by:

4.3.4.6.1 submitting to the Division a written statement clearly and concisely stating the specific disputed facts, the supporting facts, and the relief sought; or

4.3.4.6.2 requesting a hearing on the issue according to the provisions of R655-4-7.

4.3.4.7 A Cease and Desist Order shall remain in force during the pendency of the appeal.

4.3.5 When required by the state engineer, the well driller or registered operator shall take lithologic samples at the specified intervals and submit them in the bags provided by the state engineer.

4.3.6 A copy of the current Administrative Rules for Water Wells should be available at each well construction site for review by the construction personnel. Licensed well drillers/pump installers and registered operators must have proof of licensure or registration with them on site during regulated well activity.

4.3.7 Prior to starting construction of a new well, the licensed driller shall investigate and become familiar with the drilling conditions, geology of potential aquifers and overlying materials, anticipated water quality problems, and know contaminated water bearing zones that may be encountered in the area of the

R655-4-4. Administrative Requirements and General Procedures

proposed drilling activity.

4.4 Removing Drill Rig From Well Site.

4.4.1 A well driller shall not remove his drill rig from a well site unless the well drilling activity is properly completed or abandoned in accordance with the construction standards in Sections 9 thru 12.

4.4.2 For the purposes of these rules, the regulated work on a well will be considered completed when the well driller removes his drilling rig from the well site. The regulated pump work on a well will be considered completed when the pump installer removes his pump rig from the well site.

4.4.3 The well driller may request a variance from the state engineer to remove a drill rig from a well prior to completion or abandonment. This request must be in written form to the state engineer. The written request must provide justification for leaving the well incomplete or un-abandoned and indicate how the well will be temporarily abandoned as provided in Section R655-4-14 and must give the date when the well driller plans to continue work to either complete the well or permanently abandon it.

4.5 Official Well Driller's Report (Well Log).

4.5.1 Within 30 days of the completion of regulated work on any well, the driller shall file an official well driller's report (well log) with the state engineer. The blank well log form will be mailed to the licensed well driller upon receipt of the information on the Start Card as described in Subsection 4.2.

4.5.2 The water right number or non-production well number, owner name/address, and the approved location of the well will be preprinted on the blank well log provided to the well driller. The driller is required to verify this information and make any necessary changes on the well log prior to submittal. The state engineer will mark the approved activity (e.g., new, replace, repair, deepen) on the well log. The driller must provide the following information on the well log:

- a. The start and completion date of work on the well;
- b. The nature of use for the well (e.g., domestic, irrigation, stock watering, commercial, municipal, provisional, monitor, cathodic protection, heat pump, etc.;
- c. The borehole diameter, depth interval, drilling method and drilling fluids utilized to drill the well;
- d. The lithologic log of the well based on strata samples taken from the borehole as drilling progresses;
- e. Static water level information to include date of measurement, static level, measurement method, reference point, artesian flow and pressure, and water temperature;

R655-4-4. Administrative Requirements and General Procedures

- f. The size, type, description, joint type, and depth intervals of casing, screen, and perforations;
- g. A description of the filter pack, surface and interval seal material, and packers used in the well along with necessary related information such as the depth interval, quantity, and mix ratio;
- h. A description of the finished wellhead configuration;
- i. The date and method of well development;
- j. The date, method, yield, drawdown, and elapsed time of a well yield test;
- k. A description of pumping equipment (if available);
- l. Other comments pertinent to the well activity completed;
- m. The well driller's statement to include the driller name, license number, signature, and date.

4.5.3 Accuracy and completeness of the submitted well log are required. Of particular importance is the lithologic section which should accurately reflect the geologic strata penetrated during the drilling process. Sample identification must be logged in the field as the borehole advances and the information transferred to the well log form for submission to the state engineer.

4.5.4 An amended well log shall be submitted by the licensed driller if it becomes known that the original report contained inaccurate or incorrect information, or if the original report requires supplemental data or information. Any amended well log must be accompanied by a written statement, signed and dated by the licensed well driller, attesting to the circumstances and the reasons for submitting the amended well log.

4.6 Official Well Abandonment Reports (Abandonment Logs).

4.6.1 Whenever a well driller is contracted to replace an existing well under state engineer's approval, it shall be the responsibility of the well driller to inform the well owner that it is required by law to permanently abandon the old well in accordance with the provisions of Section R655-4-12.

4.6.2 Within 30 days of the completion of abandonment work on any well, the driller shall file an abandonment log with the state engineer. The blank abandonment log will be mailed to the licensed well driller upon notice to the state engineer of commencement of abandonment work as described in Subsection R655-4-4(4.2.4).

4.6.3 The water right number or non-production well number, owner name/address, and the well location (if available) will be preprinted on the blank abandonment log provided to the well driller. The driller is required to verify this information and make any necessary changes on the abandonment log prior to submitting the log. The driller must provide the following information on the abandonment log:

R655-4-4. Administrative Requirements and General Procedures

- a. Existing well construction information;
- b. Date of abandonment;
- c. Reason for abandonment;
- d. A description of the abandonment method;
- e. A description of the abandonment materials including depth intervals, material type, quantity, and mix ratio;
- f. Replacement well information (if applicable);
- g. The well driller's statement to include the driller name, license number, signature, and date.

4.6.4 When a well is replaced and the well owner will not allow the driller to abandon the existing well, the driller must briefly explain the situation on the abandonment form and submit the form to the state engineer within 30 days of completion of the replacement well.

4.7 Official Pump Installation Report (Pump Log).

4.7.1 Soon after the completion of regulated pump work on any well, the licensee shall file an official pump installation report (pump log) with the state engineer. If well disinfection is the only activity on a well, a pump log need not be filed with the state engineer. Blank pump log forms will be available to the licensee at any Division office, requested by mail, or downloaded from the Division's website (www.waterrights.utah.gov).

4.7.2 Pertinent information to be included on the pump log by the licensee shall consist of:

- a. The water right number or non-production well number;
- b. the well owner name and address;
- c. The approved point of diversion or location of the well;
- d. The start and completion date of work on the well;
- e. The nature of use for the well (e.g., domestic, irrigation, stock watering, commercial, municipal, provisional, monitor, cathodic protection, heat pump, etc.);
- f. Pertinent well details including casing diameters/depths, total well depth, well intake depth intervals, wellhead configuration including pitless adapter/unit configuration if applicable;
- g. A detailed description of pump-related work performed on or in the well including pump setting depth, pump type, pumping rate, valving, drop piping, jointing, capping, testing, sealing, disinfection, and pitless adapter/unit installation;
- h. Static water level information to include date of measurement, static level, measurement method, reference point, artesian flow and pressure, and water temperature;
- i. A description of the finished wellhead configuration;
- j. The date, method, yield, drawdown, and elapsed time of a well yield test;

R655-4-4. Administrative Requirements and General Procedures

- k. Other comments pertinent to the well activity completed;
- m. The pump installer's statement to include the licensee name, license number, signature, and date.

4.8 Incomplete or Incorrectly Completed Reports.

An incomplete log or a log that has not been completed correctly will be returned to the licensee to be completed or corrected. The log will not be considered filed with the state engineer until it is complete and correct.

4.8 Extensions of Time.

The well driller may request an extension of time for filing the well log if there are circumstances which prevent the driller from obtaining the necessary information before the expiration of the 30 days. The extension request must be submitted in writing before the end of the 30-day period.

4.9 Late Well Logs - Lapsed License

All outstanding well logs or abandonment logs shall be properly submitted to the state engineer prior to the lapsing of a license. A person with a lapsed license who has failed to submit all well/abandonment logs within 90 days of lapsing will be subject to the state engineer's enforcement powers under Section 73-2-25 of the Utah Code (Related rules: Section R655-14 UAC)

R655-4-5. Administrative Rule Infractions

5.1 List of Infractions and Points.

Licensed well drillers who commit the infractions listed below in Table 1 shall have assessed against their well drilling record the number of points assigned to the infraction.

TABLE 1

Level I Infractions of Administrative Requirements

	Points
Well log submitted late	10
Failure to submit a Pump Log.....	10
Well abandonment report submitted late	10
License number or company name not clearly posted on well drilling/pump rig.....	10
Failing to notify the state engineer of a change in the well licensee's company name	10
Failure to properly notify the state engineer before the proposed start date shown on the start card	20
Failure to properly notify the state engineer before the abandonment of a regulated well	20
Failure to notify the state engineer of a change of start date	50
Constructing a replacement well further than 150 ft from the original well without the authorization of an approved change application	50
Failure to drill at the state engineer approved location as identified on the start card	50
Removing the well drilling rig from the well site before completing the well or temporarily or permanently abandoning the well	50

TABLE 2

Level II Infractions of Administrative Requirements

	Points
Employing an operator who is not registered with the state.....	75
Contracting out work to an unlicensed driller (using the unlicensed driller's rig) without prior written approval from the state.....	75
Performing any well drilling activity without valid authorization (except in emergency situations)	100

R655-4-5. Administrative Rule Infractions

Intentionally making a material misstatement of fact in an official well driller's report/pump log or amended official well driller's report (well log)	100
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TABLE 3

Level III Infractions of Construction Standards / Conditions

	Points
Approvals	
Using a method of drilling not listed on the well driller's license.....	30
Failing to comply with any conditions included on the well approval such as minimum or maximum depths, specified locations of perforations, etc.	50
Performing any well construction activity in violation of a red tag cease work order	100
Casing	
Failure to extend well casing at least 18" above ground	30
Failure to install casing in accordance with these rules	50
Failure to install a protective casing around a PVC well at the surface.....	50
Using improper casing joints	100
Using or attempting to use sub-standard well casing	100
Surface Seals	
Using improper products or procedures to install a surface seal ..	100
Failure to seal off artesian flow on the outside of casing	100
Failure to install surface seal to adequate depth based on formation type.....	100
Failure to install interval seals to eliminate aquifer commingling or cross contamination.....	100
Well Abandonment	
Using improper procedures to abandon a well	100
Using improper products to abandon a well	100
Construction Fluids	
Using water of unacceptable quality in the well drilling operation.....	40

R655-4-5. Administrative Rule Infractions

Using an unacceptable mud pit	40
Failure to use treated or disinfected water for drilling processes .	40
Using improper circulation materials or drilling chemicals	100

Filter/Gravel Packs and Formation Stabilizers

Failure to disinfect filter pack	40
Failure to install filter pack properly	75
Failure to install formation stabilizer according to standard	75

Well Completion

Failure to make well accessible to water level or pressure head measurements.....	30
Failure to install casing annular seals, cap, and valving, and to control artesian flow.....	30
Failure to disinfect a well upon completion of well drilling activity.....	40
Failure to install sanitary well capping according to standard	75
Failure to install a pitless adapter/unit according to standard.....	75
Failure to develop and test a well according to standard.....	75
Failure to hydrofracture a well according to standard	75
Failure to install packers/plugs according to standard.....	75
Failure to install well intakes(screens, perforations, open bottom) according to standard.....	75
Failure install non-production wells according to standard.....	100

Pump Installation and Repair

Failure to extend well casing at least 18" above ground	30
Failure to make well accessible to water level or pressure head measurements	30
Failure to install casing annular seals, cap, and valving, and to control artesian flow.....	30
Failure to disinfect a well upon completion of pump activity	40
Failure to install a protective casing around a PVC well at the surface.....	50
Failure to maintain surface completion and security standards....	75
Failure to install or maintain backflow protection.....	75
Failure to develop and test a well according to standard.....	75
Failure to install sanitary well capping according to standard	75
Failure to install a pitless adapter/unit according to standard.....	75
Failure to prevent contamination from entering a well	

R655-4-5. Administrative Rule Infractions

through placement, products, tools, and materials100
Failure to repair a well’s surface seal 100

General

Failure to securely cover an unattended
well during construction30
Failure to engage in well drilling activity in accordance
with accepted industry practices 100

TABLE 4

Level IV Infractions of Application Requirements

	POINTS
Submitting an initial license or registration application that contains false or misleading information.....	100

5.2 When Points Are Assessed.

Points will be assessed against a driller's record upon verification by the state engineer that an infraction has occurred. Points will be assessed at the time the state engineer becomes aware of the infraction regardless of when the infraction occurred.

5.3 Infraction Notice

When infraction points are assessed against a well driller’s record, the State Engineer shall issue an infraction notice to the well driller. The notice shall include an explanation of the administrative rule(s) violated, the date the alleged violations were discovered and the approximate date of occurrence, the number of points assessed for each infraction, the total number of points on the well drillers record, an explanation of the adjudicative process to appeal a cease and desist order and or infraction notice, and an explanation of how to delete points from the driller record, an any other information deemed pertinent by the state engineer.

5.4 Appeal of Infractions.

5.4.1 If the infraction points do not require a hearing, a well driller may appeal an infraction within 30 days of the date the Infraction Notice was issued. The appeal shall be made in writing to the state engineer and shall state clearly and concisely the disputed facts, the supporting facts, and the relief sought.

5.4.2 A well driller may request reconsideration of a denied appeal by requesting a hearing before the Presiding Officer within 20 days of the denial. If

R655-4-5. Administrative Rule Infractions

the Presiding Officer does not respond within 20 days after the request is submitted, then it is deemed denied.

5.5 Deleting Points from the Driller Record.

Points assessed against a well driller's record shall remain on the record unless deleted through any of the following options:

5.5.1 Points shall be deleted three years after the date when the infraction is noted by the state engineer and the points are assessed against the driller's record.

5.5.2 One half the points on the record shall be deleted if the well driller is free of infractions for an entire year.

5.5.3 Thirty (30) points shall be deleted for obtaining six (6) hours of approved continuing education credits in addition to the credits required to renew the water well driller's license. A driller may exercise this option only once each year.

5.5.4 Twenty (20) points shall be deleted for taking and passing (with a minimum score of 70%) the test covering the administrative requirements and the minimum construction standards. A driller may exercise this option only every other year.

5.6 Well Driller Hearings.

When the number of infraction points assessed against the well driller's record equals or exceeds 100, the state engineer shall submit a request to the Presiding Officer for a hearing. The requested purpose of the hearing shall be to determine if administrative penalties should be levied against the water well driller including fines and probation, suspension, or revocation of the water well driller's. In lieu of a hearing, the well driller may request a preliminary conference to resolve and agree upon the dispute, fines, and penalties. If resolution cannot be reached at the preliminary conference, a hearing shall be held.

5.7 Lack of Knowledge Not an Excuse.

Lack of knowledge of the law or the administrative requirements and minimum construction standards related to well drilling shall not constitute an excuse for violation thereof.

R655-4-6. Administrative Penalties

6.0 Administrative Penalties

Administrative penalties ordered against a licensed driller by the Presiding Officer following a hearing can include probation, administrative fines, license suspension, and license revocation. Administrative penalties are ordered based on the severity of the infraction (Level I, II, III from Tables 1-3 of Section 5.1) as well as the recurrence of an infraction. The maximum administrative fine per infraction shall be capped at \$1000.

6.1 Level I Administrative Penalties: Level I administrative penalties shall be levied against Level I administrative infractions (see Table 1 of Section 5.1). The Level I administrative penalty structure is as follows:

6.1.1 At the first conviction of Level I infractions, the disciplinary action for the infractions shall be probation.

6.1.2 Second conviction shall result in probation and a fine at a rate of \$2.50 per infraction point.

6.1.3 Third conviction shall result in probation and an elevated fine at a rate of \$5.00 per infraction point.

6.1.4 Fourth conviction shall result in an elevated fine at a rate of \$10.00 per infraction point and possible suspension.

6.1.5 Continued and repeated convictions beyond the fourth conviction may result in an elevated fine at a rate of \$10.00 per infraction point and possible suspension or revocation.

6.1.6 Fines for late well logs and abandonment logs shall be calculated separately and added to fines calculated for other infractions. For late well log infractions, the points associated with each infraction shall be multiplied by a factor based on the lateness of the well log. The infraction point multipliers are as follows in Table 5:

TABLE 5

Tardiness of the log	Infraction Point Multiplier
1-2 weeks	0.50
2-4 weeks	1.00
1-3 months	1.50
3-6 months	2.00
6-9 months	2.50
9-12 months	3.00
Over 12 months	4.00

R655-4-6. Administrative Penalties

6.2 Level II Administrative Penalties: Level II administrative penalties shall be levied against Level II administrative infractions (see Table 2 of Section 5.1). The Level II administrative penalty structure is as follows:

6.2.1 At the first conviction of Level II infractions, the disciplinary action shall result in probation and a fine at a rate of \$2.50 per infraction point.

6.2.2 Second conviction shall result in probation and an elevated fine at a rate of \$5.00 per infraction point.

6.2.3 Third conviction shall result in possible suspension and an elevated fine at a rate of \$10.00 per infraction point.

6.2.4 Continued and repeated convictions beyond the fourth conviction may result in an elevated fine at a rate of \$10.00 per infraction point and possible suspension or revocation.

6.3 Level III Administrative Penalties: Level III administrative penalties shall be levied against Level III construction infractions (see Table 3 of Section 5.1). The Level III administrative penalty structure is as follows:

6.3.1 At the first conviction of Level III infractions, the disciplinary action shall result in probation and a fine at a rate of \$5.00 per infraction point.

6.3.2 Second conviction shall result in possible suspension and an elevated fine at a rate of \$10.00 per infraction point.

6.3.3 Third conviction may result in an elevated fine at a rate of \$10.00 per infraction point and possible suspension or revocation.

6.3.4 Level IV Administrative Penalties: The Level IV administrative penalty shall be levied against a Level IV application requirement infraction (see Table 4 of Section 5.1). The Level IV administrative penalty is revocation of the license at first conviction.

6.4 Administrative Penalties - General

6.4.1 Penalties shall only be imposed as a result of a well driller hearing.

6.4.2 Failure to pay a fine within 30 days from the date it is assessed shall result in the suspension of the well driller license until the fine is paid.

6.4.3 Fines shall be deposited as a dedicated credit. The state engineer shall expend the money retained from fines for expenses related to well drilling activity inspection, well drilling enforcement, and well driller education.

6.5 Probation: As described above in Sections 6.1, 6.2, and 6.3, probation shall generally be the disciplinary action imposed in situations where the facts established through testimony and evidence describe first time infractions of the administrative rules that are limited in number and less serious in their impact on the well owner and on the health of the aquifer. The probation period shall

R655-4-6. Administrative Penalties

generally last until the number of infraction points on the well driller's record is reduced below 70 through any of the options described in Subsection 4-5.5.

6.6 Suspension: Suspension shall generally be the disciplinary action imposed in situations where the facts established through testimony and evidence describe repeated convictions of the administrative rules, or infractions that pose a serious threat to the health of the aquifer, or a well driller's apparent disregard for the administrative rules or the state's efforts to regulate water well drilling. Depending upon the number and severity of the rule infractions as described above in Sections 6.1, 6.2, and 6.3, the state engineer may elect to suspend a well driller license for a certain period of time and/or until certain conditions have been met by the well driller. In establishing the length of the suspension, the state engineer shall generally follow the guideline that three infraction points is the equivalent of one day of suspension. A well driller whose license has been suspended shall be prohibited from engaging in regulated well drilling activity. License suspension may also result in the exaction of the Well Driller Bond as set forth in Subsection 4-3.9.4. A well driller whose license has been suspended is allowed to work as a registered operator under the direct, continuous supervision of a licensed well driller. If the suspension period extends beyond the expiration date of the water well driller license, the water well driller may not apply to renew the license until the suspension period has run and any conditions have been met. Once the suspension period has run and once all conditions have been met by the well driller, the suspension shall be lifted and the driller shall be notified that he/she may again engage in the well drilling business. The well driller shall then be placed on probation until the number of infraction points on the well driller's record is reduced below 70 through any of the options described in Subsection 4-5.5.

6.7 Revocation: Revocation shall generally be the disciplinary action imposed in situations where the facts established through testimony and evidence describe repeated convictions of the administrative rules for which the well driller's Utah Water Well License has previously been suspended. Revocation shall also be the disciplinary action taken if after a hearing the facts establish that a driller knowingly provided false or misleading information on a driller license application. A well driller whose license has been revoked shall be prohibited from engaging in regulated well drilling activity. License revocation may also result in the exaction of the Well Driller Bond as set forth in Subsection 4-3.9.4. A well driller whose license has been revoked is allowed to work as a registered operator under the direct, continuous supervision of a licensed well driller. A well driller whose water well license has been revoked may not make application for a

R655-4-6. Administrative Penalties

new water well license for a period of two years from the date of revocation. After the revocation period has run, a well driller may make application for a new license as provided in Section R655-4-3. However, the well drilling experience required must be based on new experience obtained since the license was revoked.

R655-4-7. Adjudicative Proceedings

7.1 Designation of Presiding Officers.

The following persons may be designated Presiding Officers in well driller adjudicative proceedings: Assistant State Engineers; Deputy State Engineers; or other qualified persons designated by the State Engineer.

7.2 Disqualification of Presiding Officers.

7.2.1 A Presiding Officer shall disqualify himself from performing the functions of the Presiding Officer regarding any matter in which he, his spouse, or a person within the third degree of relationship to either of them or the spouse of such person:

7.2.1.1 Is a party to the proceeding, or an officer, director, or trustee of a party;

7.2.1.2 Has acted as an attorney in the proceeding or served as an attorney for, or otherwise represented, a party concerning the matter in controversy;

7.2.1.3 Knows that he has a financial interest, either individually or as a fiduciary, in the subject matter in controversy or in a party to the proceeding;

7.2.1.4 Knows that he has any other interest that could be substantially affected by the outcome of the proceeding; or

7.2.1.5 Is likely to be a material witness in the proceeding.

7.2.2 A Presiding Officer is also subject to disqualification under principles of due process and administrative law.

7.2.3 These requirements are in addition to any requirements under the Utah Public Officers' and Employees' Ethics Act, Section 67-16-1 et seq.

7.2.4 A motion for disqualification shall be made first to the Presiding Officer. If the Presiding Officer is appointed, any determination of the Presiding Officer upon a motion for disqualification may be appealed to the State Engineer.

7.3 Informal Proceedings

7.3.1 All adjudicative proceedings initiated under this rule are classified as informal adjudicative proceedings.

7.3.1 The procedures for informal adjudicative proceedings initiated under this rule are set forth in this rule.

7.4 Service of Notice and Orders.

7.4.1 Hearing Notices and Final Judgment and Orders shall be served upon the well driller at the well driller's address using certified mail or methods described in Rule 5 of the Utah Rules of Civil Procedure.

7.4.2 Infraction notices, notices of approval or denial of licensing or registration or license or registration renewal, and other routine correspondence related to the Division's Well Drilling Program shall be sent to the well driller at

R655-4-7. Adjudicative Proceedings

the well driller's address by regular U.S. Mail.

7.5 Computation of Time.

7.5.1 Computation of any time period referred to in these rules shall begin with the first day following the act that initiates the running of the time period. The last day of the time period computed is included unless it is a Saturday, Sunday, or legal holiday or any other day on which the Division is closed, in which event the period shall run until the end of the business hours of the following business day.

7.5.2 The Presiding Officer, for good cause shown, may extend any time limit contained in these rules, unless precluded by statute. All requests for extensions of time shall be made by motion.

7.6 Request for Hearing

7.6.1 A hearing before a Presiding Officer is permitted in a well drilling adjudicative proceeding if:

7.6.1.1 The proceeding was commenced by an Infraction Notice; or

7.6.1.2 The proceeding was commenced by a well driller request raising a genuine issue regarding

7.6.1.2.1 The denial of a license or registration renewal application; or

7.6.1.2.2 The issuance of a cease and desist order (red tag)

7.6.2 Regardless of any other provision of the general laws to the contrary, all requests for a hearing shall be in writing and shall be filed with the Division to the attention of the Presiding Officer.

7.6.3 The request for a hearing shall state clearly and concisely the disputed facts, the supporting facts, the relief sought, and any additional information required by applicable statutes and rules.

7.6.4 The Presiding Officer shall, give all parties at least ten (10) days notice of the date, time and place for the hearing. The Presiding Officer may grant requests for continuances for good cause shown.

7.6.5 Any party may, by motion, request that a hearing be held at some place other than that designated by the Presiding Officer, due to disability or infirmity of any party or witness, or where justice and equity would be best served.

7.6.6 A well driller at any time may withdraw the well driller's request for a hearing. The withdrawal shall be filed with the Division to the attention of the Presiding Officer, in writing, signed by the well driller or an authorized representative, and is deemed final upon the date filed.

7.7 Filings Generally.

7.7.1 Papers filed with the Division shall state the title of the proceeding and the name of the well driller on whose behalf the filing is made.

R655-4-7. Adjudicative Proceedings

7.7.2 Papers filed with the Division shall be signed and dated by the well driller on whose behalf the filing is made or by the well driller's authorized representative. The signature constitutes certification that the well driller:

7.7.2.1 Read the document;

7.7.2.2 Knows the content thereof;

7.7.2.3 To the best of the well driller's knowledge, represents that the statements therein are true;

7.7.2.4 Does not interpose the papers for delay; and

7.7.2.5 If the well driller's signature does not appear on the paper, authorized a representative with full power and authority to sign the paper.

7.7.3 All papers, except those submittals and documents that are kept in a larger format during the ordinary course of business, shall be submitted on an 8.5 x 11-inch paper. All papers shall be legibly hand printed or typewritten.

7.7.4 The Division may provide forms to be used by the parties.

7.7.5 The original of all papers shall be filed with the Division with such number of additional copies as the Division may reasonably require.

7.7.6 Simultaneously with the filing of any and all papers with the Division, the party filing such papers shall send a copy to all other parties, or their authorized representative to the proceedings, by hand delivery, or U.S. Mail, postage prepaid, properly addressed.

7.8 Motions.

7.8.1 A party may submit a request to the Presiding Officer for any order or action not inconsistent with Utah law or these rules. Such a request shall be called a motion. The types of motions made shall be those that are allowed under these Rules and the Utah Rules of Civil Procedure.

7.8.2 Motions may be made in writing at any time before or after the commencement of a hearing, or they may be made orally during a hearing. Each motion shall set forth the grounds for the desired order or action and, if submitted in writing, state whether oral argument is requested. A written supporting memorandum, specifying the legal basis and support of the party's position shall accompany all motions.

7.8.3 The Presiding Officer may, upon the Presiding Officer's own initiative or upon the motion of any party, order any party to file a response or other pleading, and further permit either party to amend its pleadings in a manner just to all parties.

7.8.4 Preliminary Conference. Parties may request to appear for a preliminary conference prior to a hearing or prior to the scheduled commencement of a hearing or at any time before issuing a Final Judgment and Order. All parties shall prepare and exchange the following information at the initial preliminary

R655-4-7. Adjudicative Proceedings

conference:

(a) Names and addresses of prospective witnesses including proposed areas of expertise for expert witnesses;

(b) A brief summary of proposed testimony;

(c) A time estimate of each witness' direct testimony;

(d) Curricula vitae (resumes) of all prospective expert witnesses.

(e) The scheduling of a preliminary conference shall be solely within the discretion of the Presiding Officer.

(f) The Presiding Officer shall give all parties at least three (3) days notice of the preliminary conference.

(g) The notice shall include the date, time and place of the preliminary conference.

The purpose of a preliminary conference is to consider any or all of the following:

(a) The simplification or clarification of the issues;

(b) The possibility of obtaining stipulations, admissions, agreements on documents, understandings on matters already of record, or similar agreements which shall avoid unnecessary proof;

(c) The limitation of the number of witnesses or avoidance of similar cumulative evidence, if the case is to be heard;

(d) The possibility of agreement disposing of all or any of the issues in dispute; or

(e) Such other matters as may aid in the efficient and equitable disposition of the adjudicative enforcement proceeding.

7.8.5 Consent Order: If the respondent substantially agrees with or does not contest the statements of fact in the initial order, or if the parties agree to specific amendments to the statements of fact in the initial order, the parties may enter into a Consent Order after a preliminary conference by stipulating to the facts, fines, and penalties, if any. A Consent Order based on that stipulation, shall be prepared by the state engineer for execution by the parties. The executed Consent Order shall be reviewed by the Presiding Officer and, if found to be acceptable, will be signed and issued by the Presiding Officer. A Consent Order issued by the Presiding Officer is not subject to reconsideration or judicial review.

7.9 Conduct of Hearings.

7.9.1 All parties, authorized representatives, witnesses and other persons present at the hearing shall conduct themselves in a manner consistent with the standards and decorum commonly observed in Utah courts. Where such decorum is not observed, the Presiding Officer may take appropriate action including adjournment, if necessary.

7.9.2 The Presiding Officer shall conduct the hearing, make all decisions

R655-4-7. Adjudicative Proceedings

regarding admission or exclusion of evidence or any other procedural matters, and have an oath or affirmation administered to all witnesses.

7.10 Rules of Evidence in Hearings.

7.10.1 Discovery is prohibited, but the Division may issue subpoenas or other orders to compel production of necessary evidence.

7.10.2 A party may call witnesses and present oral, documentary, and other evidence.

7.10.3 A party may comment on the issues and conduct cross-examination of any witness as may be required for a full and true disclosure of all facts relevant to any issue designated for hearing, and as may affect the disposition of any interest which permits the person participating to be a party.

7.10.4 A witness' testimony shall be under oath or affirmation.

7.10.5 Any evidence may be presented by affidavit rather than by oral testimony, subject to the right of any party to call and examine or cross-examine the affiant.

7.10.6 Relevant evidence shall be admitted.

7.10.7 The Presiding Officer's decision may not be based solely on hearsay.

7.10.8 Official notice may be taken of all facts of which judicial notice may be taken in Utah courts.

7.10.9 All parties shall have access to public information contained in the Division's files and to all materials and information gathered in the investigation, to the extent permitted by law.

7.10.10 No evidence shall be admitted after completion of a hearing or after a case is submitted on the record, unless otherwise ordered by the Presiding Officer.

7.10.11 Intervention is prohibited.

7.10.12 A well driller appearing before the Presiding Officer for the purpose of a hearing may be represented by a licensed attorney. The Water Well Drilling Specialist shall present evidence before a Presiding Officer supporting the State Engineer's claim. At the State Engineer's discretion, other Division staff or a representative from the office of the Attorney General may also present supporting evidence.

7.11 Transcript of Hearing.

7.11.1 Testimony and argument at the hearing shall be recorded electronically. The Division shall make copies of electronic recordings available to any party, upon written request. The fee charged for this service shall be equal to the actual costs of providing the copy. The Division is not responsible to supply any party with a transcript of a hearing.

7.11.2 If any party shall cause to be produced a transcript of a hearing, a copy

R655-4-7. Adjudicative Proceedings

of said transcript shall be filed with the Division and provided to all other parties. By order of the Presiding Officer and with the consent of all parties, such written transcript may be deemed an official transcript.

7.11.3 Corrections to an official transcript may be made only to conform it to the evidence presented at the hearing. Transcript corrections, agreed to by opposing parties, may be incorporated into the record, if and when approved by the Presiding Officer, at any time during the hearing, or after the close of the adjudicative proceeding. The Presiding Officer may call for the submission of proposed corrections and may determine the disposition thereof at appropriate times during the course of the proceeding.

7.12 Procedures and Standards for Orders

7.12.1 If the well driller attends the hearing, the Presiding Officer shall issue a Final Judgment and Order.

7.12.2 The Presiding Officer may issue a Default Order if, after proper notice, the well driller fails to attend a hearing scheduled by the Presiding Officer.

7.12.3 Within a reasonable time after the close of a well driller adjudicative proceeding, the Presiding Officer shall issue a written and signed Final Judgment and Order, including but not limited to:

7.12.3.1 A statement of law and jurisdiction;

7.12.3.2 A statement of facts;

7.12.3.3 An identification of the confirmed infraction(s);

7.12.3.4 An order setting forth actions required of the well driller;

7.12.3.5 A notice of the option to request reconsideration and the right to petition for judicial review;

7.12.3.6 The time limits for requesting reconsideration or filing a petition for judicial review; and

7.12.3.7 Other information the Presiding Officer deems necessary or appropriate.

7.12.4 The Presiding Officer's Final Judgment and Order shall be based on the record, as defined in this rule.

7.12.5 A copy of the Presiding Officer's Final Judgment and Order shall be promptly mailed to each of the parties.

7.12.6 A well driller who fails to attend a hearing waives any right to request reconsideration of the Final Judgment and Order per Section R655-4-7.13, but may petition for judicial review per Section R655-4-7.16.

7.13 Reconsideration.

7.13.1 Within 14 days after the Presiding Officer issues a Final Judgment and Order, any party may file a written request for reconsideration stating the specific

R655-4-7. Adjudicative Proceedings

grounds upon which relief is requested.

7.13.2 Unless otherwise provided by statute, the filing of a request for reconsideration is not a prerequisite for seeking judicial review of the order.

7.13.3 The request for reconsideration shall be filed with the Division to the attention of the Presiding Officer and one copy shall be mailed to each party by the party filing the request.

7.13.4 The Presiding Officer may issue a written order granting or denying the request for reconsideration. It is not required that the written order explain the grounds for the Presiding Officer's decision.

7.13.5 If the Presiding Officer does not issue an order granting a request for reconsideration within 14 days after the date it is filed with the Division, the request shall be considered denied.

7.14 Amending Administrative Orders.

7.14.1 On the motion of any party or of the Presiding Officer, the Presiding Officer may amend a Final Judgment and Order for reasonable cause shown, including but not limited to a clerical mistake made in the preparation of the order.

7.14.2 A motion by any party to amend an order shall be made in a reasonable time and, if to amend a Final Judgment and Order, not more than three (3) months after the Final Judgment and Order was issued.

7.14.3 The Presiding Officer shall notify the parties of the receipt and consideration of a motion to amend an order by issuing a notice. The notice shall include a copy of the motion.

7.14.4 Any party opposing a motion to amend an order may submit information within the time period to be established by the Presiding Officer's notice of the motion.

7.14.5 After considering a motion to amend an order and any relevant information received from the parties, the Presiding Officer shall advise the parties of his determination. If the Presiding Officer determines that the order shall be amended, the Presiding Officer shall issue the amended order to all parties.

7.15 Setting Aside a Final Judgment and Order.

7.15.1 On the motion of any party or on a motion by the Presiding Officer, the Presiding Officer may set aside a Final Judgment and Order on any reasonable grounds, including but not limited to the following:

7.15.1.1 The well driller was not properly served with an Infraction Notice;

7.15.1.2 A rule or policy was not followed when the Final Judgment and Order was issued;

7.15.1.3 Mistake, inadvertence, excusable neglect;

7.15.1.4 Newly discovered evidence which by due diligence could not have

R655-4-7. Adjudicative Proceedings

been discovered before the Presiding officer issued the Final Judgment and Order;
or

7.15.1.5 Fraud, misrepresentation or other misconduct of an adverse party;

7.15.2 A motion to set aside a final order shall be made in a reasonable time and not more than three (3) months after the Final Judgment and Order was issued.

7.15.3 The Presiding Officer shall notify the parties of the receipt and consideration of a motion to set aside a final order by issuing a notice to all parties, including therewith a copy of the motion.

7.15.4 Any party opposing a motion to set aside a final order may submit information within the time period to be established by the Presiding Officer's notice of the motion.

7.15.4 After consideration of the motion to set aside an order and any information received from the parties, the Presiding Officer shall issue an order granting or denying the motion, and provide a copy of the order to all parties.

7.16 Judicial Review.

7.16.1 Pursuant to Section 73-3-14, a Final Judgment and Order may be reviewed by trial de novo by the district court:

7.16.1.1 In Salt Lake County; or

7.16.1.2 In the county where the violation occurred.

7.16.2 A well driller shall file a petition for judicial review of a Final Judgment and Order within 20 days from the day on which the order was issued, or if a request for reconsideration has been filed and denied, within 20 days of the date of denial of the request for reconsideration.

7.16.3 The Presiding Officer may grant a stay of an order or other temporary remedy during the pendency of the judicial review on the Presiding Officer's own motion, or upon the motion of a party. The procedures for notice, for consideration of motions, and for issuing a determination shall be as set forth herein for a motion to set aside a Final Judgment and Order.

R655-4-8. License and Operator Registration Renewal

8.1 Well Driller and Pump Installer Licenses.

The Division will mail to each licensed well driller and pump installer a notice (packet) to renew his/her license approximately 30 days before the expiration of the license. Failure to receive the notice does not relieve a licensee of his obligation to file application and pay the fee for renewal in a timely manner. A well driller shall notify the Division of any change in his mailing address within 30 days after the change.

8.1.1 Well driller licenses and Pump Installer licenses shall expire and be renewed according to the following provisions:

a. The licenses of well drillers and pump installers whose last name begins with A thru L shall expire at 12 midnight on June 30 of odd numbered years.

b. The licenses of well drillers and pump installers whose last name begins with M thru Z shall expire at 12 midnight on June 30 of even numbered years.

c. Drillers and pump installers who meet the renewal requirements set forth in Subsection R655-4-8(8.1.2) on or before the expiration deadlines set forth in Subsection R655-4-8(8.1.1) shall be authorized to operate as a licensed well driller or pump installer until the new license is issued. If a licensee does not complete the renewal requirements by the license expiration date, the license will become inactive, and the licensee must cease and desist all regulated work until the license has been renewed.

d. Licensees must renew their licenses within 24 months of the license expiration date. Licensees failing to renew within 24 months of the license expiration date must re-apply for a license, meet all the application requirements of Subsections R655-4-3(3.2) or R655-4-3(3.4), and provide documentation of 12 hours of continuing education according to the requirements of R655-4-8(8.2) obtained within the previous 24 months.

8.1.2 Applications to renew a license must include the following items:

a. Payment of the license renewal fee determined and approved by the legislature;

b. Written application to the state engineer;

c. Documentation of continuing well driller bond coverage in the amount of five thousand dollars (\$5,000) penal bond for the next licensing period. The form and conditions of the well driller bond shall be as set forth in Section R655-4.3.9. Allowable documentation can include bond continuation certificates and CD statements;

d. As applicable to the type of license, proper submission of all start cards, official well driller reports (well logs), pump installer reports (pump logs), and well abandonment reports for the current licensing period;

e. Documentation of compliance with the continuing education requirements described in Section 8.2. Acceptable documentation of attendance at approved

R655-4-8. License and Operator Registration Renewal

courses must include the following information: the name of the course, the date it was conducted, the number of approved credits, the name and signature of the instructor and the licensee's name; for example, certificates of completion, transcripts, attendance rosters, diplomas, etc. (Note: licensees are advised that the state engineer will not keep track of the continuing education courses each licensee attends during the year. Licensees are responsible to acquire and then submit documentation with the renewal application.)

8.1.3 License renewal applications that do not meet the requirements of Subsection R655-4-8(8.1.2) by June 30 of the expiration year or which are received after June 30 of the expiration year, will be assessed an additional administrative late fee determined and approved by the legislature.

8.1.4 Restricted, conditioned, limited, or denied renewal applications

8.1.4.1 The state engineer may renew a license on a restricted, conditional, or limited basis if the licensee's performance and compliance with established rules and construction standards indicates the scope of the licensee's permitted activities should be reduced or that the licensee requires strict supervision during a probationary period.

8.1.4.2 The restricted, conditional, or limited license shall state the restrictions, conditions, or limitations placed on the licensee's regulated activity; whether the restrictions, conditions, or limitations are permanent or time-limited; and the requirements, if any, which must be met for the license to be re-issued without restrictions, conditions, or limitations.

8.1.4.3 The state engineer may deny an application to renew a license if there has been a violation of these rules or UTAH CODE ANNOTATED §73-3-25 that casts doubt on the competency of the licensee or his willingness to comply with the well drilling administrative requirements or construction standards.

8.1.4.4 Within 30 days of a license renewal application being denied or a license being renewed on a restricted, conditioned, or limited basis, a licensee may appeal the action by requesting a hearing according to the provisions of R655-4-7.

8.1.4.5 The restrictions, conditions, or limitations on a license or the denial of a license shall remain effective during the pendency of the well driller/pump installer adjudicative proceeding.

8.2 Continuing Education.

8.2.1 During each license period, licensed well drillers and pump installers are required to earn at least twelve (12) continuing education credits by attending training sessions approved, sponsored, or sanctioned by the state engineer. Drillers and pump installers who do not renew their licenses, but who intend to renew within the following 24 month period allowed in Section 8.1.1, are also required to earn twelve (12) continuing education credits.

R655-4-8. License and Operator Registration Renewal

8.2.2 The state engineer will develop criteria for the training courses, approve the courses which can offer continuing education credits, and assign the number of credits to each course.

8.2.3 The committee established in Section 8.2.2 shall assign the number of continuing education credits to each proposed training session based on the instructor's qualifications, a written outline of the subjects to be covered, and written objectives for the session. Licensees wishing continuing education credit for other training sessions shall provide the state engineer with all information it needs to assign continuing education requirements.

8.2.4 Licensed drillers must complete a State Engineer-sponsored "Administrative Rules for Well Drillers and Pump Installers" review course or other approved rules review once every four (4) years.

8.2.5 CE credits cannot be carried over from one licensing period to another.

8.3 Operator's Registration.

8.3.1 Drill Rig and Pump Rig operator registrations shall expire at the same time as the license of the well driller or pump installer by whom they are employed. Operators who meet the renewal requirements set forth in Subsection R655-4-8(8.3.2) on or before 12 midnight June 30 of the expiration year shall be authorized to act as a registered operator until the new registration is issued. Operators must renew their registrations within 24 months of the registration expiration date. Operators failing to renew within 24 months of the registration expiration date must re-apply for an operator's registration and meet all the application requirements of Subsections R655-4-3(3.3) and R655-4-3(3.5).

8.3.2 Applications to renew an operator's registration must include the following items:

a. Payment of the registration renewal fee determined and approved by the legislature;

b. Written application to the state engineer.

8.3.3 Registration renewal applications that do not meet the requirements of Subsection R655-4-8(8.3.2) by the June 30 expiration date or that are received after the June 30 expiration date will be assessed an additional administrative late fee determined and approved by the legislature.

R655-4-9. The Approval Process for Non-Production Wells

9.1 General.

Regulated non-production wells such as cathodic protection wells, closed-loop heating/cooling exchange wells, monitor/piezometer/test wells, and other wells meeting the criteria in R655-4-1(1.2.4) drilled and constructed to a depth greater than 30 feet below natural ground surface require approval from the state engineer. The approval and permitting of regulated production wells is accomplished through the water right processes in accordance with Section 73 of the Utah Code.

9.2 Approval to Drill, Construct, Renovate, or Replace.

Approval to drill, construct, renovate, or replace non-production wells is issued by the state engineer's main office and regional offices following review of written requests from the owner/applicant or their appointed representative. The appointed representative shall not include the licensed driller designated on the application. The requests for approval shall be made on forms provided by the state engineer entitled "Request for Non-Production Well Construction". The following information must be included on the form:

- a. General location or common description of the project.
- b. Specific course and distance locations from established government surveyed outside section corners or quarter corners.
- c. Total anticipated number of wells to be installed.
- d. Diameters, approximate depths and materials used in the wells.
- e. Projected start and completion dates.
- f. Name and license number of the driller contracted to install the wells.
- g. A detailed explanation of the purpose and technical aspects of the drilling project. This can also include reviews and approvals (e.g., building permits) done by local jurisdictions of the project. This additional documentation may expedite the Division's processing of the non-production well application.
- h. Signature of the well owner or authorized representative attesting to the accuracy and truthfulness of the information on the application. The licensed driller cannot be the signatory on the non-production well application.

9.2.1 There is no fee required to request approval to drill, construct, renovate, or replace a non-production well. Using available information and sources, the Division will evaluate the potential for the non-production well to become a contamination source or otherwise negatively impact the groundwater resource prior to approval. This evaluation can take up to 14 days to conduct. The Division shall list application information on its website to allow the public and local jurisdictions to review the project prior to approval. The well permit application shall be returned without review to the applicant if the Division determines that the application is incomplete, contains inaccurate information, lacks sufficient information or is illegible. The Division shall deny the issuance of a well permit if

R655-4-9. The Approval Process for Non-Production Wells

the site where the well is to be drilled is designated by the Division as an area where wells may not be constructed, including but not limited to contaminated or protected aquifers, areas where drilling and construction of wells can impact other water rights, and other areas where environmental remediation may be adversely affected by the construction and/or operation of wells. Upon written approval by the state engineer, the project will be assigned an approved non-production well number which will be referenced on all start cards and official well driller's reports.

R655-4-10. General Requirements.

10.1 Standards.

10.1.1 In some locations, the compliance with the following minimum standards will not result in a well being free from pollution or from being a source of subsurface leakage, waste, or contamination of the groundwater resource. Since it is impractical to attempt to prepare standards for every conceivable situation, the well driller or pump installer shall judge when to construct or otherwise perform work on wells under more stringent standards when such precautions are necessary to protect the groundwater supply and those using the well in question. Other state and local regulations pertaining to well drilling and construction, groundwater protection, isolation distances (setbacks) from potential contamination sources and/or other structures/boundaries, and water quality/testing regulations may exist that are either more stringent than these rules or that specifically apply to a given situation. It is the licensee's responsibility to understand and apply other federal, state, and local regulations as applicable.

10.2 Well Site Locations.

10.2.1 Well site locations are described by course and distance from outside section corners or quarter corners (based on a Section/Township/Range Cadastral System) and by the Universal Transverse Mercator (UTM) coordinate system (NAD83 Map Datum) on all state engineer authorizations to drill (Start Cards). However, the licensee should also be familiar with local zoning ordinances, or county boards of health requirements which may limit or restrict the actual well location and construction in relationship to property/structure boundaries and existing or proposed concentrated sources of pollution or contamination such as septic tanks, drain fields, sewer lines, stock corrals, feed lots, etc. The licensee should also be familiar with the Utah Underground Facilities Act (Title 54, Chapter 8a of the Utah Code Annotated 1953 as amended) which requires subsurface excavators (including well drilling) to notify operators of underground utilities prior to any subsurface excavation. Information on this requirement can be found by calling Blue Stakes Utility Notification Center at (800)662-4111.

10.2.2 Regulated wells shall be drilled at the approved location as defined on the valid start card. The driller shall check the drilling location to see if it matches the state-approved location listed on the Driller's Start Card.

10.3 Unusual Conditions.

10.3.1 If unusual conditions occur at a well site and compliance with these rules and standards will not result in a satisfactory well or protection to the groundwater supply, a licensed water well driller or pump installer shall request that special standards be prescribed for a particular well (variance request). The request for special standards shall be in writing and shall set forth the location of

R655-4-10. General Requirements.

the well, the name of the owner, the unusual conditions existing at the well site, the reasons and justification that compliance with the rules and minimum standards will not result in a satisfactory well, and the proposed standards that the licensee believes will be more adequate for this particular well. If the state engineer finds that the proposed changes are in the best interest of the public, the state engineer will approve the proposed changes by assigning special standards for the particular well under consideration. At the Division's discretion, the licensee applying for the variance may be required to provide additional technical information justifying the variance. The variance request will be evaluated, and a response will be given within fourteen days. In a public health emergency or other exceptional circumstance, verbal notification for a variance may be given. An emergency usually consists of a well failure resulting in a dry well or an unusable well. Driller convenience does not constitute an emergency.

R655-4-11. Well Drilling and Construction Requirements

11.0 General.

11.0.1 Figures 1 through 5 are used to illustrate typical well construction standards, and can be viewed in the State of Utah Water Well Handbook available at the Division of Water Rights, 1594 West North Temple, Salt Lake City, Utah. Figure 1 illustrates the typical construction of a drilled well with driven casing such as a well drilled using the cable tool method or air rotary with a drill-through casing driver. Figure 2 illustrates the typical construction of a well drilled with an oversized borehole and/or gravel packed without the use of surface casing. Figure 3 illustrates the typical construction of a well drilled with an oversized borehole and/or gravel packed with the use of surface casing. Figure 4 illustrates the typical construction of a well drilled with an oversized borehole and/or gravel packed completed in stratified formations in which poor formation material or poor quality water is encountered. Figure 5 illustrates the typical construction of a well completed with PVC or nonmetallic casing.

11.1 Approved Products, Materials, and Procedures.

11.1.1 Any product, material or procedure designed for use in the drilling, construction, cleaning, renovation, development pump installation/repair, or abandonment of water production or non-production wells, which has received certification and approval for its intended use by the National Sanitation Foundation (NSF) under ANSI/NSF Standard 60 or 61, the American Society for Testing Materials (ASTM), the American Water Works Association (AWWA) or the American National Standards Institute (ANSI) may be utilized. Other products, materials or procedures may also be utilized for their intended purpose upon manufacturers certification that they meet or exceed the standards or certifications referred to in this section and upon state engineer approval.

11.2 Well Casing - General

11.2.1 Drillers Responsibility. It shall be the sole responsibility of the well driller to determine the suitability of any type of well casing for the particular well being constructed, in accordance with these minimum requirements.

11.2.2 Casing Stick-up. The well casing shall extend a minimum of 18 inches above finished ground (land) level and the natural ground surface should slope away from the casing. A secure sanitary, weatherproof mechanically secured cap/seal or a completely welded cap shall be placed on the top of the well casing to prevent contamination of the well. If a vent is placed in the cap, it shall be properly screened to prevent access to the well by debris, insects, or other animals.

11.2.3 Steel Casing. All steel casing installed in Utah shall be in new or like-new condition, being free from pits or breaks, clean with all potentially dangerous chemicals or coatings removed, and shall meet the minimum specifications listed in Table 6 of these rules. In order to utilize steel well casing that does not fall within the categories

R655-4-11. Well Drilling and Construction Requirements

specified in Table 6, the driller shall receive written approval from the state engineer. All steel casing installed in Utah shall meet or exceed the minimum ASTM, ANSI, or AWWA standards for steel pipe as described in Subsection 11.1 unless otherwise approved by the state engineer. Applicable standards (most recent revisions) may include:

ANSI/AWWA A100-AWWA Standard for Water Wells.

ANSI/ASTM A53-Standard Specifications for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

ANSI/ASTM A139-Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and over).

ANSI/AWWA C200-Standard for Steel Water Pipe-6 in. and Larger.

ASTM A589-89-Standard Specification for Seamless and Welded Carbon Steel Water-Well Pipe.

API Spec.5L and 5LS-Specification for Liner Pipe.

ASTM A106-Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service

ASTM A778-Standard Specifications for Welded, Unannealed Austenitic Stainless Steel Tubular Products.

ASTM A252-Standard Specification for Welded and Seamless Steel Pipe Piles.

ASTM A312-Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes

ASTM A409- Standard Specification for Welded Large Diameter Austenitic Steel Pipe for Corrosive or High-Temperature Service

R655-4-11. Well Drilling and Construction Requirements

**TABLE 6
MINIMUM WALL THICKNESS FOR STEEL WELL CASING**

Nominal Casing Diameter (in)	Depth							
	0 to 200 (ft)	200 to 300 (ft)	300 to 400 (ft)	400 to 600 (ft)	600 to 800 (ft)	800 to 1000 (ft)	1000 to 1500 (ft)	1500 to 2000 (ft)
5	.250	.250	.250	.250	.250	.250	.250	.250
6	.250	.250	.250	.250	.250	.250	.250	.250
8	.250	.250	.250	.250	.250	.250	.250	.250
10	.250	.250	.250	.250	.250	.250	.312	.312
12	.250	.250	.250	.250	.250	.250	.312	.312
14	.250	.250	.250	.250	.312	.312	.312	.312
16	.250	.250	.312	.312	.312	.312	.375	.375
18	.250	.312	.312	.312	.375	.375	.375	.438
20	.250	.312	.312	.312	.375	.375	.375	.438
22	.312	.312	.312	.375	.375	.375	.375	.438
24	.312	.312	.375	.375	.375	.438
30	.312	.375	.375	.438	.438	.500

Note: Minimum wall thickness is in inches. For nominal casing diameters less than five (5) inches, the minimum wall thickness must be equivalent to ASTM Schedule 40. For any other casing diameter not addressed herein, prior approval by the state engineer is required. Conversions: $0.250 = 1/4$, $0.312 = 5/16$, $0.375 = 3/8$, $0.438 = 7/16$.

11.2.4 Plastic and Other Non-metallic Casing.

11.2.4.1 Materials. PVC well casing and screen may be installed in Utah upon obtaining permission of the well owner. Other types of non-metallic casing or screen must be approved by the state engineer prior to installation. Plastic well casing and screen shall be manufactured and installed to conform with The American National Standards Institute (ANSI) or the American Society for Testing and Materials (ASTM) Standard F 480 (most recent version), which are incorporated by reference to these rules. Casing and screen meeting this standard is normally marked "WELL CASING" and with the ANSI/ASTM designation "F 480-[version year], SDR-17 (or 13.5, 21, etc.)". All plastic casing and screen for use in potable water supplies shall be manufactured to be acceptable to the American National Standards Institute/National Sanitation Foundation (NSF) standard 61. Other types of plastic casings and screens may be installed upon

R655-4-11. Well Drilling and Construction Requirements

manufacturers certification that such casing meets or exceeds the above described ASTM/SDR specification or ANSI/NSF approval and upon state engineer approval.

11.2.4.2 Minimum Wall Thickness and Depth Requirements. PVC well casing and screen with a nominal diameter equal to or less than four (4) inches and for non-production well purposes shall meet the minimum wall thickness required under ASTM Standard F480-95 SDR 21 or a Schedule 40 designation. PVC well casing and screen use for water production well purposes with a nominal diameter equal to or less than four (4) inches shall meet the minimum wall thickness required under ASTM Standard F480-95 SDR 17 or a Schedule 80 designation. PVC well casing and screen with a nominal diameter greater than four (4) inches shall meet the minimum wall thickness required under ASTM Standard F480 (most recent version) SDR 17 or a Schedule 80 designation. Additionally, caution should be used whenever other than factory slots or perforations are added to PVC well casing. The installation of hand cut slots or perforations significantly reduces the collapse strength tolerances of unaltered casings. The depth at which plastic casing and screen is placed in a well shall conform to the minimum requirements and restrictions as outlined in ASTM Standard F-480 (most recent version) and to PVC casing manufacturer recommendations. Liner pipe does not need to meet these wall thickness requirements if it is placed inside of a casing that does meet these wall thickness requirements.

11.2.4.3 Fiberglass Casing. Fiberglass reinforced plastic well casings and screens may be installed in wells upon obtaining permission of the well owner. All fiberglass casing or screens installed in wells for use in potable water supplies shall be manufactured to be acceptable by ANSI/NSF Standard 61 and upon state engineer approval.

11.2.4.4 Driving Non-metallic Casing. Non-metallic casing shall not be driven, jacked, or dropped and may only be installed in an oversized borehole.

11.2.4.5 Protective Casing. If plastic or other non-metallic casing is utilized, the driller shall install a protective steel casing which complies with the provisions of Subsection 11.2.3 or an equivalent protective covering approved by the state engineer over and around the well casing at ground surface to a depth of at least two and one half (2.5) feet. If a pitless adapter is installed on the well, the bottom of the protective cover shall be placed above the pitless adapter/well connection. If the pitless adapter is placed in the protective casing, the protective casing shall extend below the pitless entrance in the well casing and be sealed both on the outside of the protective casing and between the protective casing and well casing. The protective cover shall be sealed in the borehole in accordance with the requirements of Subsection 11.4. The annular space between the protective cover and non-metallic casing shall also be sealed with acceptable materials in accordance with Subsection 11.4. A sanitary, weather-tight seal or a completely welded cap shall be placed on top of the protective cover, thus enclosing the well itself. If the sanitary seal is vented, screens shall be placed in the vent to

R655-4-11. Well Drilling and Construction Requirements

prevent debris insects, and other animals from entering the well. This protective casing requirement does not apply to monitor wells. Figure 5 depicts this requirement.

11.3 Casing Joints.

11.3.1 General. All well casing joints shall be made water tight. In instances in which a reduction in casing diameter is made, there shall be enough overlap of the casings to prevent misalignment and to insure the making of an adequate seal in the annular space between casings to prevent the movement of unstable sediment or formation material into the well, in addition to preventing the degradation of the water supply by the migration of inferior quality water through the annular space between the two casings.

11.3.2 Steel Casing. All steel casing shall be screw-coupled or welded. If the joints are welded, the weld shall meet American Welding Society standards and be at least as thick as the wall thickness of the casing and shall consist of at least two beads for the full circumference of the joint and be fully penetrating. Spot welding of joints is prohibited.

11.3.3 Plastic Casing. All plastic well casing shall be mechanically screw coupled, chemically welded, cam-locked or lug coupled to provide water tight joints as per ANSI/ASTM F480-95. Metal screws driven into casing joints shall not be long enough to penetrate the inside surface of the casing. Metal screws should be used only when surrounding air temperatures are below 50 degrees Fahrenheit (F) which retards the normal setting of the cement. Solvent-welded joints shall not impart taste, odors, toxic substances, or bacterial contamination to the water in the well.

11.4 Surface Seals and Intervals Seals

11.4.1 General. Before the drill rig is removed from the drill site of a well, a surface seal shall be installed. Well casings shall be sealed to prevent the possible downward movement of contaminated surface waters in the annular space around the well casing. The seal shall also prevent the upward movement of artesian waters within the annular space around the well casing. Depending upon hydrogeologic conditions around the well, interval seals may need to be installed to prevent the movement of groundwater either upward or downward around the well from zones that have been cased out of the well due to poor water quality or other reasons. The following surface and interval seal requirements apply equally to rotary drilled, cable tool drilled, bored, jetted, augered, and driven wells unless otherwise specified.

11.4.2 Seal Material.

11.4.2.1 General. The seal material shall consist of neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout as defined in Section R655-4-2. Use of sealing materials other than those listed above must be approved by the state engineer. Bentonite drilling fluid (drilling mud), dry drilling bentonite, or drill cuttings are not an acceptable sealing material. In no case shall drilling fluid (mud), drill cuttings, drill

R655-4-11. Well Drilling and Construction Requirements

chips, or puddling clay be used, or allowed to fill, partially fill, or fall into the required sealing interval of a well during construction of the well. The annular space to be grouted must be protected from collapse and the introduction of materials other than grout. All hydrated sealing materials (neat cement grout, sand cement grout, bentonite grout) shall be placed by tremie pipe, pumping, or pressure from the bottom of the seal interval upwards in one continuous operation when placed below a depth of 30 feet or when placed below static groundwater level. Neat cement and sand cement grouts must be allowed to cure a minimum of 24 hours before well drilling, construction, or testing may be resumed. Allowable setting times may be reduced or lengthened by use of accelerators or retardants specifically designed to modify setting time, at the approval of the state engineer. The volume of annular space in the seal interval shall be calculated by the driller to determine the estimated volume of seal material required to seal the annular space. The driller shall place at least the volume of material equal to the volume of annular space, thus ensuring that a continuous seal is placed. The driller shall maintain the well casing centered in the borehole during seal placement using centralizers or other means to ensure that the seal is placed radially and vertically continuous. Neat cement and sand cement grout shall not be used for surface or interval seals with PVC and other approved non-metallic casing unless specific state engineer approval is obtained.

11.4.2.2 Bentonite Grout. Bentonite used to prepare grout for sealing shall have the ability to gel; not separate into water and solid materials after it gels; have a hydraulic conductivity or permeability value of $10E-7$ centimeters per second or less; contain at least 20 percent solids by weight of bentonite, and have a fluid weight of 9.5 pounds per gallon or greater and be specifically designed for the purpose of sealing. In addition, if a bentonite grout is to be placed in the vadose zone (unsaturated interval), then clean rounded fine sand shall be added to the bentonite grout in order to increase the overall solids content and stabilize the grout from dehydrating and cracking in that interval. For 20% solids bentonite grout, at least 100 pounds of clean rounded fine sand shall be added. For 30% solids bentonite grout, at least 50 pounds of clean fine sand shall be added. Bentonite grout shall not be used for sealing intervals of fractured rock or sealing intervals of highly unstable material that could collapse or displace the sealing material, unless otherwise approved by the state engineer. Bentonite grout shall not be used as a sealing material where rapidly flowing groundwater might erode it. Bentonite or polymer drilling fluid (mud) does not meet the definition of a grout with respect to density, gel strength, and solids content and shall not be used for sealing purposes. At no time shall bentonite grout contain materials that are toxic, polluting, develop odor or color changes, or serve as a micro-bacterial nutrient. All bentonite grout shall be prepared and installed according to the manufacturer's instructions and these rules. All additives must be certified by a recognized certification authority such as NSF and approved by the state engineer. All bentonite used in any well shall be certified by

R655-4-11. Well Drilling and Construction Requirements

NSF/ANSI approved standards for use in potable water supply wells, or equivalent standards as approved by the state engineer.

11.4.2.3 Unhydrated Bentonite. Unhydrated bentonite (e.g., granular, tabular, pelletized, or chip bentonite) may be used in the construction of well seals above a depth of 50 feet. Unhydrated bentonite can be placed below a depth of 50 feet when placed inside the annulus of two casings, when placed using a tremie pipe, or by using a placement method approved by the state engineer. The bentonite material shall be specifically designed for well sealing and be within industry tolerances. All unhydrated bentonite used for sealing must be free of organic polymers and other contamination. Placement of bentonite shall conform to the manufacturer's specifications and instructions and result in a seal free of voids or bridges. Granular or powdered bentonite shall not be placed under water by gravity feeding from the surface. When placing unhydrated bentonite, a sounding or tamping tool shall be run in the sealing interval during pouring to measure fill-up rate, verify a continuous seal placement, and to break up possible bridges or cake formation.

11.4.3 Seal and Unperforated Casing Placement.

11.4.3.1 General Seal Requirements. Figure 1 illustrates the construction of a surface seal for a typical well. The surface seal must be placed in an annular space that has a minimum diameter of four (4) inches larger than the nominal size of the permanent well casing (This amounts to a 2-inch annulus). The surface seal must extend from land surface to a minimum depth of 30 feet. The completed surface seal must fully surround the permanent well casing, must be evenly distributed, free of voids, and extend to undisturbed or recompacted soil. In unconsolidated formations such as gravels, sands, or other unstable conditions when the use of drilling fluid or other means of keeping the borehole open are not employed, either a temporary surface casing with a minimum depth of 30 feet and a minimum nominal diameter of four (4) inches greater than the outermost permanent casing shall be utilized to ensure proper seal placement or the well driller shall notify the state engineer's office that the seal will be placed in a potentially unstable open borehole without a temporary surface casing by telephone or FAX in conjunction with the start card submittal in order to provide an opportunity for the state engineer's office to inspect the placement of the seal. If a temporary surface casing is utilized, the surface casing shall be removed in conjunction with the placement of the seal. Alternatively, conductor casing may be sealed permanently in place to a depth of 30 feet with a minimum 2-inch annular seal between the surface casing and borehole wall. If the temporary surface casing is to be removed, the surface casing shall be withdrawn as sealing material is placed between the outer-most permanent well casing and borehole wall. The sealing material shall be kept at a sufficient height above the bottom of the temporary surface casing as it is withdrawn to prevent caving of the borehole wall. If the temporary conductor casing is driven in place without a 2-inch annular seal between the surface casing and borehole wall, the surface casing shall be

R655-4-11. Well Drilling and Construction Requirements

removed. Specific state engineer approval must be obtained on a case-by-case basis for any variation of these requirements. Surface seals and unperforated casing shall be installed in wells located in unconsolidated formation such as sand and gravel with minor clay or confining units; unconsolidated formation consisting of stratified layers of materials such as sand, gravel, and clay or other confining units; and consolidated formations according to the following procedures.

11.4.3.2 Unconsolidated Formation without Significant Confining Units. This includes wells that penetrate an aquifer overlain by unconsolidated formations such as sand and gravel without significant clay beds (at least six feet thick) or other confining formations. The surface seal must be placed in a 2-inch annular space to a minimum depth of 30 feet. Permanent unperforated casing shall extend at least to a depth of 30 feet and also extend below the lowest anticipated pumping level. Additional casing placed in the open borehole below the required depths noted above shall meet the casing requirements of Subsection 9.2 unless the casing is installed as a liner inside a larger diameter approved casing.

11.4.3.3 Unconsolidated Formation with Significant Confining Units. This includes wells that penetrate an aquifer overlain by clay or other confining formations that are at least six (6) feet thick. The surface seal must be placed in a 2-inch annular space to a minimum depth of 30 feet and at least five (5) feet into the confining unit above the water bearing formation. Unperforated casing shall extend from ground surface to at least 30 feet and to the bottom of the confining unit overlying the water bearing formation. If necessary to complete the well, a smaller diameter casing, liner, or well screen may be installed below the unperforated casing. The annular space between the two casings shall be sealed with grout, bentonite, or a mechanical packer. Additional casing placed in the open borehole below the required depths noted above shall meet the casing requirements of Subsection 11.2 unless the casing is installed as a liner inside a larger diameter approved casing.

11.4.3.4 Consolidated Formation. This includes drilled wells that penetrate an aquifer, either within or overlain by a consolidated formation. The surface seal must be placed in a 2-inch annular space to a minimum depth of 30 feet and at least five (5) feet into competent consolidated formation. Unperforated permanent casing shall be installed to extend to a depth of at least 30 feet and the lower part of the casing shall be driven and sealed at least five (5) feet into the consolidated formation. If necessary to complete the well, a smaller diameter casing, liner, or well screen may be installed below the unperforated casing. The annular space between the two casings shall be sealed with grout, bentonite, or a mechanical packer. Additional casing placed in the open borehole below the required depths noted above shall meet the casing requirements of Subsection 11.2 unless the casing is installed as a liner inside a larger diameter approved casing.

11.4.3.5 Sealing Artesian Wells. Unperforated well casing shall extend into the

R655-4-11. Well Drilling and Construction Requirements

confining stratum overlying the artesian zone, and shall be adequately sealed into the confining stratum to prevent both surface and subsurface leakage from the artesian zone. If leaks occur around the well casing or adjacent to the well, the well shall be completed with the seals, packers, or casing necessary to eliminate the leakage. The driller shall not move the drilling rig from the well site until leakage is completely stopped, unless authority for temporary removal of the drilling rig is granted by the state engineer, or when loss of life or property is imminent. If the well flows naturally at land surface due to artesian pressure, the well shall be equipped with a control valve so that the flow can be completely stopped. The control valve must be available for inspection by the state engineer at all times. All flowing artesian water supply wells shall be tested for artesian shut-in pressure in pounds per square inch and rate of flow in cubic feet per second, or gallons per minute, under free discharge conditions. This data shall be reported on the well log.

11.4.3.6 Exceptions: With state engineer approval, exceptions to minimum seal depths can be made for shallow wells where the water to be produced is at a depth less than 30 feet. In no case shall a surface seal extend to a total depth less than 10 feet below land surface.

11.4.4 Interval Seals. Formations containing undesirable materials (e.g., fine sand and silt that can damage pumping equipment and result in turbid water), contaminated groundwater, or poor quality groundwater must be sealed off so that the unfavorable formation cannot contribute to the performance and quality of the well. These zones, as well as zones with significantly differing pressures, must also be sealed to eliminate the potential of cross contamination or commingling between two aquifers of differing quality and pressure. Figure 4 illustrates this situation. Unless approved by the state engineer, construction of wells that cause the commingling or cross connection of otherwise separate aquifers is not allowed.

11.4.5 Other Sealing Methods. In wells where the above-described methods of well sealing do not apply, special sealing procedures can be approved by the state engineer upon written request by the licensed well driller.

11.5 Special Requirements for Oversized and Gravel Packed Wells. This section applies to wells in which casing is installed in an open borehole without driving or drilling in the casing and an annular space is left between the borehole wall and well casing (e.g., mud rotary wells, flooded reverse circulation wells, air rotary wells in open bedrock).

11.5.1 Oversized Borehole. The diameter of the borehole shall be at least four (4) inches larger than the outside diameter of the well casing to be installed to allow for proper placement of the gravel pack and/or formation stabilizer and adequate clearance for grouting and surface seal installations. In order to accept a smaller diameter casing in any oversized borehole penetrating unconsolidated or stratified formations, the

R655-4-11. Well Drilling and Construction Requirements

annular space must be sealed in accordance with Subsection 11.4. In order to minimize the risk of: 1) borehole caving or collapse; 2) casing failure or collapse; or 3) axial distortion of the casing, it is required that the entire annular space in an oversized borehole between the casing and borehole wall be filled with formation stabilizer such as approved seal material, gravel pack, filter material or other state engineer-approved materials. Well casing placed in an oversized borehole should be suspended at the ground surface until all formation stabilizer material is placed in order to reduce axial distortion of the casing if it is allowed to rest on the bottom of an open oversized borehole. In order to accept a smaller diameter casing, the annular space in an oversized borehole penetrating unconsolidated formations (with no confining layer) must be sealed in accordance with Subsection 11.4 to a depth of at least 30 feet or from static water level to ground surface, whichever is deeper. The annular space in an oversized borehole penetrating stratified or consolidated formations must be sealed in accordance with Subsection 11.4 to a depth of at least 30 feet or five (5) feet into an impervious strata (e.g., clay) or competent consolidated formation overlying the water producing zones back to ground surface, whichever is deeper. Especially in the case of an oversized borehole, the requirements of Subsection 11.4.4 regarding interval sealing must be followed.

11.5.2 Gravel Pack or Filter Material. The gravel pack or filter material shall consist of clean, well-rounded, chemically stable grains that are smooth and uniform. The filter material should not contain more than 2% by weight of thin, flat, or elongated pieces and should not contain organic impurities or contaminants of any kind. In order to assure that no contamination is introduced into the well via the gravel pack, the gravel pack must be washed with a minimum 100 ppm solution of chlorinated water or dry hypochlorite mixed with the gravel pack at the surface before it is introduced into the well (see Table 7 of these rules for required amount of chlorine material).

11.5.3 Placement of Filter Material. All filter material shall be placed using a method that through common usage has been shown to minimize a) bridging of the material between the borehole and the casing, and b) excessive segregation of the material after it has been introduced into the annulus and before it settles into place. It is not acceptable to place filter material by pouring from the ground surface unless proper sounding devices are utilized to measure dynamic filter depth, evaluate pour rate, and minimize bridging and formation of voids.

11.5.4 No Surface Casing Used. If no permanent conductor casing is installed, neat cement grout, sand cement grout, bentonite grout, or unhydrated bentonite seal shall be installed in accordance with Subsection 11.4. Figure 2 of these rules illustrates the construction of a typical well of this type.

11.5.5 Permanent Conductor Casing Used. If permanent conductor casing is installed, it shall be unperforated and installed and sealed in accordance with Subsection 11.4 as depicted in Figure 3 of these rules. After the gravel pack has been installed

R655-4-11. Well Drilling and Construction Requirements

between the conductor casing and the well casing, the annular space between the two casings shall be sealed by either welding a water-tight steel cap between the two casings at land surface or filling the annular space between the two casings with neat cement grout, sand cement grout, bentonite grout, or unhydrated bentonite from at least 50 feet to the surface and in accordance with Subsection 11.4. If a hole will be created in the permanent conductor casing in order to install a pitless adapter into the well casing, the annular space between the conductor casing and well casing shall be sealed to at least a depth of thirty (30) feet with neat cement grout, sand cement grout, bentonite grout, or unhydrated bentonite. A waterproof cap or weld ring sealing the two casings at the surface by itself without the annular seal between the two casings is unacceptable when a pitless adapter is installed in this fashion. Moreover in this case, the annular space between the surface casing and well casing must be at least 2 inches in order to facilitate seal placement.

11.5.6 Gravel Feed Pipe. If a gravel feed pipe, used to add gravel to the gravel pack after well completion, is installed, the diameter of the borehole in the sealing interval must be at least four (4) inches in diameter greater than the permanent casing plus the diameter of the gravel feed pipe. The gravel feed pipe must have at least 2-inches of seal between it and the borehole wall. The gravel feed pipe must extend at least 18 inches above ground and must be sealed at the top with a watertight cap or plug (see Figure 2).

11.5.7 Other Gravel Feed Options. If a permanent surface casing or conductor casing is installed in the construction of a filter pack well, a watertight, completely welded, steel plate (weld ring) at least 3/16 of an inch in thickness shall be installed between the inner production casing and the outer surface/conductor casing at the wellhead. A watertight fill port with threaded cap may be installed for the purpose of placing additional filter pack material in the well.

11.6 Protection of the Aquifer.

11.6.1 Drilling Fluids and LCMs. The well driller shall take due care to protect the producing aquifer from clogging or contamination. Organic substances or phosphate-based substances shall not be introduced into the well or borehole during drilling or construction. Every effort shall be made to remove all substances and materials introduced into the aquifer or aquifers during well construction. "Substances and materials" shall mean all bentonite- and polymer-based drilling fluids, filter cake, and any other inorganic substances added to the drilling fluid that may seal or clog the aquifer. All polymers and additives used in any well shall be certified by NSF/ANSI approval standards for use in potable water supply wells, or equivalent standards as approved by the state engineer. The introduction of lost circulation materials (LCM's) during the drilling process shall be limited to those products which will not present a potential medium for bacterial growth or contamination. Only LCM's which are non-

R655-4-11. Well Drilling and Construction Requirements

organic, which can be safely broken down and removed from the borehole, may be utilized. This includes, but is not limited to, paper/wood products, brans, hulls, grains, starches, hays/straws, and proteins. This is especially important in the construction of wells designed to be used as a public water system supply. All polymers and additives used in any well shall be certified by NSF/ANSI approval standards for use in potable water supply wells, or equivalent standards as approved by the Division. The product shall be clearly labeled as meeting these standards. Polymers and additives must be designed and manufactured to meet industry standards to be nondegrading and must not act as a medium which will promote growth of microorganisms.

11.6.2 Containment of Drilling Fluid. Drilling or circulating fluid introduced into the drilling process shall be contained in a manner to prevent surface or subsurface contamination and to prevent degradation of natural or man-made water courses or impoundments. Rules regarding the discharges to waters of the state are promulgated under R317-8-2 of the Utah Administrative Code and regulated by the Utah Division of Water Quality (Tel. 801-536-6146). Pollution of waters of the state is a violation of the Utah Water Quality Act, Utah Code Annotated Title 19, Chapter 5.

11.6.3 Mineralized, Contaminated or Polluted Water. Whenever a water bearing stratum that contains nonpotable mineralized, contaminated or polluted water is encountered, the stratum shall be adequately sealed off so that contamination or co-mingling of the overlying or underlying groundwater zones will not occur (see Figure 4) Water bearing zones with differing pressures must also be isolated and sealed off in the well to avoid aquifer depletion, wasting of water, and reduction of aquifer pressures.

11.6.4 Down-hole Equipment. All tools, drilling equipment, and materials used to drill, repair, renovate, clean, or install a pump in a well shall be free of contaminants prior to beginning well construction or other in-well activity. Contaminants include lubricants, fuel, bacteria, etc. that will reduce the well efficiency, and any other item(s) that will be harmful to public health and/or the resource or reduce the life of the water well. It is recommended that excess lubricants placed on drilling equipment be wiped clean prior to insertion into the borehole.

11.6.5 Well Disinfection and Chlorination of Water. No contaminated or untreated water shall be placed in a well during construction. Water should be obtained from a chlorinated municipal system. Where this is not possible, the water must be treated to give at least 100 parts per million free chlorine residual. Upon completion of a well or work on a well, the driller or pump installer shall disinfect the well using accepted disinfection procedures to give at least 100 parts per million free chlorine residual equally distributed in the well water from static level to the bottom of the well. A chlorine solution designated for potable water use prepared with either calcium hypochlorite (powdered, granular, or tablet form) or sodium hypochlorite in liquid form shall be used for water well disinfection. Off-the-shelf chlorine compounds intended for home laundry use, pool or fountain use should not be used if they contain additives such

R655-4-11. Well Drilling and Construction Requirements

as antifungal agents, silica ("Ultra" brands), scents, etc. Table 7 provides the amount of chlorine compound required per 100 gallons of water or 100 feet linear casing volume of water to mix a 100 parts per million solution. Disinfection situations not depicted in Table 7 must be approved by the state engineer. Additional recommendations and guidelines for water well system disinfection are available from the state engineer upon request.

TABLE 7
AMOUNT OF CHLORINE COMPOUND FOR EACH 100 FEET OF WATER
STANDING IN WELL (100 ppm solution)

Well Diameter (inches)	Ca-HyCLT* (25% HOCL) (ounces)	Ca-HyCLT (65% HOCL) (ounces)	Na-HyCLT** (12-trade %) (fluid ounces)	Liquid CL*** (100% Cl ₂) (lbs)
2	1.00	0.50	3.5	0.03
4	3.50	1.50	7.0	0.06
6	8.00	3.00	16.0	0.12
8	14.50	5.50	28.0	0.22
10	22.50	8.50	45.0	0.34
12	32.50	12.00	64.0	0.50
14	44.50	16.50	88.0	0.70
16	58.00	26.00	112	0.88
20	90.50	33.00	179	1.36
For every 100 gal. of water add:	5.50	2.00	11.5	0.09
NOTES:	*Calcium Hypochlorite (solid)			
	**Sodium Hypochlorite (liquid)			
	***Liquid Chlorine			

11.7 Special Requirements.

11.7.1 Explosives. Explosives used in well construction shall not be detonated within the section of casing designed or expected to serve as the surface seal of the completed well, whether or not the surface seal has been placed. If explosives are used in the construction of a well, their use shall be reported on the official well log. In no case shall explosives, other than explosive shot perforators specifically designed to perforate steel casing, be detonated inside the well casing or liner pipe.

11.7.2 Access Port. Every well shall be equipped with a usable access port so that the position of the water level, or pressure head, in the well can be measured at all times.

11.7.3 Completion or Abandonment. A licensed driller shall not remove his drill

R655-4-11. Well Drilling and Construction Requirements

rig from a well site unless the well is completed or abandoned. Completion of a well shall include all surface seals, gravel packs or curbs required. Dry boreholes, or otherwise unsuccessful attempts at completing a well, shall be properly abandoned in accordance with Section R655-4-14. Upon completion, all wells shall be equipped with a watertight, tamper-resistant casing cap or sanitary seal.

11.7.4 Surface Security. If it becomes necessary for the driller to temporarily discontinue the drilling operation before completion of the well or otherwise leave the well or borehole unattended, the well and/or borehole must be covered securely to prevent contaminants from entering the casing or borehole and rendered secure against entry by children, vandals, domestic animals, and wildlife.

11.7.5 Pitless Adapters/Units. Pitless adapters or units are acceptable to use with steel well casing as long as they are installed in accordance with manufacturers recommendations and specifications as well as meet the Water Systems Council Pitless Adapter Standard (PAS-97) which are incorporated herein by reference and are available from Water Systems Council, 13 Bentley Dr., Sterling, VA 20165, phone 703-430-6045, fax 703-430-6185 (watersystemscouncil.org). The pitless adaptor, including the cap or cover, casing extension, and other attachments, must be so designed and constructed to be secure, water tight, and to prevent contamination of the potable water supply from external sources. Pitless wellhead configurations shall have suitable access to the interior of the well in order to measure water level and for well disinfection purposes. Pitless configurations shall be of watertight construction throughout and be constructed of materials at least equivalent to and having wall thickness and strength compatible to the casing. Pitless adapters or units are not recommended to be mounted on PVC well casing. If a pitless adapter is to be used with PVC casing, it should be designed for use with PVC casing, and the driller should ensure that the weight of the pump and column do not exceed the strength of the PVC well casing. If it is known that a pitless adapter/unit will be installed on a well, a cement grout seal shall not be allowed within the pitless unit or pitless adaptor sealing interval as the well is being constructed. The pitless adapter or unit sealing interval shall be sealed with unhydrated bentonite as the well is constructed and before pitless installation. Upon pitless adapter/unit installation, the surface seal below the pitless connection shall be protected and maintained. After the pitless adapter/unit has been installed, the associated excavation around the well from the pitless connection to ground surface shall be backfilled and compacted with low permeability fill that includes clay. The pitless adapter or unit, including the cap or cover, pitless case and other attachments, shall be designed and constructed to be watertight to prevent the entrance of contaminants into the well from surface or near-surface sources.

11.7.6 Hydraulic Fracturing. The hydraulic fracturing pressure shall be transmitted through a drill string and shall not be transmitted to the well casing. Hydraulic fracturing intervals shall be at least 20 feet below the bottom of the permanent casing of

R655-4-11. Well Drilling and Construction Requirements

a well. All hydraulic fracturing equipment shall be thoroughly disinfected with a 100 part per million chlorine solution prior to insertion into the well. The driller shall include the appropriate hydraulic fracturing information on the well log including methods, materials, maximum pressures, location of packers, and initial/final yields. In no case shall hydrofracturing allow commingling of waters within the well bore. Clean sand or other material (propping agents) approved by the Division may be injected into the well to hold the fractures open when pressure is removed.

11.7.7 Static Water Level, Well Development, and Well Yield. To fulfill the requirements of Subsection R655-4-4.5.2, new wells designed to produce water shall be developed to remove drill cuttings, drilling mud, or other materials introduced into the well during construction and to restore the natural groundwater flow to the well to the extent possible. After a water production well is developed, a test should be performed to determine the rate at which groundwater can be reliably produced from the well. Following development and testing, the static water level in the well should also be measured. Static water level, well development information, and well yield information shall be noted on the official submittal of the Well Log by the well driller.

11.7.8 Packers. Packers shall be of a material that will not impart taste, odor, toxic substances or bacterial contamination to the water in the well.

11.7.9 Screens. Screens must be constructed of corrosion-resistant material and sufficiently strong to withstand stresses encountered during and after installation. Screen slot openings, screen length, and screen diameter should be sized and designed to provide sufficient open area consistent with strength requirements to transmit sand-free water from the well. Screens should be installed so that exposure above pumping level will not occur.

11.7.10 Openings in the Casing. There shall be no opening in the casing wall between the top of the casing and the bottom of the required casing seal except for pitless adapters, measurement access ports, and other approved openings installed in conformance with these standards. In no case shall holes be cut in the casing wall for the purpose of lifting or lowering casing into the well bore unless such holes are properly welded closed and watertight prior to placement into the well bore.

11.7.11 Casing vents. If a well requires venting, it must terminate in a down-turned position at least 18-inches above ground (land) level, at or above the top of the casing or pitless unit and be covered with a 24 mesh corrosion-resistant screen.

FIGURE 1. TYPICAL CONSTRUCTION OF A DRILLED WELL WITH DRIVEN WELL CASING

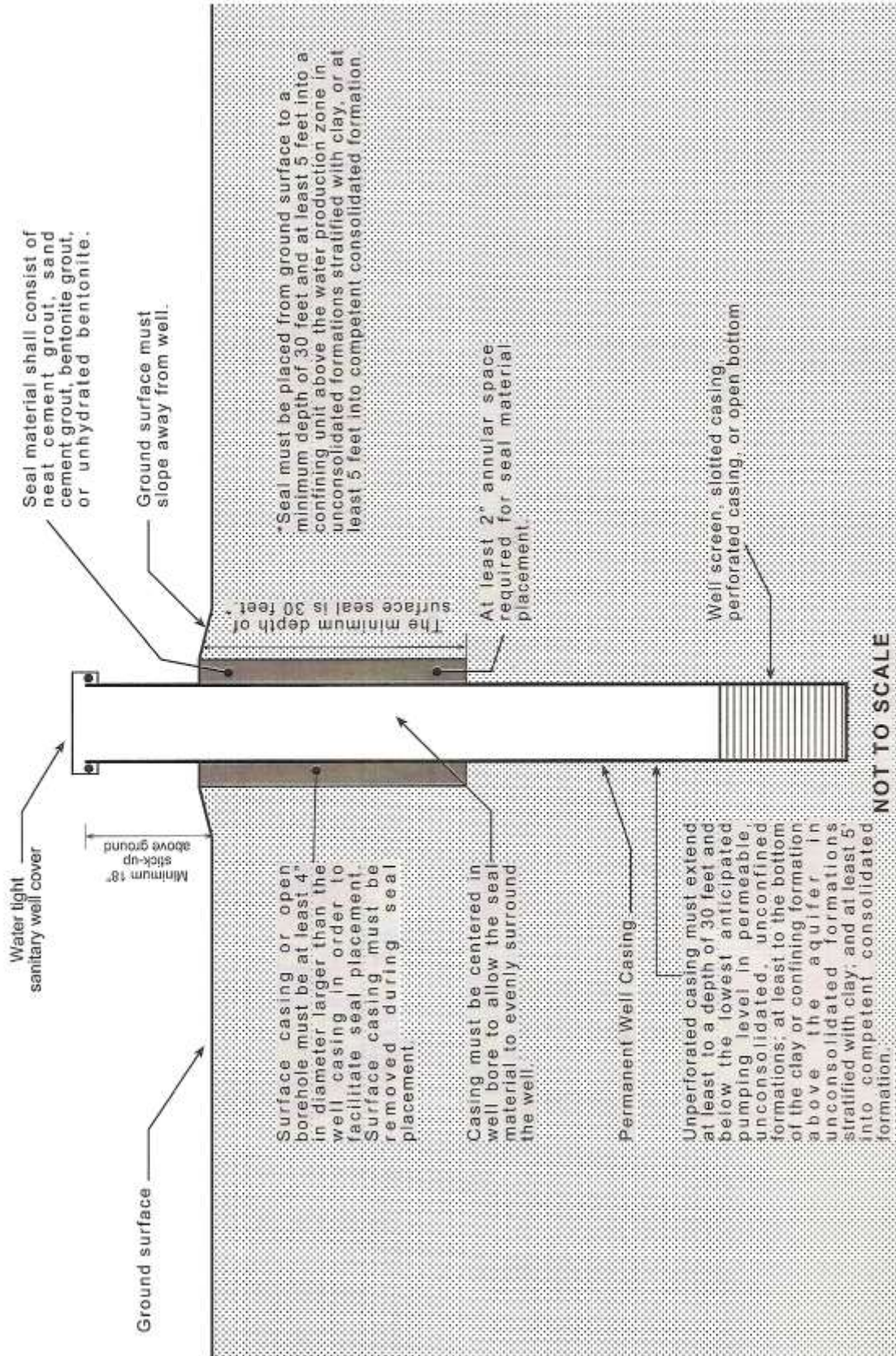


FIGURE 2. TYPICAL CONSTRUCTION OF AN OVERSIZED AND/OR GRAVEL PACKED WELL WITHOUT SURFACE CASING

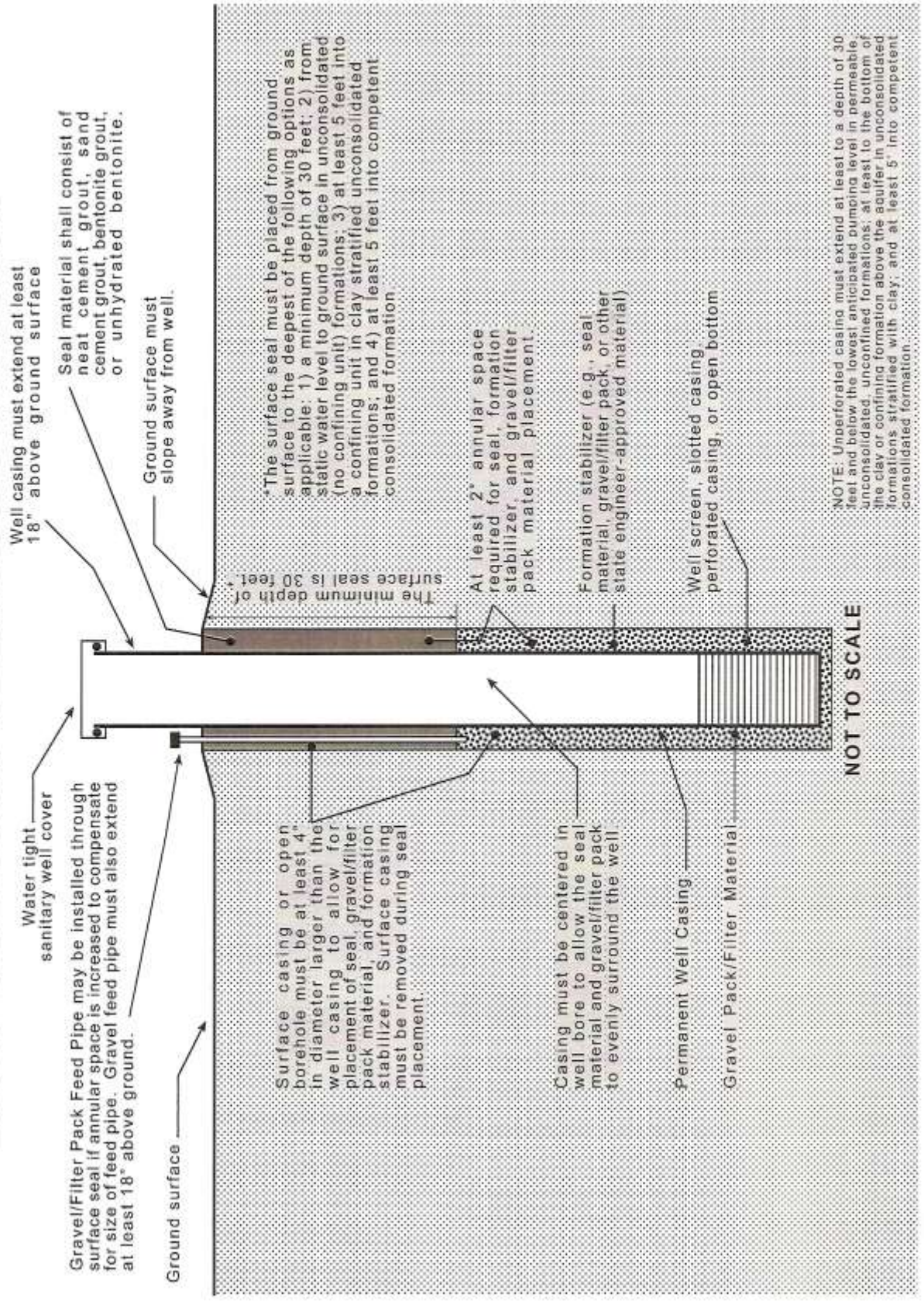


FIGURE 3. TYPICAL CONSTRUCTION OF AN OVERSIZED AND/OR GRAVEL PACKED WELL WITH SURFACE CASING

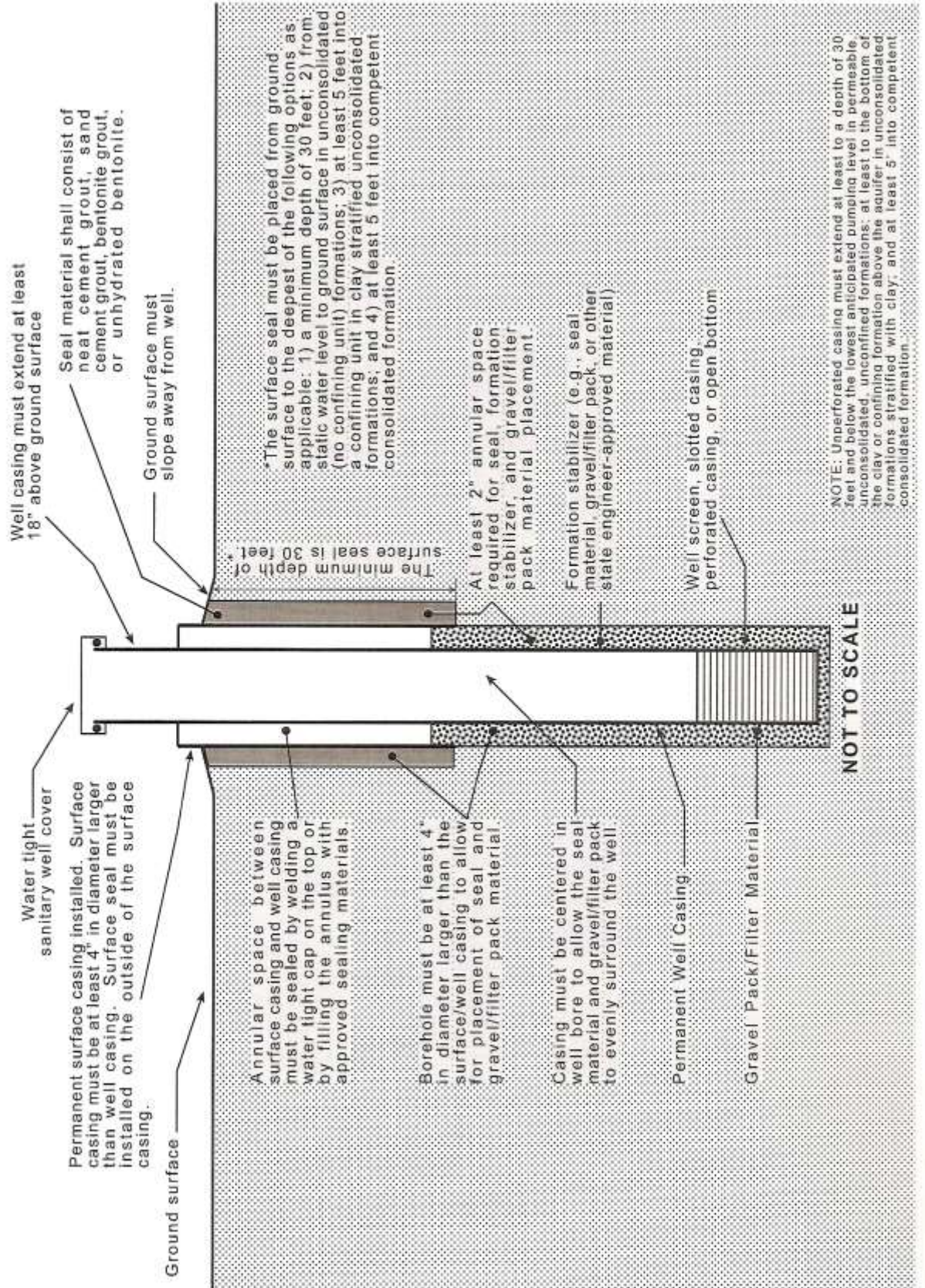


FIGURE 4. TYPICAL CONSTRUCTION OF AN OVERSIZED AND/OR GRAVEL PACKED WELL IN STRATIFIED UNITS

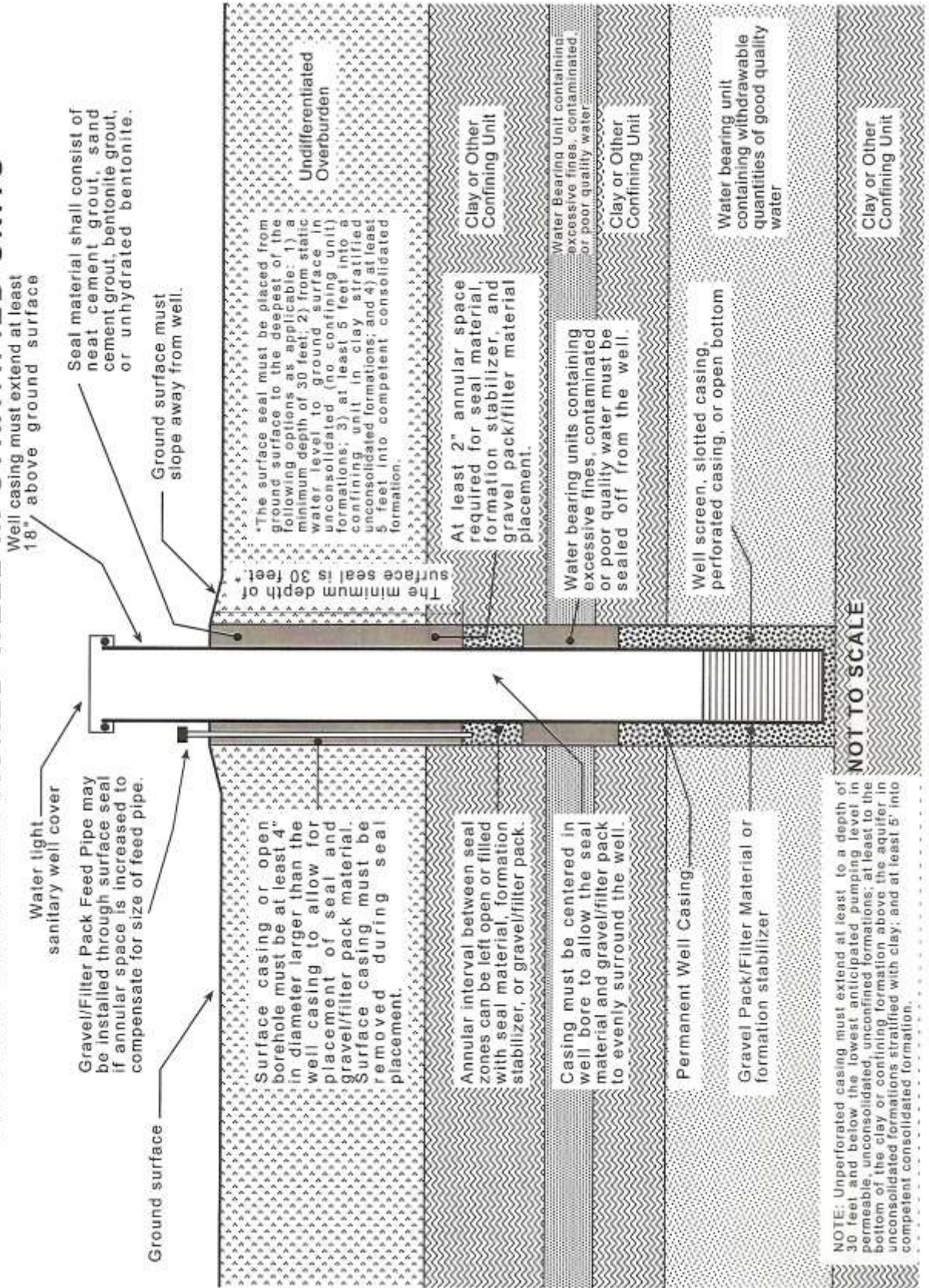
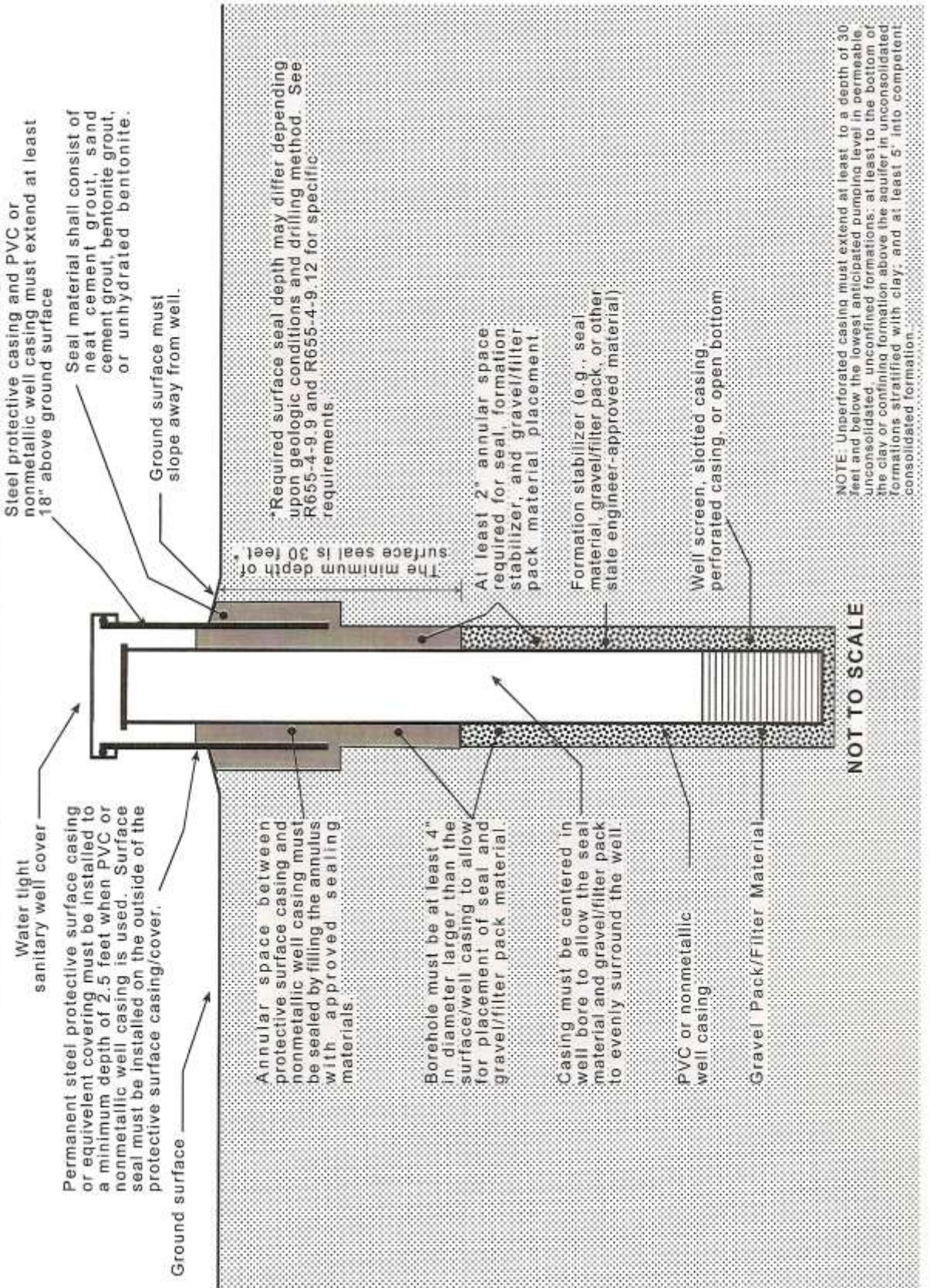


FIGURE 5. TYPICAL CONSTRUCTION OF A WELL COMPLETED WITH PVC OR NONMETALLIC WELL CASING



R655-4-12 Special Wells

12.1 Construction Standards for Special Wells.

12.1.1 General. The construction standards outlined in Section R655-4-11 are meant to serve as minimum acceptable construction standards. Certain types of wells such as cathodic protection wells, closed-loop heating or cooling exchange wells, recharge and recovery wells, and public supply wells require special construction standards that are addressed in this section or in rules promulgated by other regulating agencies. At a minimum, when constructing special wells as listed above, the well shall be constructed by a licensed well driller, and the minimum construction standards of Section R655-4-11 shall be followed in addition to the following special standards.

12.1.2 Public Water Supply Wells. Public water supply wells are subject to the minimum construction standards outlined in Section R655-4-11 in addition to the requirements established by the Department of Environmental Quality, Division of Drinking Water under Rules R309-515 and R309-600. Rules and requirements in R309-515 and R309-600 are regulated by the Division of Drinking Water and not by the Division of Water Rights and may include a preliminary evaluation report related to drinking water source protection, well plan and specification review and approval, and mandatory grout seal inspection (The Division of Drinking Water should be contacted to determine specific and current rules and requirements).

12.1.3 Cathodic Protection Well Construction. Cathodic protection wells shall be constructed in accordance with the casing, joint, surface seal, and other applicable requirements outlined in Section R655-4-11. Any annular space existing between the base of the annular surface seal and the top of the anode and conductive fill interval shall be filled with appropriate fill or sealing material. Fill material shall consist of washed granular material such as sand, pea gravel, or sealing material. Fill material shall not be subject to decomposition or consolidation and shall be free of pollutants and contaminants. Fill material shall not be toxic or contain drill cuttings or drilling mud. Additional sealing material shall be placed below the minimum depth of the annular surface seal, as needed, to prevent the cross-connection and commingling of separate aquifers and water bearing zones. Vent pipes, anode access tubing, and any other tubular materials (i.e., the outermost casing) that pass through the interval to be filled and sealed are considered casing for the purposes of these standards and shall meet the requirements of Subsections R655-4-11.2 and 11.3. Cathodic protection well casing shall be at least 2 inches in internal diameter to facilitate eventual well abandonment. Figure 6 illustrates the construction of a typical cathodic protection well.

12.1.4 Closed-loop Heating/Cooling Exchange Wells. Wells or boreholes utilized for heat exchange or thermal heating in a closed-loop fashion, which are greater than 30 feet in depth and encounter formations containing groundwater,

R655-4-12 Special Wells

must be drilled by a licensed driller and the owner or applicant must have an approved application for that specific purpose as outlined in Section R655-4-9. Wells or boreholes installed for heat or thermal exchange process must comply with the minimum construction standards of Section R655-4-11. Direct exchange (DX) systems are not allowed unless case by case permission is provided by the state engineer.

12.1.4.1 For open-loop systems where groundwater is removed, processed, and re-injected, a non-consumptive use water right approval must be obtained from the state engineer. Approval to re-inject water underground is also required from the Utah Division of Water Quality. Open-loop system wells shall be constructed in accordance with the requirements found in Section R655-4-11. If a separate well or borehole is required for re-injection purposes, it must also comply with these standards and the groundwater must be injected into the same water bearing zones as from which it is initially withdrawn. The quality and quantity of groundwater shall not be diminished or degraded upon re-injection.

12.1.4.2 Closed-loop heat exchange wells must also comply with the guidelines set forth in the National Ground Water Association Guidelines for Construction of Vertical Boreholes for Closed Loop Heat Pump Systems (guidelines are copyrighted and available from the National Ground Water Association at 601 Dempsey Rd, Westerville, OH 43081-8978, Phone 614-898-7791, Fax 614.898-7786, website www.ngwa.org, email customerservice@ngwa.org) or standards set forth in the Design and Installation Standards for Closed-Loop/Geothermal Heat Pump Systems (standards are copyrighted and available from the International Ground Source Heat Pump Association (374 Cordell South, Oklahoma State University, Stillwater, OK 74078-8018, www.igshpa.okstate.edu). These guidelines and standards may be viewed during normal business hours at the Division's main office at 1594 West North Temple, SLC, UT 84116). For closed-loop systems where groundwater is not removed in the process, non-production well approval must be obtained from the state engineer. Specific requirements for closed-loop wells include:

a. The location of closed loop heat pump wells must comply with applicable ordinances, regulations, or other enforceable instruments of local governments to ensure adequate protection of public water systems from encroachments or any impairment of the groundwater resource. During drilling and construction, provisions shall be made to reduce entry of foreign matter or surface runoff into the well or borehole.

b. Closed-loop system wells must be sealed from the bottom of the well/boring to ground surface using acceptable materials and placement methods described in Section 11.4. Sand may be added to the seal mix to enhance thermal conductivity as long as the seal mix meets permeability and gel strength standards outlined in Section 11.4.

R655-4-12 Special Wells

c. **Borehole Diameter:** The borehole diameter of a closed loop heat pump well must be of sufficient size to allow placement of the pipe and placement of a tremie to emplace the grout. In general, for loop piping with a nominal diameter of $\frac{3}{4}$ to 1 inch, the borehole diameter shall be at least 4.75 inches. For loop piping with a nominal diameter of 1.25 inches, the borehole diameter shall be at least 5.25 inches. For loop piping with a nominal diameter of 1.5 to 2.0 inches, the borehole diameter shall be at least 6.0 inches.

d. **Grouting of Vertical Ground Water Heat Pump Wells:** Grouting the annulus of a heat pump well shall be completed within 24 hours from the time the borehole is drilled and loaded with the U-bend assembly and within at least 6 hours from the time the drill rig moves off the borehole. Full-length grout placement is required on all vertical closed loop heat pump boreholes.

e. **Placement of Grout Material:** Full-length grout material must be placed by tremie from the bottom of the borehole to the top. The tremie pipe shall be continuously submerged in grout during placement. The tremie pipe must not be left in the borehole. The grout must fill the entire borehole. Grout must not be allowed to free-fall. Once the grout has settled for at least 48 hours, borehole shall be topped off with additional grout as necessary to maintain seal material to ground surface.

f. **Pipe:** Pipe material, joining methods, and installation must meet the guidelines and standards referenced in the National Ground Water Association Guidelines for Construction of Vertical Boreholes for Closed Loop Heat Pump Systems, (guidelines are copyrighted and available from the National Ground Water Association at 601 Dempsey Rd, Westerville, OH 43081-8978, Phone 614-898-7791, Fax 614.898-7786, email customerservice@ngwa.org) and in the Design and Installation Standards for Closed-Loop/Geothermal Heat Pump Systems (standards are copyrighted and available from the International Ground Source Heat Pump Association (374 Cordell South, Oklahoma State University, Stillwater, OK 74078-8018, www.igshpa.okstate.edu). Guidelines and standards may be viewed during normal business hours at the Division's main office at 1594 West North Temple, SLC, UT 84116). U-bend connections shall be factory jointed and piping shall not have any fusion joints below a depth of 30 feet.

g. **Pressure Testing:** Loop piping shall be filled with water and pressure tested prior to installation into the borehole. Loop piping failing this initial pressure testing shall not be installed. The installed system must be pressure tested at a minimum of 2 times the system operating pressure to ensure the integrity of the system. If a pressure loss is detected, the cause must be properly repaired or material replaced or properly plugged. The system shall be pressure tested again following any repairs. Pressure testing procedures shall follow the guidelines and standards in the National Ground Water Association Guidelines for Construction of Vertical Boreholes for Closed Loop Heat Pump Systems, (guidelines are

R655-4-12 Special Wells

copyrighted and available from the National Ground Water Association at 601 Dempsey Rd, Westerville, OH 43081-8978, Phone 614-898-7791, Fax 614.898-7786, email customerservice@ngwa.org) and in the Design and Installation Standards for Closed-Loop/Geothermal Heat Pump Systems (standards are copyrighted and available from the International Ground Source Heat Pump Association (374 Cordell South, Oklahoma State University, Stillwater, OK 74078-8018, www.igshpa.okstate.edu). Guidelines and standards may be viewed during normal business hours at the Division's main office at 1594 West North Temple, SLC, UT 84116).

h. Heat transfer fluid, additives, and inhibitors. The heat transfer fluids, additives, and inhibitors used inside the closed-loop assembly must be nontoxic, safe to install, provide corrosion protection, not promote bacterial growth, and not produce an unacceptable risk to the environment in the event of a system leak. Potassium acetate or ethylene glycol shall not be used as a heat transfer fluid. Water used in the heat transfer fluid mix must be from a treated potable source or be disinfected in accordance with these rules. Use and placement of fluids, additives, and inhibitors shall be in accordance with the guidelines and standards in the National Ground Water Association Guidelines for Construction of Vertical Boreholes for Closed Loop Heat Pump Systems, (guidelines are copyrighted and available from the National Ground Water Association at 601 Dempsey Rd, Westerville, OH 43081-8978, Phone 614-898-7791, Fax 614.898-7786, email customerservice@ngwa.org) and in the Design and Installation Standards for Closed-Loop/Geothermal Heat Pump Systems (standards are copyrighted and available from the International Ground Source Heat Pump Association (374 Cordell South, Oklahoma State University, Stillwater, OK 74078-8018, www.igshpa.okstate.edu). Guidelines and standards may be viewed during normal business hours at the Division's main office at 1594 West North Temple, SLC, UT 84116)

i. Abandonment: When closed-loop heat exchange wells are required to be permanently abandoned (decommissioned and sealed), the most recent version of the standards referenced in the previous section shall be followed. The state engineer shall be notified prior to loop field abandonment. All heat transfer fluids shall be flushed and removed from loop piping prior to abandonment. Below ground loop piping to be abandoned shall be filled completely with acceptable grout and the loop piping ends properly capped or sealed.

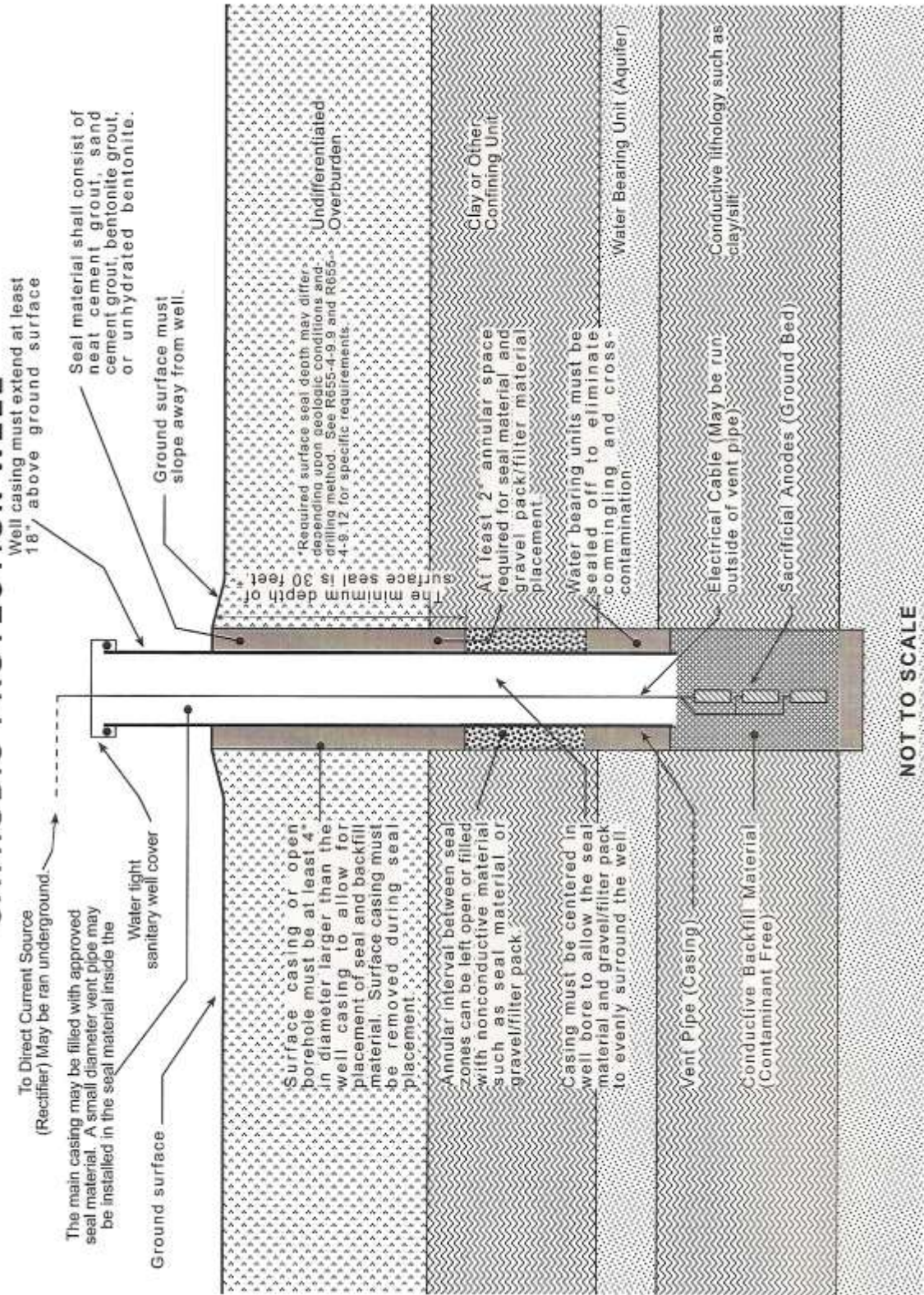
12.1.4.3 The rules herein pertain only to the heating and cooling exchange well constructed to a depth greater than 30 feet and are not intended to regulate the incidental work that may occur up to the well such as plumbing, electrical, piping, trenching, and backfilling activities.

12.1.5 Recharge and Recovery Wells. Any well drilled under the provisions of Title 73, Chapter 3b (Groundwater Recharge and Recovery Act) shall be

R655-4-12 Special Wells

constructed in a manner consistent with these rules and shall be drilled by a currently licensed driller. Special rules regarding the injection of water into the ground are also promulgated under the jurisdiction of the Utah Department of Environmental Quality, Division of Water Quality (Rule R317-7 "Underground Injection Control Program" of the Utah Administrative Code) and must be followed in conjunction with the Water Well Drilling rules.

FIGURE 6. TYPICAL CONSTRUCTION OF A CATHODIC PROTECTION WELL



R655-4-13. Deepening, Rehabilitation, and Renovation of Wells

13.1 Sealing of Casing.

13.1.1 If in the repair of a drilled well, the old casing is withdrawn, the well shall be recased and resealed in accordance with the rules provided in Subsection R655-4-11(11.4).

13.2 Inner Casing.

13.2.1 If an inner casing is installed to prevent leakage of undesirable water into a well, the space between the two well casings shall be completely sealed using packers, casing swedging, pressure grouting, etc., to prevent the movement of water between the casings.

13.3 Outer Casing.

13.3.1 If the "over-drive" method is used to eliminate leakage around an existing well, the casing driven over the well shall meet the minimum specifications listed in Subsection R655-4-11(11.4).

13.4 Artesian Wells.

13.4.1 If upon deepening an existing well, an artesian zone is encountered, the well shall be cased and completed as provided in Subsection R655-4-11(11.4).

13.5 Drilling in a Dug Well.

13.5.1 A drilled well may be constructed through an existing dug well provided that:

13.5.1.1 Unperforated Casing Requirements. An unperforated section of well casing extends from a depth of at least ten (10) feet below the bottom of the dug well and at least 20 feet below land surface to above the maximum static water level in the dug well.

13.5.1.2 Seal Required. A two foot thick seal of neat cement grout, sand cement grout, or bentonite grout is placed in the bottom of the dug well so as to prevent the direct movement of water from the dug well into the drilled well.

13.5.1.3 Test of Seal. The drilled well shall be pumped or bailed to determine whether the seal described in Subsection R655-4-13(13.5.1.2) is adequate to prevent movement of water from the dug well into the drilled well. If the seal leaks, additional sealing and testing shall be performed until a water tight seal is obtained.

13.6 Well Rehabilitation and Cleaning.

13.6.1 Tools used to rehabilitate or clean a well shall be cleaned, disinfected, and free of contamination prior to placement in a well.

13.6.2 The driller shall use rehabilitation and cleaning tools properly so as not

R655-4-13. Deepening, Rehabilitation, and Renovation of Wells

to permanently damage the well or aquifer. If the surface seal is damaged or destroyed in the process of rehabilitation or cleaning, the driller shall repair the surface seal to the standards set forth in Subsection R655-4-11(11.4).

13.6.3 Debris, sediment, and other materials displaced inside the well and surrounding aquifer as a result of rehabilitation or cleaning shall be completely removed by pumping, bailing, well development, or other approved methods.

13.6.4 Detergents, chlorine, acids, or other chemicals placed in wells for the purpose of increasing or restoring yield, shall be specifically designed for that purpose and used according to the manufacturer's recommendations.

13.6.5 Any renovation, rehabilitation, cleaning, or other work on a well that requires alteration of the well itself shall be conducted by a licensed well driller.

13.6.6 Following completion of deepening, renovation, rehabilitation, cleaning, or other work on a well, the well shall be properly disinfected in accordance with Subsection R655-4-11(11.6.5).

R655-4-14 Abandonment of Wells

14.1 Temporary Abandonment.

14.1.1 When any well is temporarily removed from service, the top of the well shall be sealed with a tamper resistant, water-tight cap or seal. If a well is in the process of being drilled and is temporarily abandoned, the well shall be sealed with a tamper resistant, water-tight cap or seal and a surface seal installed in accordance with Subsection R655-4-11(11.4). The well may be temporarily abandoned during construction for a maximum of 90 days. After the 90 day period, the temporarily abandoned well shall be completed as a well that meets the standards of Section 11 or permanently abandoned in accordance with the following requirements, and an official well abandonment report (abandonment log) must be submitted in compliance with Section R655-4-4.

14.2 Permanent Abandonment.

14.2.1 The rules of this section apply to the abandonment of the type of wells listed in Subsection R655-4-1(1.2) including private water wells, public supply wells, monitor wells, cathodic protection wells, and heating or cooling exchange wells. A licensed driller shall notify the state engineer prior to commencing abandonment work of an existing well and submit a complete and accurate abandonment log following abandonment work in accordance with Section R655-4-4 of these rules. Prior to commencing abandonment work, the driller shall obtain a copy of the well log of the well proposed to be abandoned from the well owner or the state engineer, if available, in order to determine the proper abandonment procedure. Any well that is to be permanently abandoned shall be completely filled from bottom to top in a manner to prevent vertical movement of water within the borehole as well as preventing the annular space surrounding the well casing from becoming a conduit for possible contamination of the groundwater supply. A well driller who wishes to abandon a well in a manner that does not comply with the provisions set forth in this section must request approval from the state engineer.

14.3 License Required.

14.3.1 Well abandonment shall be accomplished under the direct supervision of a currently licensed water well driller who shall be responsible for verification of the procedures and materials used.

14.4 Acceptable Materials.

14.4.1 Neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout in accordance with Section R655-4-11.4 shall be used to abandon wells and boreholes. Other sealing materials or additives, such as fly ash, may be used in the preparation of grout upon approval of the state engineer. Drilling mud

R655-4-14 Abandonment of Wells

or drill cuttings shall not be used as any part of a sealing materials for well abandonment. The liquid phase of the abandonment fluid shall be water from a potable municipal system or disinfected in accordance with Subsection R655-4-11(11.6.5).

14.5 Placement of Materials.

14.5.1 Neat cement and sand cement grout shall be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The sealing material shall be placed by the use of a grout pipe, tremie line, dump bailer or equivalent in order to avoid freefall, bridging, or dilution of the sealing materials or separation of aggregates from sealants. Sealing material shall not be installed by freefall (gravity) unless the interval to be sealed is dry and no deeper than 30 feet below ground surface. If the well to be abandoned is a flowing artesian well, the well may be pressure grouted from the surface. The well should be capped immediately after placement of seal materials to allow the seal material to set up and not flow out of the well.

14.5.2 Bentonite-based abandonment products shall be mixed and placed according to manufacturer's recommended procedures and result in a seal free of voids or bridges. Granular or powdered bentonite shall not be placed under water. When placing unhydrated bentonite, a sounding or tamping tool shall be run in the sealing interval during pouring to measure fill-up rate, verify a continuous seal placement, and to break up possible bridges or cake formation.

14.5.3 If seal material settlement occurs during placement and set up, the top of the abandoned well casing or borehole shall be topped off with approved sealing material until the seal top remains at the natural ground surface.

14.5.4 Abandonment materials placed opposite any non-water bearing intervals or zones shall be at least as impervious as the formation or strata prior to penetration during the drilling process.

14.5.5 Prior to well or borehole abandonment, all pump equipment, piping, and other debris shall be removed to the extent possible. The well shall also be sounded immediately before it is plugged to make sure that no obstructions exist that will interfere with the filling and sealing. If the well contains lubricating oil that has leaked from a turbine shaft pump, it shall be removed from the well prior to abandonment and disposed of in accordance with applicable state and federal regulations.

14.5.6 Verification shall be made that the volume of sealing and fill material placed in a well during abandonment operations equals or exceeds the volume of the well or borehole to be filled and sealed.

R655-4-14 Abandonment of Wells

14.6 Termination of Casing.

14.6.1 The casings of wells to be abandoned shall be severed to the natural ground surface or deeper if necessitated by development of the area. If the casing is severed below ground surface, compacted native material shall be placed above the abandoned well upon completion.

14.7 Abandonment of Artesian Wells.

14.7.1 A neat cement grout, sand-cement grout, or concrete plug shall be placed in the confining stratum overlying the artesian zone so as to prevent subsurface leakage from the artesian zone. The remainder of the well shall be filled with sand-cement grout, neat cement grout, bentonite abandonment products, or bentonite grout. The uppermost ten (10) feet of the well shall be abandoned as required in Subsection R655-4-14(14.5.3).

14.8 Abandonment of Drilled and Jetted Wells.

14.8.1 A neat cement grout or sand cement grout plug shall be placed opposite all perforations, screens or openings in the well casing. The remainder of the well shall be filled with cement grout, neat cement, bentonite abandonment products, concrete, or bentonite slurry. The uppermost ten feet of the well shall be abandoned as required in Subsection R655-4-14(14.5.3).

14.9 Abandonment of Gravel Packed Wells.

14.9.1 All gravel packed wells shall be pressure grouted throughout the perforated or screened section of the well. The remainder of the well shall be filled with sand cement grout, neat cement grout, bentonite abandonment products, or bentonite grout. If gravel pack extends above or below the perforated/screened interval in the annular space between the casing and borehole wall, additional perforations in that blank interval of casing shall be required. The uppermost ten feet of the well shall be abandoned as required in Subsection R655-4-14(14.5.3).

14.10 Removal of Casing.

14.10.1 Where possible, it is recommended that the well casing be removed during well abandonment, and when doing so, the abandonment materials shall be placed from the bottom of the well or borehole progressively upward as the casing is removed. The well shall be sealed with sand cement grout, neat cement grout, bentonite abandonment products, or bentonite grout. In the case of gravel packed wells, the entire gravel section shall be pressure grouted. The uppermost ten feet of the well shall be abandoned as required in Subsection R655-4-14(14.5.3).

R655-4-14 Abandonment of Wells

14.11 Replacement Wells.

14.11.1 Wells which are to be removed from operation and replaced by the drilling of a new well under an approved replacement application, shall be abandoned in a manner consistent with the provisions of Section R655-4-14 before the rig is removed from the site of the newly constructed replacement well, unless written authorization to remove the rig without abandonment is provided by the state engineer. Also refer to the requirements provided in Subsection R655-4-4(4.4).

14.12 Abandonment of Cathodic Protection Wells.

14.12.1 The general requirements for permanent well abandonment in accordance with Section R655-4-14 shall be followed for the abandonment of cathodic protection wells.

14.12.2 A cathodic protection well shall be investigated before it is destroyed to determine its condition, details of its construction and whether conditions exist that will interfere with filling and sealing.

14.12.3 Casing, cables, anodes, granular backfill, conductive backfill, and sealing material shall be removed as needed, by re-drilling, if necessary, to the point needed to allow proper placement of abandonment material. Casing that cannot be removed shall be adequately perforated or punctured at specific intervals to allow pressure injection of sealing materials into granular backfill and all other voids that require sealing.

R655-4-15 Monitor Well Construction Standards

15.1 Scope.

15.1.1 Certain construction standards that apply to water wells also apply to monitor wells. Therefore, these monitoring well standards refer frequently to the water well standard sections of the rules. Standards that apply only to monitor wells, or that require emphasis, are discussed in this section. Figure 7 illustrates a schematic of an acceptable monitor well with an above-ground surface completion. Figure 8 illustrates a schematic of an acceptable monitor well with a flush-mount surface completion. Figures 7 and 8 can be viewed in the publication, State of Utah Administrative Rules for Water Wells, most recent edition, available at the Division of Water Rights, 1594 West North Temple, Salt Lake City, Utah.

15.1.2 These standards are not intended as a complete manual for monitoring well construction, alteration, maintenance, and abandonment. These standards serve only as minimum statewide guidelines towards ensuring that monitor wells do not constitute a significant pathway for the movement of poor quality water, pollutants, or contaminants. These standards provide no assurance that a monitor well will perform a desired function. Ultimate responsibility for the design and performance of a monitoring well rests with the well owner and/or the owner's contractor, and/or technical representative(s). Most monitor well projects are the result of compliance with the Environmental Protection Agency (EPA), Federal Regulations such as the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund"), or specific State Solid and Hazardous Waste requirements. The contracts governing their installation are tightly written containing specific requirements as to site location, materials used, sampling procedures and overall objectives. Therefore specific construction requirements for monitor well installation shall be governed by applicable contracts and regulations providing they meet or exceed state requirements and specifications. Guidelines and recommended practices dealing with the installation of monitor wells may be obtained from the state engineer upon request. Additional recommended information may be obtained from the Environmental Protection Agency (EPA), Resource Conservation and Recovery Act (RCRA), Groundwater Monitoring Enforcement and Compliance Document available from EPA's regional office in Denver, Colorado and from the Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, available from the National Groundwater Association in Dublin, Ohio.

15.2 Installation and Construction.

15.2.1 Materials and Equipment Contaminant-Free. All material used in the installation of monitor wells shall be contaminant-free when placed in the ground. Drilling equipment shall be clean and contaminant free in accordance with

R655-4-15 Monitor Well Construction Standards

Subsection R655-4-11(11.6.4). During construction contaminated water should not be allowed to enter contaminant-free geologic formations or water bearing zones.

15.2.2 Borehole Integrity. Some minor cross-contamination may occur during the drilling process, but the integrity of the borehole and individual formations must then be safeguarded from permanent cross connection.

15.2.3 Casing and Screen. The well casing should be perforated or screened and filter packed with sand or gravel where necessary to provide adequate sample collection at depths where appropriate aquifer flow zones exist. The casing and screen selected shall not affect or interfere with the chemical, physical, radiological, or biological constituents of interest. Screens in the same well shall not be placed across separate water bearing zones in order to minimize interconnection, aquifer commingling, and cross contamination. Screens in a nested well can be placed in separate water bearing zones as long as the intervals between the water bearing zones are appropriately sealed and aquifer cross connection and commingling does not occur. Monitor well casing and screen shall conform to ASTM standards, or consist of at least 304 or 316 stainless steel, PTFE (Teflon), or Schedule 40 PVC casing.

15.2.4 Gravel/Filter Pack. If installed, the gravel or filter pack should generally extend two (2) feet to ten (10) feet above screened or perforated areas to prevent the migration of the sealing material from entering the zones being sampled. Gravel or filter pack material shall meet the requirements of Subsection R655-4-11(11.5.2). Gravel/filter pack for monitoring wells does not require disinfection. Drill cutting should not be placed into the open borehole annulus. The well driller shall ensure that a bridge or voids do not occur in the annular space during the placement of the gravel pack by means of a sounding device or other mechanism.

15.2.5 Annular Seal. All monitor wells constructed shall have a continuous surface seal, which seals the annular space between the borehole and the permanent casing, in accordance with the provisions in Section R655-4-11. The surface seal depth requirements of Section R655-4-11 do not apply to monitor wells. The surface seal may be more or less than 50 feet depending on the screen/perforation and/or gravel pack interval. Seals shall also be constructed to prevent interconnection and commingling of separate aquifers penetrated by the well, prevent migration of surface water and contaminations into the well and aquifers, and shall provide casing stability. The seal shall have a minimum diameter of four inches larger than the nominal size of the permanent casing, and shall extend from land surface to the top of the filter pack. After the permanent casing and filter pack (optional) has been set in final position, a layer of bentonite or fine sand (e.g., mortar sand) shall be placed on top of the filter pack to maintain

R655-4-15 Monitor Well Construction Standards

separation between the seal material and the screened interval in order to insure that the seal placement will not interfere with the filter pack. The remaining annular space shall be filled to land surface in a continuous operation with unhydrated bentonite, neat cement grout, sand-cement grout, or bentonite grout. Only potable water should be used to hydrate any grout or slurry mixture. The completed annular space shall fully surround the permanent casing, be evenly distributed, free of voids, and extend from the permanent casing to undisturbed or recompacted soil. All sealing materials and placement methods shall conform to the standards in Section R655-4-2 and Subsection R655-4-11(11.4). The well driller shall ensure that a bridge or voids do not occur in the annular space during the placement of the seal.

15.2.6 Cuttings, Decon Water, Development Water, and Other IDW. Drill cuttings, decontamination (Decon) water, monitor well development water, and other investigation derived waste (IDW) shall be managed and disposed of in accordance with applicable state and federal environmental regulations. It is the responsibility of the driller to know and understand such requirements.

15.3 Minimum Surface Protection Requirements.

15.3.1 If a well is cased with metal and completed above ground surface, a locking water resistant cap shall be installed on the top of the well.

15.3.2 If the well is not cased with metal and completed above ground surface, a protective metal casing shall be installed over and around the well. The protective casing shall be cemented at least two feet into the ground around the nonmetallic casing. A water tight cap shall be installed in the top of the well casing. A locking cap shall be installed on the top of the protective casing.

15.3.3 Monitor wells completed above ground and potentially accessible to vehicular damage shall be protected in the following manner. At least three metal posts, at least three inches in diameter, shall be cemented in place around the casing. Each post shall extend at least three feet above and two feet below ground surface. A concrete pad may be installed to add protection to the surface completion. If installed, the concrete pad shall be at least four (4) inches thick and shall slope to drain away from the well casing. The base shall extend at least two (2) feet laterally in all directions from the outside of the well boring. When a concrete pad is used, the well seal may be part of the concrete pad.

15.3.4 If the well is completed below land surface, a water tight cap with a lock shall be attached to the top of the well casing. A metal monument or equivalent shall be installed over and around the well. The monument shall serve as a protective cover and be installed level with the land surface and be equipped with a waterproof seal to prevent inflow of any water or contaminants. Drains will be provided, when feasible, to keep water out of the well and below the well cap.

R655-4-15 Monitor Well Construction Standards

The monument and cover must be designed to withstand the maximum expected load.

15.4 Abandonment.

15.4.1 Abandonment of monitor wells shall be completed in compliance with the provisions of Section R655-4-14. The provisions of Section R655-4-14 are not required for the permanent abandonment of monitor wells completed at a depth of 30 feet below natural ground surface.

FIGURE 7. TYPICAL CONSTRUCTION OF A MONITORING WELL WITH AN ABOVE-GROUND SURFACE COMPLETION

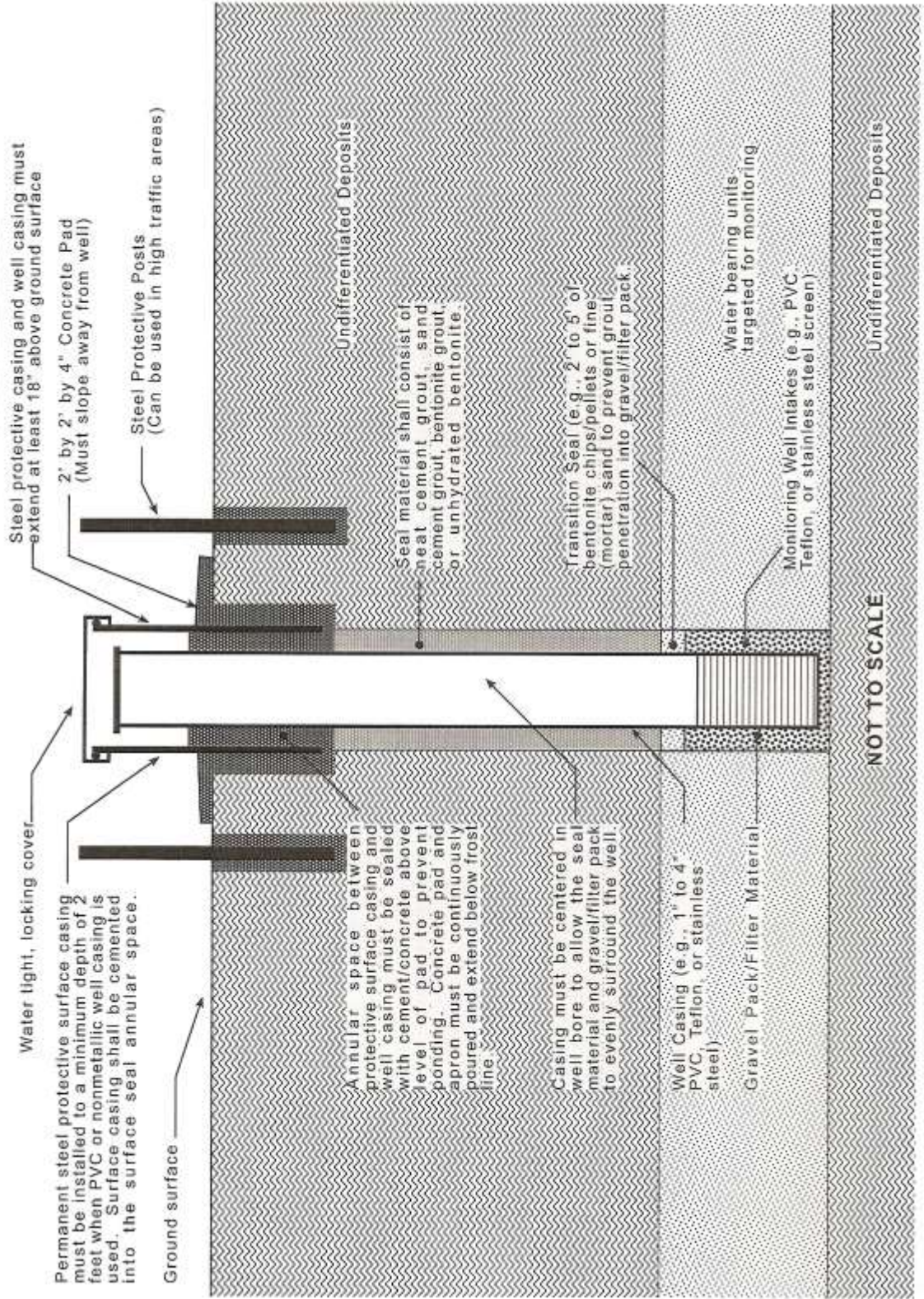
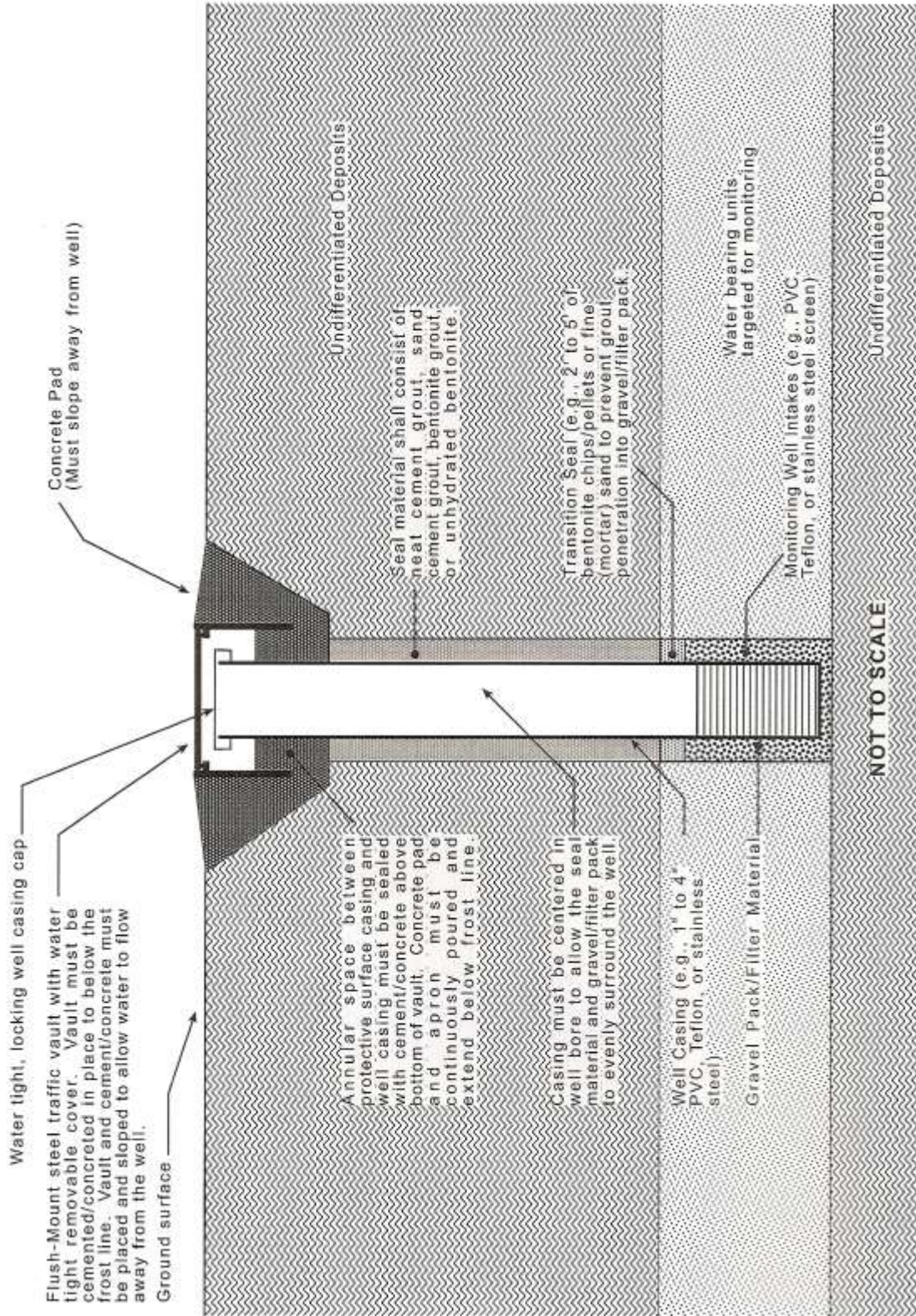


FIGURE 8. TYPICAL CONSTRUCTION OF A MONITORING WELL WITH AN FLUSH-MOUNT SURFACE COMPLETION



R655-4-16 Pump Installation and Repair

16.1 Pump installation practices. All pump installations shall be completed in such a manner as to prevent waste and contamination of groundwater by pollution material entering the well from pumping equipment, casing connectors, fittings, piping, sanitary seals or caps.

16.2 Surface Seal. If in the process of pump installation or repair, the well's surface seal is disturbed or damaged, it shall be repaired and resealed in accordance with the standards provided in Subsection R655-4-11(11.4).

16.3 Tools, Equipment, and Materials. Down-hole tools and equipment used in performance of pump installation and repair shall be cleaned, disinfected, and free of contamination prior to placement in a well. All tools, drilling equipment, and materials used to drill a well shall be free of contaminants prior to beginning pump-related work. Contaminants include lubricants, fuel, bacteria, etc. that will reduce the well efficiency, and any other item(s) that will be harmful to public health and/or the resource or reduce the life of the water well. It is recommended that excess lubricants placed on equipment be wiped clean prior to insertion into the well. Thread Compounds, Sealants, and Lubricants must not exceed the maximum contaminant levels for chemicals, taste, and odor. The licensee shall use pump-related tools and equipment properly so as not to permanently damage the well or aquifer.

16.4 Disinfection. Following completion of pump installation and repair work on a well, the well, pump, and in-well discharge piping shall be properly disinfected in accordance with Subsection R655-4-11(11.6.5).

16.5. Product, Material, and Process Standards. Any product, material or procedure designed for use related to pump installation and repair of water production or non-production wells, which has received certification and approval for its intended use by the National Sanitation Foundation (NSF) under ANSI/NSF Standard 60 or 61, the American Society for Testing Materials (ASTM), the American Water Works Association (AWWA) or the American National Standards Institute (ANSI) may be utilized. Other products, materials or procedures may also be utilized for their intended purpose upon manufacturers certification that they meet or exceed the standards or certifications referred to in this section and upon state engineer approval. Organic substances shall not be introduced into the well or borehole during pump installation and repair work.

16.6 Surface Completions. Pump installers shall leave the well surface completion upon completion of pump installation/repair work in accordance with the standards in

R655-4-16 Pump Installation and Repair

Subsection R655-4-11 as it pertains to casing stick up, steel/PVC casing extensions, sanitary capping and venting, and protective casings. Upon completion, all wells shall be equipped with a watertight, tamper-resistant casing cap or sanitary seal.

16.7 Flowing Artesian Wells. In accordance with Subsection R655-4-11(11.4.3.5, artesian wells that flow naturally at the surface, the well shall be equipped with a control valve so that the flow can be completely stopped. The control valve must be available for inspection by the state engineer at all times.

16.8 Seals Between Casings. If the well is constructed of multiple casing strings at or near the ground surface and if a pitless adapter/unit is installed, the standards of Subsection R655-4-11(11.5.5) shall be employed to ensure proper sealing between casings is maintained.

16.9 Water Level and Flow Measurement. Following pump installation and repair work, the well shall be left in such a manner to allow for access to water level measurements in accordance with R655-4-11(11.7.2). After pump installation and repair work is completed on a well, the static water level should be measured after which a test should be performed to determine the rate at which groundwater can be reliably produced from the well. Pumping water level should be measured and recorded during this test. Static water level and well testing information shall be noted on the official submittal of the Pump Log by the pump installer or well driller.

16.10 Surface Security. If it becomes necessary for the pump installer to temporarily discontinue operation on a well before completion or otherwise leave the well unattended, the well must be covered securely to prevent contaminants from entering the casing and rendered secure against entry by children, vandals, domestic animals, and wildlife.

16.11 Above-grade connections. An above-grade connection into the top or side of a well casing shall be at least eighteen inches (18") above the land surface and shall be constructed so as to exclude dirt or other foreign matter by at least one of the following methods, as may be applicable:

- (A) Threaded connection;
- (B) Welded connection;
- (C) Expansion sealer;
- (D) Bolted flanges with rubber gaskets;
- (E) Overlapping well cap; or
- (F) If a water well pump is mounted or sealed on a concrete pedestal, the casing

R655-4-16 Pump Installation and Repair

shall extend at least to the top of the pedestal and at least eighteen inches (18") above the land surface.

16.12 Pitless Connections. Pitless adapters and units shall be installed in accordance with the standards set forth in Subsection R655-4-11(11.7.5). Pitless adapters shall be installed below the frost line. A below-ground connection shall not be submerged in water at the time of installation. Holes cut in the casing through which the pitless adapters are installed must be sized and constructed so as to guarantee a watertight seal with the pitless adapter in place.

16.13 Backflow Protection. When a check valve or foot valve is not a part of the pump, a check valve or back-siphon prevention device shall be installed on the pump discharge line within the well or beyond the well to eliminate the opportunity for contaminated water to backflush into the well. Such device must be designed to direct or isolate the water flow to prevent water in the distribution line from running back down the well during removal or repair to the pump and pumping equipment. When a flow meter is installed on a well the meter must be located downstream from the backflow preventer and be placed in accordance with manufacturer spacing specifications.

16.14 Hand Pumps. Hand pumps shall be of the force type equipped with a packing gland around the pump rod, a delivery spout which is closed and downward directed, and a one-piece bell-type base which is part of the pump stand or is attached to the pump column in a watertight manner. The bell base of the pump shall be bolted with a gasket to a flange which is securely attached to the casing or pipe sleeve.

16.15 Pumping Water Level. In a screened or perforated well, the well pump setting and suction inlet shall be located so that the pumping level of the water cannot be drawn below the top of the screen.

16.16 Pump and Column/Drop Pipe Removal. During any repair or installation of a water well pump, the licensed installer shall make a reasonable effort to maintain the integrity of ground water and to prevent contamination by elevating the pump column and fittings, or by other means suitable under the circumstances.

APPENDIX 1 - Well Drilling Authorization-Approval Processes

General

Diversion and beneficial use of groundwater from any well requires approval through the appropriation procedures described below. Wells constructed to a depth of less than 30 feet are excluded from regulation under the Administrative Rules for Water Well Drillers, but they must still be approved through one of these appropriation procedures.

Approval to construct a new well

The process for requesting approval to construct private water production wells, public water system supply wells, and recharge and recovery wells is outlined below according to the provisions of Section 73-3 of the Utah Code Annotated.

Authorization to construct a new well is granted by the State Engineer upon approval of any of the following types of applications:

Application to appropriate
Application for an exchange

Application for a permanent change
Application for a temporary change

Application forms are available from the State Engineer's Office. Each type of application requires information relating to the applicant, the amount of water, the point of diversion, the place of use, and the amount and nature of use of the water. A map or maps are required to be submitted with the application. An applicant must be able to demonstrate ownership of the water right before the application will be accepted for filing. A filing fee must be paid at the time the application is submitted which is based upon the amount of water involved in the application.

After the application has been filed, it is reviewed and advertised in a newspaper or newspapers of general circulation in the county in which the source of supply is located and where the water is to be used. The State Engineer may determine whether or not to advertise the application if it is a temporary change (1 year duration), a permanent change of point of diversion which is less than 660 feet from the existing point of diversion, or if it is an application to appropriate or change a small amount of water.

Protests to the application may be filed with the State Engineer within 20 days of the advertisement in the newspaper.

APPENDIX 1 - Well Drilling Authorization-Approval Processes

The State Engineer will determine whether a hearing is necessary to gather further information concerning the impacts of the application. If a hearing is to be held, it will be scheduled for the next hearing date set for the county where the application was advertised. Generally, water rights hearings are held twice a year in each county of the state.

After reviewing the information presented by the applicant and any protestors, the State Engineer will decide whether to approve or deny the application. The applicant and protestors will be notified of the decision by mail. **If the decision is to approve the application, start and applicant cards will be included in the mailing to the applicant.** Both applicant and protestors have the opportunity to request a re-consideration by the State Engineer or to appeal the State Engineer's decision to the district court.

The entire application process from filing to the State Engineer's decision may take between six to twelve months or longer. If an application is not advertised, the length of the process may be reduced to one to three months

Proof process

Whenever a new well has been constructed that was approved by the process described above, the well owner is responsible to submit proof to the State Engineer that the approved water right has been developed. The requirements of submitting proof are outlined in the approval letter sent to the well owner. **Submitting a well log to the State Engineer does not fulfill the requirements of the proof process, the well owner must hire a proof engineer or land surveyor to prepare and submit the proof for them.**

Approval to construct a Provisional, Test Well, or Non-Production Well

(For specific requirements for these types of wells, see Section R655-4-9 of the Administrative Rules for Water Wells.)

Provisional Well: If a water right application has been filed and the applicant desires to commence construction of the well before the application is approved and has a legitimate reason for doing so, authorization to drill may be granted by the State Engineer's regional offices as per Section 73-3-5 (UCA). The written request should be made to the regional office. If provisional authorization to drill is granted, the applicant will be allowed to drill, construct, develop, and test the well only. Water from the provisional well shall not be put to beneficial use until the associated water right application has been approved. The applicant assumes the risk if the associated water right application is denied, and if so, the applicant

APPENDIX 1 - Well Drilling Authorization-Approval Processes

is responsible to have the provisional well properly abandoned by a licensed driller.

Authorization to drill a provisional well will be considered on a case-by-case basis. Approval will be based on the provisions of Section 73-3-1 and Section 73-3-2 of the State Code after a review of the hydrogeologic conditions, the existing rights in the area, the potential for interference, the current appropriation policy for the area. If approval is granted, the start cards will be mailed immediately.

Test Well: Before an application is filed, authorization may be granted by one of the State Engineer's regional offices or the Well Drilling Program in the SLC office to construct a test well for the purpose of determining characteristics of an aquifer or the existence of a useable groundwater source. The request to construct a test well can be made by completing a form entitled "Request for Non-Production Well Construction" (see attached or go to <http://waterrights.utah.gov/forms/nonProdWell.asp>) and submitting it to the regional office or the Well Drilling Program office in the SLC main office. If test well authorization to drill is granted, the applicant will be allowed to drill, construct, develop, and test the well only. Water from the test well shall not be put to beneficial use until an approved water right has been moved into the well. Test wells, unless they are converted to a production well or monitor well, should be properly abandoned by a licensed driller, which is the responsibility of the applicant/owner.

Authorization to drill a test well will be considered on a case-by-case basis. Approval will be based on the provisions of Section 73-3-1 and Section 73-3-2 of the State Code after a review of the hydrogeologic conditions, the existing rights in the area, the potential for interference, the current appropriation policy for the area. If approval is granted, the start cards will be mailed immediately.

Non-Production Well: Approval to drill and construction regulated non-production wells must be obtained from the Well Drilling Program office in the SLC office or the State Engineer's regional offices. Regulated non-production wells include:

- **Monitor Wells:** These wells are used to monitor water level and quality. These wells are not associated with a water right.
- **Cathodic Protection Wells:** These wells are drilled and constructed with a sacrificial anode for the purpose of protecting steel structures at the ground

APPENDIX 1 - Well Drilling Authorization-Approval Processes

surface from galvanic corrosion such as steel pipelines or steel tanks. These wells are not associated with a water right.

- **Closed-Loop Heat Exchange Wells:** These wells utilize the thermal conductivity of soil and groundwater without extracting the groundwater for the purpose of heating and cooling buildings. These wells are not associated with a water right. (Note: Open-Loop heat exchange wells actually extract groundwater to circulate through a heating/cooling exchanger before re-injection into the aquifer and requires a non-consumptive use water right. A Non-Production Well Construction Request should not be used for an open-loop heat exchange well)
- **Other Wells:** These wells may include piezometers, inclinometers, AC Grounding Wells, dewatering wells, temperature gradient wells, etc. that penetrate and case aquifers deeper than 30 feet, but that do not produce groundwater. These wells are not associated with a water right.

The request to construct a non-production well can be made by completing the form entitled “Request for Non-Production Well Construction” (see attached or go to <http://waterrights.utah.gov/forms/nonProdWell.asp>) and submitting it to the regional office or the Well Drilling Program office in the SLC main office. The Division can take up to 14-days to review and respond to the NPW application. If non-production well authorization to drill is granted, the applicant will be allowed to drill, construct, develop, and test the well only. Water from the test well shall not be put to beneficial use. Non-production wells that are no longer being utilized for their intended purpose should be properly abandoned by a licensed driller, which is the responsibility of the applicant/owner.

This permit may not be the only authorization needed to drill a well. The applicant is responsible for obtaining other permits/authorizations from federal agencies, other state agencies, and/or local jurisdictions as applicable. Moreover, if the applicant is not the landowner, it is the applicant's responsibility to ensure that approvals/permissions have been obtained to trespass and drill a well(s) on the property. This permit does not give authorization to trespass on private property.

APPENDIX 1 - Well Drilling Authorization-Approval Processes

REQUEST FOR NON-PRODUCTION WELL CONSTRUCTION UTAH DIVISION OF WATER RIGHTS (for wells deeper than 30 feet)

Well Type (check one):

Test () Monitoring () Cathodic Protection () Closed Loop Heat Exchange* ()
Piezometer () Inclinator () Dewatering () Other _____

*This form cannot be used for open loop heat exchange wells. A non-consumptive use water right application must be filed for open loop heat exchange wells.

Applicant/Owner Name: _____

Mailing Address: _____

Project Address: _____

Contact Person: _____ Phone: _____

Proposed Start Date: _____ Anticipated Completion Date: _____

Well Driller Name & License #: _____ Proposed # of Wells: _____

PROPOSED LOCATION OF WELLS: County: _____ Area: _____

NO./SO. DISTANCE (feet)	EAST/WEST DISTANCE (feet)	SECTION CORNER	SECTION	TOWNSHIP	RANGE	BASE	DIAMETER (inches)	DEPTH (feet)	PROPERTY PARCEL NUMBER

*Use back of form or additional paper if more room is needed. If providing well locations in latitude/longitude or UTM coordinates, please also provide the map datum used (e.g., NAD27, NAD83, WGS84, etc.). **This form must be completed and signed by the owner/applicant and not by the licensed driller.***

EXPLANATORY: _____

Signature of Applicant (attesting to completeness & accuracy) _____ Date _____

FOR OFFICE USE ONLY

Approved By: _____ Approval Date: _____ Non-Production Well No.: _____

APPENDIX 1 - Well Drilling Authorization-Approval Processes

Approval to clean, deepen, or repair a well

A request to clean, deepen or repair a well can be made to one of the State Engineer's regional offices by completing a form entitled "Application to Renovate An Existing Well" (See attached sample or go to <http://waterrights.utah.gov/forms/renovate.asp>). The application will be reviewed by the Division and approval of the request will be granted soon thereafter if the water right is up to date with respect to ownership and title. If the Water Right is not up to date, then additional time may be required to make it so. The regional office will send an approval letter and the start/applicant cards to the water user. Approval to clean, deepen, or repair a well does not include approval to replace the well if the repair cannot be completed.

In an emergency situation, the request may be made and approval granted by telephone, however, a completed application must be then completed and sent to the division to confirm the request. After approval is granted by telephone, the driller must telephone the start card information to the well drilling office before commencing work and then send the card in when it is received from the applicant

Approval to replace a well

If a well must be replaced, the owner may apply to one of the State Engineer's regional offices by completing a form entitled "Application to Replace an Existing Well" (See attached sample form or go to <http://waterrights.utah.gov/forms/replace.asp>). If the new well will be located within 150 feet of the existing well, the request will be approved soon after the application is received by the regional office and an approval letter and start/applicant cards will be sent to the well owner. If the Water Right ownership and title is not up to date, the approval of the application may be delayed until those issues are resolved. If the new well will be located more than 150 feet away from the existing well, the well owner must also file an application for a permanent point of diversion and go through the approval process described in the section "**Approval to construct a new well**" above. When an existing well is replaced by a new well, the well owner is responsible to have the existing well abandoned unless the two well locations are listed on the water right.

APPENDIX 1 - Well Drilling Authorization-Approval Processes

**APPLICATION TO RENOVATE
AN EXISTING WELL
STATE OF UTAH**

Pursuant to Section 73-3-28 Utah Code Annotated 1953, as amended, application is hereby made to the State Engineer to renovate an existing well based on the following showing of facts.

-
1. Water Right No.: _____ Appl./Claim #: _____
Point of Diversion: _____
 2. Owner: _____
Address: _____

 3. The existing well: (check those applicable)
 leaks around the outside of the casing
 casing needs repair
 requires renovation
 requires deepening
 4. The Utah licensed well driller who will perform the work is: Name: _____

 5. Explanatory: _____

The applicant hereby agrees, if this application is approved, to abide by the rules and regulations promulgated by the State Engineer regarding the renovation of existing wells. The applicant further agrees to and hereby authorizes the State Engineer to endorse his original claim or application to show any change resulting from this application.

Signature of Applicant

Signature of Applicant

***** **FOR OFFICE USE ONLY** *****

1. _____ Application filed and received by: _____
2. _____ Application examined by: _____
Recommendation: _____
3. _____ Field examination by: _____
Recommendation: _____
4. _____ Application approve/rejected subject to the following conditions: _____

5. _____ Authority granted under this application will end.

Area Engineer
For Kent L. Jones, P.E.
State Engineer

APPENDIX 1 - Well Drilling Authorization-Approval Processes

APPLICATION TO REPLACE AN EXISTING WELL STATE OF UTAH

Pursuant to Section 73-3-28 Utah Code Annotated 1953, as amended, application is hereby made to the State Engineer to replace an existing well based on the following showing of facts.

-
-
1. Water Right No.: _____ Appl./Claim #: _____
Point of Diversion: _____
 2. Owner: _____
Address: _____

 3. The new well will be _____ ft. north / south and _____ ft. east / west of the existing well, and will be _____ inches in diameter and _____ feet deep.
 4. The Utah licensed well driller who will perform the work is: Name: _____

 5. Explanatory: _____

The applicant hereby agrees, if this application is approved, to abide by the rules and regulations promulgated by the State Engineer regarding the renovation of existing wells, including the abandonment of the existing well once the replacement well has been constructed. The applicant further agrees to and hereby authorizes the State Engineer to endorse his original claim or application to show any change resulting from this application.

Signature of Applicant

Signature of Applicant

***** **FOR OFFICE USE ONLY** *****

1. _____ Application filed and received by: _____
2. _____ Application examined by: _____
Recommendation: _____
3. _____ Field examination by: _____
Recommendation: _____
4. _____ Application approve/rejected subject to the following conditions: _____

5. _____ Authority granted under this application will end.

Area Engineer
For Kent L. Jones, P.E.
State Engineer

Replace

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

73-1-1. Waters declared property of public.

All waters in this state, whether above or under the ground are hereby declared to be the property of the public, subject to all existing rights to the use thereof.

73-1-2. Unit of measurement -- Of flow -- Of volume.

The standard unit of measurement of the flow of water shall be the discharge of one cubic foot per second of time, which shall be known as a second-foot; and the standard unit of measurement of the volume of water shall be the acre-foot, being the amount of water upon an acre covered one foot deep, equivalent to 43,560 cubic feet.

73-1-3. Beneficial use basis of right to use.

Beneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state.

73-2-1. State engineer -- Term -- Powers and duties -- Qualification for duties.

(1) There shall be a state engineer.

(2) The state engineer shall:

(a) be appointed by the governor with the consent of the Senate;

(b) hold office for the term of four years and until a successor is appointed; and

(c) have five years experience as a practical engineer or the theoretical knowledge, practical experience, and skill necessary for the position.

(3) (a) The state engineer shall be responsible for the general administrative supervision of the waters of the state and the measurement, appropriation, apportionment, and distribution of those waters.

(b) The state engineer may secure the equitable apportionment and distribution of the water according to the respective rights of appropriators.

(4) The state engineer shall make rules, in accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, consistent with the purposes and provisions of this title, regarding:

(a) reports of water right conveyances;

(b) the construction of water wells and the licensing of water well drillers;

(c) dam construction and safety;

(d) the alteration of natural streams;

(e) sewage effluent reuse;

(f) geothermal resource conservation; and

(g) enforcement orders and the imposition of fines and penalties.

(5) The state engineer may make rules, in accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, consistent with the purposes and provisions of this title, governing:

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

- (a) water distribution systems and water commissioners;
 - (b) water measurement and reporting;
 - (c) ground-water recharge and recovery;
 - (d) the determination of water rights; and
 - (e) the form and content of applications and related documents, maps, and reports.
- (6) The state engineer may bring suit in courts of competent jurisdiction to:
- (a) enjoin the unlawful appropriation, diversion, and use of surface and underground water without first seeking redress through the administrative process;
 - (b) prevent theft, waste, loss, or pollution of those waters;
 - (c) enable him to carry out the duties of the state engineer's office; and
 - (d) enforce administrative orders and collect fines and penalties.
- (7) The state engineer may:
- (a) upon request from the board of trustees of an irrigation district under Title 17B, Chapter 2a, Part 5, Irrigation District Act, or another local district under Title 17B, Limited Purpose Local Government Entities - Local Districts, or a special service district under Title 17D, Chapter 1, Special Service District Act, that operates an irrigation water system, cause a water survey to be made of all lands proposed to be annexed to the district in order to determine and allot the maximum amount of water that could be beneficially used on the land, with a separate survey and allotment being made for each 40-acre or smaller tract in separate ownership; and
 - (b) upon completion of the survey and allotment under Subsection (7)(a), file with the district board a return of the survey and report of the allotment.
- (8) (a) The state engineer may establish water distribution systems and define their boundaries.
- (b) The water distribution systems shall be formed in a manner that:
 - (i) secures the best protection to the water claimants; and
 - (ii) is the most economical for the state to supervise.

73-2-1.5. Procedures -- Adjudicative proceedings.

Except as provided in Sections **63G-4-102** and **73-2-25**, the state engineer and the Division of Water Rights shall comply with the procedures and requirements of Title 63G, Chapter 4, Administrative Procedures Act, in their adjudicative proceedings.

73-2-14. Fees of state engineer -- Deposited as a dedicated credit.

- (1) The state engineer shall charge fees pursuant to Section 63J-1-504 for the following:
- (a) applications to appropriate water;
 - (b) applications to temporarily appropriate water;
 - (c) applications for permanent or temporary change;
 - (d) applications for exchange;
 - (e) applications for an extension of time in which to resume use of water;

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

- (f) applications to appropriate water, or make a permanent or temporary change, for use outside the state filed pursuant to Title 73, Chapter 3a, Water Exports;
 - (g) groundwater recovery permits;
 - (h) diligence claims for surface or underground water filed pursuant to Section 73-5-13;
 - (i) republication of notice to water users after amendment of application where required by this title;
 - (j) applications to segregate;
 - (k) requests for an extension of time in which to submit proof of appropriation not to exceed 14 years after the date of approval of the application;
 - (l) requests for an extension of time in which to submit proof of appropriation 14 years or more after the date of approval 2-6 of the application;
 - (m) groundwater recharge permits;
 - (n) applications for a well driller's license, annual renewal of a well driller's license, and late annual renewal of a well driller's license;
 - (o) certification of copies;
 - (p) preparing copies of documents;
 - (q) reports of water right conveyance; and
 - (r) requests for a livestock water use certificate under Section 73-3-31.
- (2) Fees for the services specified in Subsections (1)(a) through (i) shall be based upon the rate of flow or volume of water. If it is proposed to appropriate by both direct flow and storage, the fee shall be based upon either the rate of flow or annual volume of water stored, whichever fee is greater.
- (3) Fees collected under this section:
- (a) shall be deposited in the General Fund as a dedicated credit to be used by the Division of Water Rights; and
 - (b) may only be used by the Division of Water Rights to:
 - (i) meet the publication of notice requirements under this title;
 - (ii) process reports of water right conveyance;
 - (iii) process a request for a livestock water use certificate; and
 - (iv) hire an employee to assist with processing an application.

73-2-20. Employees authorized to enter and cross lands -- Injuring monuments a crime.

(1) In order to carry out the purposes of this title any person properly employed hereunder is authorized to enter and cross all lands within the state if no damage is done to private property.

(2) It is a crime punishable under Section **73-2-27** for any person to knowingly or intentionally remove or injure any equipment, permanent marks, or monuments made or installed by any person properly employed under this title.

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

73-2-25. State engineer enforcement powers.

(1) For purposes of this section, "initial order" means one of the following issued by the state engineer:

- (a) a notice of violation; or
- (b) a cease and desist order.

(2) (a) The state engineer may commence an enforcement action under this section if the state engineer finds that a person:

- (i) is diverting, impounding, or using water for which no water right has been established;
- (ii) is diverting, impounding, or using water in violation of an existing water right;
- (iii) violates Section **73-5-4**;
- (iv) violates Section **73-5-9**;
- (v) violates a written distribution order from the state engineer;
- (vi) violates an order issued under Section **73-3-29** regarding the alteration of the bed or bank of a natural stream channel;
- (vii) violates a notice or order regarding dam safety issued under Chapter 5a, Dam Safety;
- (viii) fails to submit a report required by Section **73-3-25**; or
- (ix) engages in well drilling without a license required by Section **73-3-25**.

(b) To commence an enforcement action under this section, the state engineer shall issue an initial order, which shall include:

- (i) a description of the violation;
 - (ii) notice of any penalties to which a person may be subject under Section **73-2-26**;
- and
- (iii) notice that the state engineer may treat each day's violation of the provisions listed in Subsection (2)(a) as a separate violation under Subsection **73-2-26(1)(d)**.

(c) The state engineer's issuance and enforcement of an initial order is exempt from Title 63G, Chapter 4, Administrative Procedures Act.

(3) In accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, the state engineer shall make rules necessary to enforce an initial order, which shall include:

(a) provisions consistent with this section and Section **73-2-26** for enforcement of the initial order if a person to whom an initial order is issued fails to respond to the order or abate the violation;

(b) the right to a hearing, upon request by a person against whom an initial order is issued; and

(c) provisions for timely issuance of a final order after:

(i) the person to whom the initial order is issued fails to respond to the order or abate the violation; or

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

(ii) a hearing held under Subsection (3)(b).

(4) A person may not intervene in an enforcement action commenced under this section.

(5) After issuance of a final order under rules made pursuant to Subsection (3)(c), the state engineer shall serve a copy of the final order on the person against whom the order is issued by:

(a) personal service under Utah Rules of Civil Procedure 5; or

(b) certified mail.

(6) (a) The state engineer's final order may be reviewed by trial de novo by the district court in:

(i) Salt Lake County; or

(ii) the county where the violation occurred.

(b) A person shall file a petition for judicial review of the state engineer's final order issued under this section within 20 days from the day on which the final order was served on that person.

(7) The state engineer may bring suit in a court of competent jurisdiction to enforce a final order issued under this section.

(8) If the state engineer prevails in an action brought under Subsection (6)(b) or (7), the state may recover all court costs and a reasonable attorney fee.

73-2-26. Administrative penalties.

(1) (a) As part of a final order issued under Section **73-2-25**, the state engineer may order that a person to whom an order is issued:

(i) pay an administrative fine not to exceed:

(A) \$5,000 for each knowing violation; or

(B) \$1,000 for each violation that is not knowing;

(ii) replace up to 200% of water taken; and

(iii) be liable for any expense incurred by the state engineer or division in investigating and stopping the violation.

(b) The definition of "knowingly" under Subsection **76-2-103(2)** shall apply to determinations under Subsection (1)(a)(i).

(c) The penalties described in Subsection (1)(a) shall be in addition to:

(i) any criminal penalty established for a violation described in Subsection (1); and

(ii) any private right of action.

(d) (i) Each day of a continuing violation of the provisions described in Subsection **73-2-25(2)(a)** or an initial or final order issued under Section **73-2-25** is a separate violation.

(ii) A penalty may not be imposed for a violation of the provisions listed in Subsection **73-2-25(2)(a)** or an initial or a final order issued under Section **73-2-25** for a

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

violation occurring more than 12 months before the day on which a notice of violation is issued.

(e) Separate violations under Subsection (1)(d) may be consolidated for resolution in one enforcement proceeding under Section **73-2-25**.

(f) The state engineer has discretion to pursue an administrative fine, order requiring replacement, or both.

(2) Before imposing a fine or ordering replacement under Subsection (1), the state engineer shall consider:

(a) the value or quantity of water unlawfully taken, including the cost or difficulty of replacing the water;

(b) the gravity of the violation, including the economic injury or impact to others;

(c) whether the person subject to fine or replacement attempted to comply with the state engineer's orders; and

(d) the violator's economic benefit from the violation.

(3) (a) The state engineer may require that the water unlawfully taken be replaced after:

(i) a person fails to request judicial review of a final order issued under Section **73-2-25**; or

(ii) the completion of judicial review, including any appeals.

(b) The state engineer's order shall require that replacement of water begin within one year of the day on which:

(i) the time period for requesting judicial review of a final order issued under Section **73-2-25** expires without a person requesting judicial review of the final order; or

(ii) the completion of judicial review, including any appeals.

(4) Water replaced under Subsection (3) shall be taken from water that the person subject to the order requiring replacement would be entitled to use during the replacement period.

(5) (a) If the state engineer issues an order requiring replacement, a copy of the order shall be placed in the Division of Water Rights' water rights records.

(b) The order requiring replacement shall constitute a lien upon the water right affected if

the state engineer files a notice of lien in the office of the county recorder in the county where the place of use of the water right is located.

(c) A notice of lien under Subsection (5)(b) shall include a legal description of the place of use of the water right.

(6) Any monies collected under this section shall be deposited into the General Fund.

73-2-27. Criminal penalties.

(1) This section applies to offenses committed under:

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

- (a) Section **73-1-14**;
- (b) Section **73-1-15**;
- (c) Section **73-2-20**;
- (d) Subsection **73-3-3(9)**;
- (e) Section **73-3-26**;
- (f) Section **73-3-29**;
- (g) Section **73-5-9**;
- (h) Section **76-10-201**;
- (i) Section **76-10-202**; and
- (j) Section **76-10-203**.

(2) Under circumstances not amounting to an offense with a greater penalty under Subsection **76-6-106(2)(b)(ii)** or Section **76-6-404**, violation of a provision listed in Subsection (1) is punishable:

(a) as a felony of the third degree if:

(i) the value of the water diverted or property damaged or taken is \$2,500 or greater; and

(ii) the person violating the provision has previously been convicted of violating the same provision;

(b) as a class A misdemeanor if:

(i) the value of the water diverted or property damaged or taken is \$2,500 or greater; or

(ii) the person violating the provision has previously been convicted of violating the same provision; or

(c) as a class B misdemeanor if Subsection (2)(a) or (b) does not apply.

73-3-1. Appropriation -- Manner of acquiring water rights.

(1) A person may acquire a right to the use of the unappropriated public waters in this state only as provided for in this title.

(2) The appropriation of public waters in the state shall comply with the requirements of this title.

(3) Except as provided in Subsection (7), a person obtaining, initiating the use of, or providing notice of intent to appropriate a water right shall comply with the requirements of this chapter.

(4) An appropriation may be made only for a useful and beneficial purpose.

(5)(a) Between appropriators, the one first in time is first in rights.

(b) A use designated by an application to appropriate any of the unappropriated waters of the state that would materially interfere with a more beneficial use of the water shall be dealt with as provided in Section 73-3-8.

(6) A person may not acquire a right to the use of water either appropriated or

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

unappropriated by adverse use or adverse possession.

(7) Notwithstanding Section 73-3-2, a person may directly capture and store precipitation as provided in Section 73-3-1.5.

73-3-2. Application for right to use unappropriated public water -- Necessity -- Form -- Contents -- Validation of prior applications by state or United States or officer or agency thereof.

(1) (a) In order to acquire the right to use any unappropriated public water in this state, any person who is a citizen of the United States, or who has filed his declaration of intention to become a citizen as required by the naturalization laws, or any association of citizens or declarants, or any corporation, or the state of Utah by the directors of the divisions of travel development, business and economic development, wildlife resources, and state lands and forestry, or the executive director of the Department of Transportation for the use and benefit of the public, or the United States of America shall make an application in a form prescribed by the state engineer before commencing the construction, enlargement, extension, or structural alteration of any ditch, canal, well, tunnel, or other distributing works, or performing similar work tending to acquire such rights or appropriation, or enlargement of an existing right or appropriation.

(b) The application shall be upon a form to be furnished by the state engineer and shall set forth:

(i) the name and post office address of the person, corporation, or association making the application;

(ii) the nature of the proposed use for which the appropriation is intended;

(iii) the quantity of water in acre-feet or the flow of water in second-feet to be appropriated;

(iv) the time during which it is to be used each year;

(v) the name of the stream or other source from which the water is to be diverted;

(vi) the place on the stream or source where the water is to be diverted and the nature of the diverting works;

(vii) the dimensions, grade, shape, and nature of the proposed diverting channel; and

(viii) other facts that clearly define the full purpose of the proposed appropriation.

(2) (a) In addition to the information required in Subsection (1)(b), if the proposed use is for irrigation, the application shall show:

(i) the legal subdivisions of the land proposed to be irrigated, with the total acreage thereof; and

(ii) the character of the soil.

(b) In addition to the information required in Subsection (1)(b), if the proposed use is for developing power, the application shall show:

(i) the number, size, and kind of water wheels to be employed and the head under

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

which each wheel is to be operated;

- (ii) the amount of power to be produced;
- (iii) the purposes for which and the places where it is to be used; and
- (iv) the point where the water is to be returned to the natural stream or source.

(c) In addition to the information required in Subsection (1)(b), if the proposed use is for milling or mining, the application shall show:

(i) the name of the mill and its location or the name of the mine and the mining district in which it is situated;

(ii) its nature; and

(iii) the place where the water is to be returned to the natural stream or source.

(d) (i) The point of diversion and point of return of the water shall be designated with reference to the United States land survey corners, mineral monuments or permanent federal triangulation or traverse monuments, when either the point of diversion or the point of return is situated within six miles of the corners and monuments.

(ii) If the point of diversion or point of return is located in unsurveyed territory, the point may be designated with reference to a permanent, prominent natural object.

(iii) The storage of water by means of a reservoir shall be regarded as a diversion, and the point of diversion in those cases is the point where the longitudinal axis of the dam crosses the center of the stream bed.

(iv) The point where released storage water is taken from the stream shall be designated as the point of rediversion.

(v) The lands to be inundated by any reservoir shall be described as nearly as may be, and by government subdivision if upon surveyed land. The height of the dam, the capacity of the reservoir, and the area of the surface when the reservoir is filled shall be given.

(vi) If the water is to be stored in an underground area or basin, the applicant shall designate, with reference to the nearest United States land survey corner if situated within six miles of it, the point of area of intake, the location of the underground area or basin, and the points of collection.

(e) Applications for the appropriation of water filed prior to the enactment of this title, by the United States of America, or any officer or agency of it, or the state of Utah, or any officer or agency of it, are validated, subject to any action by the state engineer.

73-3-3. Permanent or temporary changes in point of diversion, place of use, or purpose of use.

(1) For purposes of this section:

(a) "Permanent change" means a change for an indefinite period of time with an intent to relinquish the original point of diversion, place of use, or purpose of use.

(b) "Temporary change" means a change for a fixed period of time not exceeding one year.

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

(2) (a) Any person entitled to the use of water may make permanent or temporary changes in the:

- (i) point of diversion;
- (ii) place of use; or
- (iii) purpose of use for which the water was originally appropriated.

(b) Except as provided by Section **73-3-30**, a change may not be made if it impairs a vested water right without just compensation.

(3) A person entitled to use water shall change a point of diversion, place of use, or purpose of water use, including water involved in a general adjudication or other suit, in the manner provided in this section.

(4) (a) A person entitled to use water may not make a change unless the state engineer approves the change application.

(b) A person entitled to use water shall submit a change application upon forms furnished by the state engineer and shall set forth:

- (i) the applicant's name;
- (ii) the water right description;
- (iii) the water quantity;
- (iv) the stream or water source;
- (v) if applicable, the point on the stream or water source where the water is diverted;
- (vi) if applicable, the point to which it is proposed to change the diversion of the

water;

- (vii) the place, purpose, and extent of the present use;
- (viii) the place, purpose, and extent of the proposed use; and
- (ix) any other information that the state engineer requires.

(5) (a) The state engineer shall follow the same procedures, and the rights and duties of the applicants with respect to applications for permanent changes of point of diversion, place of use, or purpose of use shall be the same, as provided in this title for applications to appropriate water.

(b) The state engineer may waive notice for a permanent change application involving only a change in point of diversion of 660 feet or less.

(6) (a) The state engineer shall investigate all temporary change applications.

(b) If the state engineer finds that the temporary change will not impair a vested water right, the state engineer shall issue an order authorizing the change.

(c) If the state engineer finds that the change sought might impair a vested water right, before authorizing the change, the state engineer shall give notice of the application to any person whose right may be affected by the change.

(d) Before making an investigation or giving notice, the state engineer may require the applicant to deposit a sum of money sufficient to pay the expenses of the investigation and publication of notice.

(7) (a) Except as provided by Section **73-3-30**, the state engineer may not reject a

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

permanent or temporary change application for the sole reason that the change would impair a vested water right.

(b) If otherwise proper, the state engineer may approve a permanent or temporary change application for part of the water involved or upon the condition that the applicant acquire the conflicting water right.

(8) (a) A person holding an approved application for the appropriation of water may change the point of diversion, place of use, or purpose of use.

(b) A change of an approved application does not:

(i) affect the priority of the original application; or

(ii) extend the time period within which the construction of work is to begin or be completed.

(9) Any person who changes or who attempts to change a point of diversion, place of use, or purpose of use, either permanently or temporarily, without first applying to the state engineer in the manner provided in this section:

(a) obtains no right;

(b) is guilty of a crime punishable under Section **73-2-27** if the change or attempted change is made knowingly or intentionally; and

(c) is guilty of a separately punishable offense for each day of the unlawful change.

(10) (a) This section does not apply to the replacement of an existing well by a new well drilled within a radius of 150 feet from the point of diversion of the existing well.

(b) Any replacement well must be drilled in accordance with the requirements of Section **73-3-28**.

73-3-5. Action by engineer on applications.

(1) On receipt of each application containing the information required by Section **73-3-2**, and payment of the filing fee, it shall be the duty of the state engineer to make an endorsement thereon of the date of its receipt, and to make a record of such receipt for that purpose.

(2) It shall be the duty of the state engineer to examine the application and determine whether any corrections, amendments or changes are required for clarity and if so, see that such changes are made before further processing.

(3) All applications which shall comply with the provisions of this chapter and with the regulations of the state engineer shall be filed and recorded.

(4) The state engineer may issue a temporary receipt to drill a well at any time after the filing of an application to appropriate water therefrom, as provided by this section if all fees be advanced and if in his judgment there is unappropriated water available in the proposed source and there is no likelihood of impairment of existing rights; provided, however, that the issuance of such temporary permits shall not dispense with the publishing of notice and the final approval or rejection of such application by the state engineer, as provided by this chapter.

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

(5) The state engineer may send the necessary notices and address all correspondence relating to each application to the owner thereof as shown by the state engineer's records, or to his attorney in fact provided a written power of attorney is filed in the state engineer's office.

73-3-5.5. Temporary applications to appropriate water -- Approval by engineer -- Expiration -- Proof of appropriation not required.

(1) The state engineer may issue temporary applications to appropriate water for beneficial purposes.

(2) The provisions of this chapter governing regular applications to appropriate water shall apply to temporary applications with the following exceptions:

(a) (i) The state engineer shall undertake a thorough investigation of the proposed appropriation, and if the temporary application complies with the provisions of Section **73-3-8**, may make an order approving the application.

(ii) If the state engineer finds that the appropriation sought might impair other rights, before approving the application, the state engineer shall give notice of the application to all persons whose rights may be affected by the temporary appropriations.

(b) The state engineer may issue a temporary application for a period of time not exceeding one year.

(c) (i) The state engineer, in the approval of a temporary application, may make approval subject to whatever conditions and provisions he considers necessary to fully protect prior existing rights.

(ii) If the state engineer determines that it is necessary to have a water commissioner distribute the water under a temporary application for the protection of other vested rights, the state engineer may assess the distribution costs against the holder of the temporary application.

(d) (i) A temporary application does not vest in its holder a permanent vested right to the use of water.

(ii) A temporary application automatically expires and is cancelled according to its terms.

(e) Proof of appropriation otherwise required under this chapter is not required for temporary applications.

73-3-8. Approval or rejection of application -- Requirements for approval -- Application for specified period of time -- Filing of royalty contract for removal of salt or minerals.

(1) (a) It shall be the duty of the state engineer to approve an application if:

(i) there is unappropriated water in the proposed source;

(ii) the proposed use will not impair existing rights or interfere with the more beneficial use of the water;

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

(iii) the proposed plan is physically and economically feasible, unless the application is filed by the United States Bureau of Reclamation, and would not prove detrimental to the public welfare;

(iv) the applicant has the financial ability to complete the proposed works; and

(v) the application was filed in good faith and not for purposes of speculation or monopoly.

(b) (i) If the state engineer, because of information in the state engineer's possession obtained either by the state engineer's own investigation or otherwise, has reason to believe that an application to appropriate water will interfere with its more beneficial use for irrigation, domestic or culinary, stock watering, power or mining development, or manufacturing, or will unreasonably affect public recreation or the natural stream environment, or will prove detrimental to the public welfare, it is the state engineer's duty to withhold approval or rejection of the application until the state engineer has investigated the matter.

(ii) If an application does not meet the requirements of this section, it shall be rejected.

(2) (a) An application to appropriate water for industrial, power, mining development, manufacturing purposes, agriculture, or municipal purposes may be approved for a specific and certain period from the time the water is placed to beneficial use under the application, but in no event may an application be granted for a period of time less than that ordinarily needed to satisfy the essential and primary purpose of the application or until the water is no longer available as determined by the state engineer.

(b) At the expiration of the period fixed by the state engineer the water shall revert to the public and is subject to appropriation as provided by this title.

(c) No later than 60 calendar days before the expiration date of the fixed time period, the state engineer shall send notice by mail or by any form of electronic communication through which receipt is verifiable, to the applicant of record.

(d) Except as provided by Subsection (2)(e), the state engineer may extend any limited water right upon a showing that:

(i) the essential purpose of the original application has not been satisfied;

(ii) the need for an extension is not the result of any default or neglect by the applicant; and

(iii) the water is still available.

(e) No extension shall exceed the time necessary to satisfy the primary purpose of the original application.

(f) A request for extension of the fixed time period must be filed in writing in the office of the state engineer on or before the expiration date of the application.

(3) (a) Before the approval of any application for the appropriation of water from navigable lakes or streams of the state that contemplates the recovery of salts and other minerals therefrom by precipitation or otherwise, the applicant shall file with the state

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

engineer a copy of a

contract for the payment of royalties to the state.

(b) The approval of an application shall be revoked in the event of the failure of the applicant to comply with terms of the royalty contract.

73-3-25. Well driller's license -- Enforcement.

(1) As used in this section:

(a) "Well" means an open or cased excavation or borehole for diverting, using, or monitoring underground water made by any construction method.

(b) "Well driller" means a person with a license to engage in well drilling for compensation or otherwise.

(c) "Well drilling" means the act of:

(i) drilling, constructing, repairing, renovating, deepening, cleaning, developing, or abandoning a well; or

(ii) installing or repairing a pump in a well.

(2)(a) Notwithstanding Subsection (3), a person who installs or repairs a pump in a well on the person's own property for the person's own use is not required to obtain a license under this section.

(b) Except as provided in Subsection (2)(c), a person who installs or repairs a pump in a well for compensation:

(i) shall obtain a license as required by Subsection (3); and

(ii) is subject to all of this section's provisions.

(c) Notwithstanding the requirements of Subsection

(2)(b), a person who performs electrical repairs on a pump in a well is not required to obtain a license as required by Subsection (3).

(3)(a)(i) A person shall obtain a license as provided in this section before engaging in well drilling.

(ii) The state engineer may enforce Subsection (3)(a)(i) in accordance with Sections 73-2-25 and 73-2-26.

(b) A person applying for a well driller license shall file a well driller bond:

(i) with the state engineer; and

(ii) payable to the Division of Water Rights.

(c)(i) Compliance with this section and the rules authorized by this section is required to obtain or renew a well driller license.

(ii) The state engineer may refuse to issue a license if it appears an applicant violates a rule authorized by this section.

(d) A well driller license is not transferable.

(4) In accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, the

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

state engineer may make rules establishing:

- (a) the amount, form, and general administrative requirements of a well driller bond;
 - (b) the amount of a well driller fine;
 - (c) minimum well drilling standards;
 - (d) well driller reporting requirements;
 - (e) the requirements for obtaining a well driller license, including:
 - (i) a well driller license application form;
 - (ii) the license expiration date; and
 - (iii) the license renewal cycle; and
 - (f) a procedure to enforce a well drilling standard or other well drilling requirement.
- (5)(a) A well driller shall submit a report to the state engineer:
- (i) containing data relating to each well;
 - (ii) within 30 days after the completion or abandonment of the well drilling;
 - (iii) on forms furnished by the state engineer; and
 - (iv) containing information required by the state engineer.
- (b) In accordance with Sections 73-2-25 and 73-2-26, the state engineer may commence an enforcement action against a person who fails to submit a report required by Subsection (5)(a) within 90 days of the day on which the well driller license lapses.
- (6)(a) A well driller shall comply with the rules authorized by this section.
- (b) If the state engineer determines that a well driller has failed to comply with a rule, the state engineer may, in accordance with the procedures established in rule:
- (i)(A) order that a well driller pay a fine; or
 - (B) revoke or suspend the well driller's license; and
- (ii) exact the bond.
- (7)(a) The state engineer shall retain the money from a fine or exacting a bond as a dedicated credit.
- (b) The state engineer may expend:
- (i) money retained from a fine for:
 - (A) well drilling inspection;
 - (B) well drilling enforcement; or
 - (C) well driller education; and
 - (ii) money retained from exacting a bond to investigate or correct a deficiency by a well driller that could adversely affect the public interest resulting from noncompliance with a rule authorized by this section.

73-3-26. Violations -- Penalty.

(1) A person engaged in well drilling, as described in Subsection 73-3-25(1)(c), is guilty of a crime punishable under Section 73-2-27 if the person does not have a current license to engage in well drilling, as provided by this title.

(2) Each day that a violation under Subsection (1) continues is a separate offense.

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

73-3-28. Replacement wells -- Requirements -- State engineer's approval -- Application to drill -- Filing -- Form -- Contents -- Notice -- Fees -- Definition -- Plugging of old well.

An existing well may be replaced with a replacement well within a radius of 150 feet from the existing well without the filing of a change application under Section **73-3-3**, upon approval first having been obtained from the state engineer.

Such request for permission to drill a replacement well shall be filed with the state engineer upon a form to be furnished by the state engineer. Such form shall contain, but need not be limited to, the name and post office address of the person, corporation or association making the request. The number of the claim or application filed with the state engineer covering the well which is being replaced, the number of the award if in a decree, the reason for the replacement, the location of the replacement well with reference to the nearest United States land survey corner, and from the old well, and the name of the driller employed by the applicant to do the work.

No filing fee shall be required for the filing of such a request for permission to drill a replacement well and the state engineer need give only such notice as, in his judgment, is necessary to protect existing rights and in the event the state engineer shall determine that it is necessary to publish notice the advertising fee shall be paid in advance by the applicant.

The term "replacement well" as used herein means a new well drilled for the sole purpose of replacing an existing well which is impaired or made useless by structural difficulties and no new right in the use of water accrues. Upon completion of the new well the old well must be plugged by the applicant in a manner satisfactory to the state engineer.

73-5-9. Powers of state engineer as to waste, pollution, or contamination of waters.

(1) To prevent waste, loss, pollution, or contamination of any waters whether above or below the ground, the state engineer may require the repair or construction of head gates or other devices on ditches or canals, and the repair or installation of caps, valves, or casings on any well or tunnel or the plugging or filling thereof to accomplish the purposes of this section.

(2) Any requirement made by the state engineer in accordance with this section shall be executed by and at the cost and expense of the owner, lessee or person having control of such diverting works affected.

(3) If within ten days after notice of such requirement as provided in this section, the owner, lessee or person having control of the water affected, has not commenced to carry out such requirement, or if he has commenced to comply therewith but shall not

APPENDIX 2 - Selected Water Laws of Utah dealing with Well

Drilling, Groundwater, and Appropriation (See Title 73, Chapters 1-6, 22 of the Utah Code for a complete description of Utah Water Right Law)

thereafter proceed diligently to complete the work, the state engineer may forbid the use of water from such source until the user thereof shall comply with such requirement.

(4) Failure to comply with any requirement made by the state engineer under this section is a crime punishable under Section **73-2-27** if the failure to comply is knowing or intentional.

(5) Each day that such violation is permitted to continue shall constitute a separate offense.

APPENDIX 3 - Well Drilling Reporting Instructions

Start Cards

An approved application to drill a well (new appropriation, replacement, change application, test well, monitor well, heat pump well, cathodic protection well, etc.) will be accompanied by an approval letter to the applicant. Along with the letter, the applicant/owner will receive an official applicant card and driller start card. The applicant card must be kept by the owner/applicant. Once the driller completes the well, the owner/applicant must fill out the applicant card with the appropriate information (well completion date, driller name, signature, date, and any comments) and send the card to the Division of Water Rights. The well owner/applicant must give the start card to the licensed driller to complete, sign, and submit to the Water Rights office before drilling operations commence. **It is a violation of the Administrative Rules for Water Well Drillers to start drilling without notifying the Water Rights office with start card information.** The driller is required to call the Water Rights office or email/fax a copy of the completed start card to the Water Rights Office with the appropriate information from the start card. The start card information can be phoned to the Salt Lake office at (801)538-7416. Alternatively, the completed start card can be faxed to the Salt Lake office at (801)538-7467. Start card can also be hand delivered or emailed (jimgoddard@utah.gov or kellyhorne@utah.gov). If you are calling in the start card information, it is acceptable to leave the information on the voice mail system if a person does not answer the phone. If the start card info is called in, then the original signed and dated start card should be mailed to the Division after the fact. If the start card is emailed or faxed, then the original does not need to be sent in to the Division. If the planned start date is delayed from that notified to the Division of Water Rights, the driller should re-notify the Division with the updated start date. Regardless of the method of submitting start card information, it is highly recommended that the driller keep a copy of every start card in case a problem with reporting requirements arises. At a minimum, the following information must be provided when calling the start card information into the Water Rights Office:

- < Application Number
- < Owner/Applicant Name
- < Well Location including north/south offset, east/west offset, section corner, section, township, range, and base/meridian
- < Well Activity (new, repair, replace, abandon)
- < Proposed Start Date & Projected Completion Date

APPENDIX 3 - Well Drilling Reporting Instructions

- < Licensee/Company Name
- < Licensee Number
- < Whether or not surface casing is used in unconsolidated boreholes with no other means of hole stabilization
- < Other comments as applicable

Approvals, permits, and start cards are not needed for regulated pump installation, cleaning, testing, development, and disinfection where the well itself is not being modified.

Field Inspections

During regulated well activities, the project site may be inspected by Water Rights staff at any time to verify proper authorization and compliance with well and pump rules. Water Rights staff should present credentials, such as a business card, to verify that they are from the Water Rights office. If serious violations are discovered at a drill site, the Water Rights staff, through the authority of the State Engineer, have the authority to immediately shut down the drilling operation, pending a hearing with the State Engineer. In this case, the Water Rights staff will place a cease and desist order (red tag) signed by the State Engineer, on the drill rig. If red tagged, the driller cannot commence drilling activities until specific approval to continue is received from the State Engineer.

Official Well Driller's Report (Well Log)

Once the Water Rights office has received the start card information, the office will prepare an Official Well Driller's Report (Well Log) form (see the sample at the end of this Appendix) and mail it to the licensed driller. The well log form will have the approval number, well owner/applicant name and address, and well location information pre-printed on it. The driller must complete the remaining portions of the form, detailing all aspects of construction, then sign, date, and return it within 30 days of well completion.

In an effort to improve the quality of Well Logs submitted to our office, we have implemented a rigorous review policy. The Administrative Rules for Water Well Drillers section R655-4-4.5.3 states: *Accuracy and completeness of the submitted official Well Driller's Report (well logs) are required.* The information listed on the Well Log is important in that it provides a record of the construction and

Appendix 3 - Well Drilling Reporting Instructions

testing of a well which becomes a part of the legal water right record, and this information is utilized by many including the well owner, the State Engineer's Office, governmental agencies, researchers, consultants, and many others. The Well Log also assists the Water Rights staff in determining if a well is constructed properly according to the minimum construction standards set forth in the Administrative Rules for Water Well Drillers. Thus, it is critical that the Well Log be filled out as completely as possible.

Water Rights staff review each incoming Well Log for deficiencies or improper information. If a Well Log is found to have data missing or is incorrect, the original log will be returned to the driller attached to a cover letter describing the deficiencies. **The Well Log will not be considered officially received until it is corrected and returned to the Division of Water Rights. Moreover, the 30-day deadline (from the well completion date) for submittal of the official Well Log will remain in effect, even though the well log was returned to the driller.** In summary, until a complete and accurate Well Driller's Report is submitted and accepted by the Division of Water Rights, the driller's licensing records will reflect this non-submittal, which means that a driller will not be able to renew their license until the official Well Driller's Report is submitted.

An example of the Official Well Driller's Report form is attached. An original official form will always have a green band on the bottom with the words "Well Log" printed in the green band. The Water Rights office can only accept this official form and copies or substitute forms will not be accepted. The following paragraphs provide some guidance on how to complete the Well Log form:

Well Identification: This section is completed by the Division of Water Rights. This section will contain a water right number or a non-production well number (e.g., test well, monitor wells, cathodic protection wells, heat pump wells), both of which are assigned and preprinted on the form by the Water Rights office.

Owner: This section is also completed by the Division of Water Rights and contains the owner/applicant name and mailing address. The mailing address does not necessarily correspond to the well location address. The driller can complete the Contact Person/Engineer, if known or applicable.

Well Location: This section is also completed by the Division of Water Rights and contains approved Point of Diversion (POD) or well location in the section/township/range coordinate system. It is the driller's responsibility to verify that the location he is drilling is actually the location of the approved well

Appendix 3 - Well Drilling Reporting Instructions

location as provided on the start card and Well Driller's Report. This can easily be verified by checking a USGS 7.5-minute topographic quadrangle map of the area or by using a global positioning system (GPS) set to the NAD83 or WGS84 map datum. An accurate survey is not required or necessary to verify well location. If the actual location differs from that of the approved well location, the driller should note any changes on the report if the driller knows the changes to be accurate. It is illegal to drill a well more than 150 feet from the approved well location without approval from the Division of Water Rights. If an owner wants a driller to drill a well more than 150 feet from the approved location, the driller should notify the owner that a change application must be filed with the Division of Water Rights before drilling commences. If the owner refuses to do this, the driller should notify the Division of Water Rights. The driller can also provide Location Description information such as well street address, proximity to buildings or other prominent landmarks, local or other well name, etc., if available.

Drillers Activity: The drilling start date and completion date (when the driller removes the rig from the location) should always be noted. The driller activity box must also be checked for the appropriate activity (e.g., new, repair, deepen, clean, replace, or public). The Nature of Use must also be noted. The nature of use can include, domestic, commercial, industrial, public, stock watering, irrigation, monitoring, provisional, test well, heat pump well, cathodic protection well, etc.

In the case of a replacement well, the driller must complete the section that describes the location of the replacement well relative to the old well. In most cases, these measurements can simply be made with a tape measure since the replacement well must be within 150 feet of the existing well. When a well is replaced, the owner is obligated to abandon (plug) the old well prior to completion of the replacement well. In order to track this process, the driller will be sent a well log for the replacement well and an abandonment log (see example attached). Both logs must be completed and returned to the Water Rights Office within 30 days of completion of the replacement well. Information required on the abandonment report will be discussed later. If the well owner refuses to abandon the old well after being notified of the requirements by the driller, the driller should note that the owner refused to abandon the well on the abandonment form, sign and date the form, and return it with the well log. Keep in mind that all forms, well log and abandonment log, must be returned to Water Rights, whether or not the well is drilled or abandoned, or else the driller will not have fulfilled the

Appendix 3 - Well Drilling Reporting Instructions

reporting requirements. In other words, the Division tracks every well log and abandonment log that leaves the office to make sure it is returned.

At least one row containing depth range, borehole diameter, drilling method, and drilling fluid should be completed in this section. If a drilling fluid is not used, then put “none used” or "not applicable" (NA) in the blank. Please do not leave the “Drilling Fluid” box blank. Also be as specific as possible on the drilling method (e.g., cable tool, mud rotary, air rotary, air rotary with casing driver and down-the-hole hammer, reverse air rotary, reverse circulation rotary, hollow stem auger percussion hammer, dual rotary, rotasonic, etc.).

Lithologic Log: The lithologic log is very important and care should be taken to complete this section with as much detail as possible. Please indicate with a check where groundwater was encountered during drilling. Please indicate the relative permeability (high or low) of each unit encountered. This only needs to be checked relative to water bearing or saturated formations/units. Please provide color information (follow the Munsell soil and/or rock color name scheme if possible and use descriptors such as light, dark, staining, iron staining, or mottled). Also, please provide a description of the sample with as much detail as possible. Some example properties that can be used to describe samples are listed below. Keep in mind that these are only examples of the type of information that can be provided. The actual descriptions may depend on the drillers understanding of the properties and the quality of the samples retrieved from the borehole.

- rock type (e.g., limestone, dolomite, shale, quartzite, sandstone, granite, basalt, tuff, conglomerate, siltstone, mudstone, rhyolite, etc.)
- grain size (e.g., very fine, fine, medium, coarse, very coarse, etc.)
- sorting (e.g., poorly sorted, well sorted, well graded, poorly graded, etc.)
- grain angularity (e.g., angular, subangular, subrounded, rounded)
- bedding (e.g., stratified, laminated, etc.)
- grain mineralogy/composition (e.g., quartz, feldspar, mica, limestone, sandstone, shale, quartzite, basalt, granite, etc.)
- density (e.g., loose, dense, very dense)
- clay plasticity (e.g., non-plastic, low, medium, high)
- grain shape (e.g., flat, elongate, etc.)
- cementation (e.g., silica, carbonate, sulfate, weak, moderate, strong)
- consistency (e.g., soft, firm, stiff, hard)
- moisture content (e.g., dry, moist, wet, saturated)
- odor (e.g., organic, hydrogen sulfide, hydrocarbons).

Appendix 3 - Well Drilling Reporting Requirements Instructions

- structure (e.g., stratified, laminated, fissured, lensed, intact, blocky, slickensided, etc.)
- fracturing (e.g., jointed, foliated, frequency, density, spacing, aperture)
- texture (e.g., phaneritic, aphanitic, glassy,
- hardness
- weathering

In the description area of the log, other pertinent information such as penetration rate, reaction of the drill rig, loss of circulation, hole caving/heaving, changes to drilling fluid, and encountered contaminants can be included.

Static Water Level: At a minimum, the water level measurement date, the water level, the method of measurement, measurement point, and height of measurement point must be provided. If the well is artesian and flowing at the surface, please check the appropriate box. If you need to convert pressure (psi) to feet of water, or visa versa, there are 2.31 feet per psi. If temperature or flowing pressure were not measured, then please indicate by placing a “NA” (not available) or some other indicator in the blank. A space is provided to include the ground elevation at the wellhead, if available. This information is not mandatory, but if you happen to know the elevation from a recent survey or approximated from a USGS 7.5 minute topographical quadrangle map, please provide it here

Construction Information: At least one row of casing information must be provided in this section including the casing depth range, casing type, casing wall thickness, and casing diameter. Use a separate row for each casing type, diameter, or wall thickness used. Please check the appropriate well intake type, either screen, perforation, or open bottom, as applicable. More than one box can be checked if it applies (e.g., groundwater can enter the well from both perforations in the casing and from the open bottom of the casing). If screen is placed in a well, the screen depth interval, slot size, diameter, and type (e.g., machine-slotted, wire-wrapped stainless steel, louvered, bridge-slotted, etc.) must be recorded. If the well is perforated, the perforated depth interval, perforation size, perforation length, and the number of perforations per round/interval must be recorded. The wellhead configuration (e.g., welded cap, sanitary well seal, pitless adapter, steel protective casing with bollards, etc.), casing joint type (e.g., welded, threaded, glued, Certa-Loc, etc), perforator used (e.g., Mills knife, pneumatic perforator, factory-cut slots, torch, saw, etc.), must be recorded. In the case of driven steel casing, indicate if a drive shoe was utilized.

Appendix 3 - Well Drilling Reporting Requirements Instructions

Surface Seal/Interval Seal/Filter Pack/Packer/Information: Indicate if a surface seal was installed and describe the seal depth and placement procedure in the appropriate blanks. The surface seal material description, quantity, and mixing information must be provided in the proper columns of the Surface Seal/Interval Seal/Filter Pack/Packer Information table. In this table, provide pertinent data for surface seal materials used, materials used to seal off intervals in the borehole such as poor quality water bearing zones, filter/gravel pack information, and packer information. Please provide the specific type/brand of bentonite, if possible. Examples of seal material descriptions include neat cement grout, sand cement grout, Enviroplug bentonite grout, Aquagaurd bentonite grout, Quik-Grout bentonite grout, BH bentonite grout, Volclay bentonite grout, 3/8" Hole Plug bentonite chips, Enviroplug medium/course bentonite chips, Volclay chips, CETCO crumbles, 3/8" Volclay tablets, 3/4" Prime Plug bentonite chips, etc. Be as specific as possible in the description and type of sealing material. Describe in detail any filter pack information for example, 3/8" washed pea gravel, 8-12 CSSI, #8 SRI gravel pack, etc. Be sure to note the **quantity** (e.g., number of 50# sacks, pounds, tons, cubic feet, cubic yards, etc.) of seal material or filter pack used per depth interval. Also note the mixing information (e.g., pounds/gallon, gallons water per sack of cement/bentonite, #bag mix, etc.) in the Grout Density column when neat cement grout, sand cement grout, or bentonite grout is used. This column can be left blank when unhydrated bentonite such as when bentonite chips, pellets, tablets, or granules are used. If filter pack is installed, the filter pack depth interval, filter pack type (e.g, 1/4 pea gravel, 8-12 CSSI, #6 SRI, etc.), and quantity placed in the well must be provided. Because every well must have a surface seal, the surface seal depth interval, type (neat cement, cement grout, bentonite grout [provide the specific type/brand of bentonite if possible], etc.), quantity of seal material, and the grout density must be recorded. If the seal was placed using dry bentonite such as hole plug, chips, pellets, etc, then please indicate "not applicable" in the grout density blank.

Well Development and Well Yield Test Information: At least one row of this information must be completed and include, at a minimum, the date, the method of development or pumping, the yield during development or testing, and the drawdown in the well during development or testing. Keep in mind that the drawdown is not the pumping water level, but rather the difference between the pumping water level and the static water level. If the well was developed or tested with a pump, please provide the pumping duration.

Appendix 3 - Well Drilling Reporting Requirements Instructions

Pump: If a pump is installed after the well is completed by the driller, please provide as much of the requested information as possible. Please also indicate whether or not the well was disinfected upon completion.

Comments and Well Driller Statement: If for any reason a driller cannot provide the critical information on the report, the driller must provide a reason and justification in the comments section of the report. Also note other information including construction activities, placement methods, additional materials used, problems encountered, extraordinary circumstances, etc.

Well Driller Statement: The Well Driller Statement Section must be entirely completed and include the printed or typed driller/company name, license number, signature of the licensed well driller, and the date of signature.

Official Pump Installation Report (Pump Log)

Submittal of a start card is not required for pump installation and repair work in a well. However, an official pump installation report (pump log) must be submitted after completion of the regulated activity (see the sample pump log at the end of this Appendix). Unlike well logs, blank pump logs are readily available from any of our offices. There is no pre-printed info on the pump log, which means the blank logs can be copied. Pump logs are also available online in a 'pdf' format and can be found on www.waterrights.utah.gov forms page and well page.

The licensee must complete the form, detailing all aspects of the regulated activity, then sign, date, and return it within 30 days of activity completion. Only information that is known or that was conducted by the licensee needs to be recorded on the pump log. Every blank of the pump log does not need to be filled out if you did not do that specific activity on the project.

In an effort to maintain the quality of Pump Logs submitted to our office, we have implemented a rigorous review policy. The information listed on the Pump Log is important in that it provides an official record of the well which becomes a part of the legal water right record, and this information is utilized by many including the well owner, the State Engineer's Office, governmental agencies, researchers, consultants, and many others. The Pump Log also assists the Water Rights staff in determining if a well is constructed and equipped properly according to the minimum construction standards set forth in the Administrative Rules for Water Wells. Thus, it is critical that the Pump Log be filled out as completely as

Appendix 3 - Well Drilling Reporting Requirements Instructions

possible.

Water Rights staff review each incoming Pump Log for deficiencies or improper information. If a Pump Log is found to have data missing or is incorrect, the original log will be returned to the licensee attached to a cover letter describing the deficiencies. **The Pump Log will not be considered officially received until it is corrected and returned to the Division of Water Rights. Moreover, the 30-day deadline (from the well completion date) for submittal of the official Pump Log will remain in effect, even though the pump log was returned to the licensee.**

An example of the Official Pump Log form is attached. An original official form will always have a green band on the bottom with the words “Pump Log” printed in the green band. The following paragraphs provide some guidance on how to complete the Well Log form:

Well Identification: List the water right number or non-production well number if known. Also list the change, exchange, or temporary water right number if known or applicable.

Owner: List the well owner’s name and address.

Well Location: List the physical street address of the well (or the property on which the well is located). If available and known, list the point of diversion (well location) in Utah Division of Water Rights public land survey system (section/township/range). If global positioning system (GPS) coordinates are available, list on the pump log in either UTM (meters) or latitude/longitude (decimal degrees). Also identify the map datum from which the coordinates were based (e.g., NAD 27, NAD83, WGS84, etc.)

Existing Well Details: To the extent known and available, list as much of the existing well detail as possible.

Pump Installation Details: Based on the activity actually conducted by the licensee, complete this section to the extent possible. If an activity under this section was not performed by the licensee, then mark it as NA (not applicable) or NP (not performed). In the comment section, note other information not otherwise specified or asked for in this section, problems encountered, extraordinary circumstances, etc.

Appendix 3 - Well Drilling Reporting Requirements Instructions

Licensee Statement: The Licensee Statement Section must be entirely completed and include the printed or typed licensee/company name, license number, signature of the licensee, and the date of signature.

Well Abandonment

When the abandonment (plugging) of a well is not associated with the installation of a new well (replacement well scenario), a start card is not required to perform the work. However, prior to abandoning a well, a licensed driller must notify the Water Rights office of the intent to abandon. The Water Rights office will then send the driller a blank Well Abandonment Report (abandonment log). The driller must submit the abandonment log to the Water Rights office after completion of abandonment. When the driller notifies the Water Rights office of an abandonment, he/she should provide the office with as much information as possible including the State well number (water right number, provisional number, monitoring well number, etc.), the well owner name and address, and the well location (preferably in the Section/Township/Range coordinate system. If not already available, the driller should also request a copy of the well log for the well to be abandoned so that well construction details are known. When the driller notifies the Water Rights Office of abandonment, the office will send the driller a blank abandonment form (example of form is attached) to be completed and returned to the office within 30 days of completion of abandonment activities. The abandonment log is similar to the well log and must include the following information:

- 1. Well Identification:** This section is completed by the Division of Water Rights. This space will be preprinted by the office with the appropriate number such as a water right number, provisional well number, monitoring well number, etc. If no information is available for the well, then this space will be marked as "Unidentified Abandonment"
- 2. Owner:** This section is completed by the Division of Water Rights. However, the driller can complete the Contact Person/Engineer if known or applicable.
- 3. Well Location:** This section is completed by the Division of Water Rights, but the driller should verify that the location where he is drilling is actually the location on the log form. If the actual location differs from that of the approved well location, the driller should note any changes on the log if the driller knows the changes to be accurate. The driller can also provide Location Description

Appendix 3 - Well Drilling Reporting Requirements Instructions

information if available.

4. Existing Well Details: The driller should make every effort to learn the construction details about the well that is to be abandoned in order to properly plug the well. This information can generally be obtained from the well log, if available. Complete this section as best as possible with the available well information and use it to guide you in the proper selection of plugging materials and procedures.

5. Abandonment Details: List the date the well was abandoned. List the reason for abandonment (e.g., replacement, dry, casing collapse, non-use, etc.). Describe how the well was abandoned including the seal placement method and procedures, amount of casing/screen removed, removal of pump/piping or other debris from the well, termination of the casing at the surface, problems encountered, and any other pertinent information. In the table, describe the sealing materials used for abandonment. Examples of seal material descriptions include neat cement grout, sand cement grout, Enviroplug bentonite grout, Aquagaurd bentonite grout, Quik-Grout bentonite grout, BH bentonite grout, Volclay bentonite grout, 3/8" Hole Plug bentonite chips, Enviroplug medium/course bentonite chips, Volclay chips, CETCO crumbles, 3/8" Volclay tablets, 3/4" Prime Plug bentonite chips, etc. Be as specific as possible in the description and type of sealing material. Be sure to note the **quantity** (e.g., number of 50# sacks, pounds, tons, cubic feet, cubic yards, etc.) of seal material used per depth interval. Also note the mixing information in the Grout Weight column when neat cement grout, sand cement grout, or bentonite grout is used. This column can be left blank when unhydrated bentonite such as when bentonite chips, pellets, tablets, or granules are used. Note in the check box if the abandoned well is being replaced with a new well and describe the location of the new well relative to the plugged well.

6. Well Driller Statement: The Well Driller Statement Section must be entirely completed and include the printed or typed driller/company name, license number, signature of the licensed well driller, and the date of signature.

Appendix 3 - Well Drilling Reporting Requirements Instructions

DRILLER SUMMARY REPORTS

On a regular basis, the Water Rights office will send to each licensed driller/pump installer in the state a driller summary report. This report lists all wells in a specified time period for which a start card and/or well log/pump log has been received at the Water Rights office. The report provides information on the well owner, well type, well approval number, start card receive date, work begin date, well log received date, well completion date from well log, applicant card receive date, applicant card well completion date, discrepancies between completion dates, and the logs received 30 days after completion date. These reports are used by the Water Rights office to determine if a driller has met reporting requirements.

Alternatively, a licensee can view his/her log record by going to their page on the Water Rights website at <http://www.waterrights.utah.gov/cgi-bin/drilview.exe>.

Remember, your driller's license cannot be renewed if there are any outstanding well logs or other problems and discrepancies with an individual drillers reporting record. If problems or discrepancies exist in the summary report as a result of errors by the Water Rights staff, renewal of the drillers license will not be halted or delayed, so it is critical that each driller review the report and point out any problems. Please review the status reports when you receive them and reconcile with your own drilling records to ensure that the information is complete and accurate. If you find any mistakes or problems with your status report, please notify our office at (801)538-7416. It will be easier to correct mistakes in the report early so that during the license renewal process, delays in license renewal due to incorrect start card and well log information can be avoided.

Appendix 3 - Well Drilling Reporting Requirements Instructions

DRILLER (START) CARD for Monitor WELL#: 0459013M00

IMPORTANT: THIS CARD MUST BE RECEIVED BY THE DIVISION OF WATER RIGHTS PRIOR TO THE BEGINNING OF WELL CONSTRUCTION -- REQUIRED ONLY FOR WELLS DEEPER THAN 30 FT.
OWNER/APPLICANT NAME: JIM GODDARD
MAILING ADDRESS: 1594 WEST NORTH TEMPLE #220, SALT LAKE CITY, UT 84114,
PHONE NUMBER: 801-538-7314
WELL LOCATION: S 801' W 327' from NE Cor, S21, T1S, R2W, SLB&M.
WELL UTM COORDINATES: Northing: 4508379 Easting: 410169
WELL ACTIVITY: NEW () REPAIR () REPLACE () ABANDON ()
CLEAN () DEEPEN ()

PROPOSED START DATE: _____

PROJECTED COMPLETION DATE: _____

LICENSE #: _____ LICENSEE/COMPANY: _____

Licensee Signature

Date

NOTICE TO APPLICANT: THIS CARD IS TO BE GIVEN TO A UTAH LICENSED WATER WELL DRILLER FOR SUBMITTAL TO THE DIVISION OF WATER RIGHTS PRIOR TO WELL CONSTRUCTION.
STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416
Fax No. 801-538-7467

COMMENTS: _____

Appendix 3 - Well Drilling Reporting Requirements Instructions

APPLICANT CARD for Monitor WELL#: 0459013M00

IMPORTANT: THIS CARD MUST BE COMPLETED, SIGNED AND RETURNED BY THE WELL OWNER/APPLICANT AS SOON AS THE WELL IS DRILLED BY A LICENSED UTAH WATER WELL DRILLER.	
OWNER/APPLICANT NAME:	JIM GODDARD
MAILING ADDRESS:	1694 WEST NORTH TEMPLE #220, SALT LAKE CITY, UT 84114.
PHONE NUMBER:	801-538-7314
WELL LOCATION:	S 801' W 327' from NE Cor. S21, T1S, R2W, SL88M.
WELL UTM COORDINATES:	Northing: 4508379 Easting: 410169
WELL ACTIVITY:	NEW () REPAIR () REPLACE () ABANDON () CLEAN () DEEPEN ()

WELL COMPLETION DATE: _____

NAME OF DRILLING COMPANY/LICENSEE: _____

Owner/Applicant Signature	Date
---------------------------	------

<p>***COMPLETE, SIGN AND RETURN THIS PORTION UPON FINAL WELL COMPLETION - DO NOT GIVE THIS CARD TO LICENSED WELL DRILLER - YOU MUST RETURN IT.</p> <p>STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416 Fax No. 801-538-7467</p>
--

COMMENTS: _____

SAMPLE

START/APPLICANT CARD INSTRUCTIONS: First, for each well, you must give a Driller (Start) Card to the licensed driller with whom you contract to construct the well. Second, it is your responsibility to sign and return this Applicant Card to this office immediately after completion of the well. **CAUTION:** There may be local health requirements for the actual siting of your well. Please check with the proper local authority before construction begins. See the enclosed sheet addressing construction information.

Appendix 3 - Well Drilling Reporting Requirements Instructions

WELL DRILLER'S REPORT

State of Utah

Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

Well Identification

Non-Production Well: 0459013M00

WIN: 30012

Owner

Note any changes

JIM GODDARD
1594 WEST NORTH TEMPLE #220
SALT LAKE CITY, UT 84114

Contact Person/Engineer: _____

Well Location

Note any changes

S 801 W 327 from the NE corner of section 21, Township 1S, Range 2W, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)

Drillers Activity

Start Date: _____ Completion Date: _____

Check all that apply: New Repair Deepen Clean Replace Public Nature of Use: _____
If a replacement well, provide location of new well _____ feet north/south and _____ feet east/west of the existing well.

DEPTH (feet) FROM TO	BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID

Well Log

DEPTH (feet) FROM TO	WATER TEMPERATURE High Low	UNCONSOLIDATED						CONSOLIDATED		DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistency, water bearing, orod, fracturing, mineralogy, texture, degree of weathering, hardness, water quality, etc.)
		CLAY	SAND	GRAVEL	COBBLES	BOULDER	OTHER	ROCK TYPE	COLOR	

Static Water Level

Date _____ Water Level _____ feet Flowing? Yes No
Method of Water Level Measurement _____ If Flowing, Capped Pressure _____ PSI
Point to Which Water Level Measurement was Referenced _____ Elevation _____
Height of Water Level reference point above ground surface _____ feet Temperature _____ degrees C F

Appendix 3 - Well Drilling Reporting Requirements Instructions

Construction Information									
DEPTH (feet)		CASING			DEPTH (feet)		<input type="checkbox"/> SCREEN	<input type="checkbox"/> PERFORATIONS	<input type="checkbox"/> OPEN BOTTOM
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)

Well Head Configuration: _____ Access Port Provided? Yes No
 Casing Joint Type: _____ Perforator Used: _____
 Was a Surface Seal Installed? Yes No Depth of Surface Seal: _____ feet Drive Shoe? Yes No
 Surface Seal Material Placement Method: _____

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)

Well Development and Well Yield Test Information						
DATE	METHOD	YIELD	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		

Pump (Permanent)
 Pump Description: _____ Horsepower: _____ Pump Intake Depth: _____ feet
 Approximate Maximum Pumping Rate: _____ Well Disinfected upon Completion? Yes No

Comments Description of construction activity, additional materials used, problems encountered, extraordinary Circumstances, abandonment procedures. *Use additional well data form for more space.*

Well Driller Statement This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.
 Name WELL DRILLING License No. 523
(Name, Firm, or Corporation - Print or Type)
 Signature _____ Date _____
(Correct Well Driller)

Appendix 3 - Well Drilling Reporting Requirements Instructions

WELL DRILLER'S REPORT ADDITIONAL DATA FORM

State of Utah
Division of Water Rights

Page ___ of ___

Well Identification

Non-Production Well: 0459013M00

Owner

Note any changes

JIM GODDARD
1594 WEST NORTH TEMPLE #220
SALT LAKE CITY, UT 84114

Contact Person/Engineer: _____

Well Location

Note any changes

S 801 W 327 from the NE corner of section 21, Township 18, Range 2W, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)

Well Log	W A T E R	D I S T R I B U T I O N	UNCONSOLIDATED					CONSOLIDATED		ROCK TYPE	COLOR	DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistency, water bearing, odor, fracturing, mineralogy, texture, degree of weathering, hardness, water quality, etc.)
			C L A S S I F I C A T I O N	S I L T	S A N D	G R A V E L	C O B B L E S	O T H E R				
DEPTH (feet)												
FROM												
TO												

Appendix 3 - Well Drilling Reporting Requirements Instructions

Construction Information (con't)									
DEPTH (feet)		CASING			DEPTH (feet)		<input type="checkbox"/> SCREEN <input type="checkbox"/> PERFORATIONS <input type="checkbox"/> OPEN BOTTOM		
FROM	TO	CASING TYPE AND MATERIAL GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per mand/interval)

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)

Comments (con't)

Well Driller Statement This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name ZIMMERMAN, MIKE WELL SERVICE License No. 527
(Print Name or Corporation - Dist or Type)

Signature _____ Date _____
(Printed Well Driller)

Appendix 3 - Well Drilling Reporting Requirements Instructions



PUMP INSTALLATION REPORT (PUMP LOG)

State of Utah Division of Water Rights
 PO Box 146300, SLC, UT 84114-6300
 (801) 538-7240; (801) 538-7467 fax; waterrights.utah.gov



Well Identification (e.g., Water Right or Non-production Well Number)

Owner Info (Name and Address):

Well Location:

Physical Street Address

Point of Diversion (Public Land Survey): North/South _____ feet, East/West _____ feet from the _____ Corner of Section _____, Township _____, Range _____, SLB&M/USB&M

GPS (UTM or Lat-Long, incl. Map Datum): _____

Existing Well Details (if known) Is a Well Driller's Report Available? Yes No
 Well Depth _____ feet Well Diameter _____ inches
 Nature of Use: Dom. Irr. Stock Industrial Commercial Municipal Provisional Monitor
 Casing Type: Steel Stainless Steel PVC Fiberglass ABS SR Other _____
 Screen Perforations Open Pipe Screen/Perforation Interval _____
 Filter Pack Yes No Depth of Surface Seal _____
 Other details (if known): _____

Pump Installation Details:
Type of Installation: New; Replacement; Repair; Other _____
Date of Installation (single date or range as applicable): _____
Type of Pump: Submersible; Lineshaft; Jet; Other _____
 Pump Manufacturer: _____; Pump Model: _____
 Number of Stages: _____; Riser/Discharge Pipe Type/Size: _____; Shaft Size (in): _____
 Height of Casing Above Ground Surface (inches): _____ Pump Intake Depth Below Top of Casing (ft): _____
 Pump Size (hp): _____; Pump Capacity (gpm): _____; Static Water Level (ft below top of casing): _____
 Pumping Water Level (ft below top of casing): _____; Shut-in Head for Flowing Wells (ft or psi): _____
 Artesian Flow (gpm): _____; Drawdown at End of Test (ft): _____
 Pitless Installation: Yes; No Manufacturer: _____; Model: _____
 Pitless Type: Pitless Adapter; Pitless Unit; Screw On; Welded; Compression
 Method of Cutting Hole in Casing: _____; Depth of Pitless (ft BGS): _____
 Pump Testing? Yes; No; Test Pumping Rate (gpm): _____; Test Pump Duration (hrs): _____
 Water Level Measurement Method: Airline; Electric Sounder; Steel Tape; Other _____
 Discharge Measure Method: Bailer; Bucket/Barrel/Stopwatch; Current; Air Lift; Gauge;
 Meter; Orifice; Volume; Weir - Flume; Other _____
 Down-hole Camera Survey? Yes; No Water Quality Sample Taken? Yes; No
 Well and Pump Works Disinfected Upon Completion in accordance with R655-4? Yes; No
 Comments by Installer: _____

Licensee Statement This pump work was conducted under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name: _____ License No. _____
(Person, Firm, or Corporation - Print or Type)

Signature of Licensee: _____ Date _____
(Licensed Well Driller or Pump Installer)

Note: All Pump work shall be performed in accordance with the provisions of the State of Utah Administrative Rules of Water Wells (Section R655-4 UAC).

Pump Log

Appendix 3 - Well Drilling Reporting Requirements Instructions

WELL ABANDONMENT REPORT State of Utah Division of Water Rights

Well Identification

Non-Production Well: 0459013M00

WIN: 30012

Owner

Note any changes

JIM GODDARD
1594 WEST NORTH TEMPLE #220
SALT LAKE CITY, UT 84114

Contact Person/Engineer: _____

Well Location

Note any changes

S 801 W 327 from the NE corner of section 21, Township 1S, Range 2W, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)

Existing Well Details

Is a Well Driller's Report Available? Yes No

Well Depth _____ feet Well Diameter _____ inches

Nature of Use: Dom. Irr. Stock Industrial Commercial Municipal Monitor Other _____

Casing Type: Steel Stainless Steel PVC Fiberglass ABS SR Other _____

Openings: Screen Perforations Open Pipe Screen/Perforation Interval _____

Filter Pack? Yes No Depth of Surface Seal _____ feet

Static Water Level _____ feet Flowing Well? Yes No

Other Details (if known) _____

Abandonment Details

Date of Abandonment _____

Reason for Abandonment _____

Method of Abandonment (Include a description of the seal placement and procedure, amount of casing/screen removed, pump/piping removal, termination of casing at the surface, problems encountered, and other pertinent information).

SAMPLE

DEPTH (feet)		ABANDONMENT MATERIAL DETAILS		
FROM	TO	ABANDONMENT MATERIAL USED	Quantity of Material Used (e.g., cubic yards, lbs)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)

Location of a new well (if present) is _____ ft north/south and _____ ft east/west from the abandoned well.

Well Driller Statement

This well was abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name WELL DRILLING _____
(Person, Firm, or Corporation - Print or Type)

License No. 523 _____

Signature _____
(Printed Well Driller)

Date _____

Appendix 4 - Continuing Education Program Overview

Introduction and Objectives

During each two-year renewal cycle, licensed well drillers and licensed pump installers are required to earn at least twelve (12) continuing education credits by attending training sessions or participating in ongoing education sponsored or approved by the state engineer in order to renew their license. Participation in ongoing education allows licensees to stay informed of regulatory, industry, and technological advances. Combining field experience with continuing education enhances a licensee's knowledge and abilities. The primary objectives of the Utah Driller/Pump Installer CE program are:

- ⊖ Increase protection of groundwater resources
- ⊖ Increase compliance to well rules
- ⊖ Develop a minimum level of confidence among water well contractors
- ⊖ Increase protection of the well owner
- ⊖ Increase public confidence in the contractor

Utah CE Requirements

The following is a summary of CE program requirements in accordance with the well rules.

- ⊖ Licensed well drillers and pump installers must earn twelve (12) CE credits during a 2-year renewal cycle in order to renew their license for the next licensing cycle.
- ⊖ One (1) hour of training or education will equal one (1) CE credit, unless otherwise designated specifically by the State Engineer. A 45 minute class will equal $\frac{3}{4}$ a CE credit, and 30 minutes will equal $\frac{1}{2}$ a CE credit. This requirement also applies to education taken out of state.
- ⊖ During a licensing cycle, the twelve (12) required CE credits must consist of credits earned from at least two separate classes or topics
- ⊖ Licensed drillers/pump installers must complete a State Engineer-sponsored "Administrative Rules for Water Wells" review course or other approved rules review once every four years.
- ⊖ A licensed driller who teaches a CE course will receive credit on a 3:1 ratio up to five credits for every hour of training. For example, if a driller teaches a one hour course, he will receive three CE credits for his effort
- ⊖ CE credits cannot be carried over from one licensing cycle to another
- ⊖ CE courses must be approved by the State Engineer's Office.
- ⊖ Licensees are responsible for obtaining and maintaining the necessary

Appendix 4 - Continuing Education Program Overview

documentation for each course attended and submitting the documentation with their license renewal application each renewal year.

CE Credit Approval Process

The State Engineer approves training courses appropriate for CE credit based on recommendations from the CEAC. The State Engineer's office maintains a list of approved courses. This list will be updated regularly as course information is furnished to the State Engineer's office. This list is periodically sent to licensed drillers throughout the year and is also posted on the Division of Water Rights web page at www.waterrights.utah.gov/wellinfo.

It is up to the licensee to decide what, when, and where to take the appropriate training. Training/education courses should relate to occupational health and safety, business and office skills, interpersonal skills, technical aspects of the well industry, or other subjects that will enhance business, technical, or regulatory knowledge, skills, and abilities. A licensee can look for training from members of professional associations, government agencies, private businesses, or individuals. A licensee can choose from the attached list of courses, however, a licensee is not limited to taking the courses that are on that list. Drillers can look for training opportunities in trade magazines, training flyers, or brochures, advertisements in newspapers or mail, and courses offered at universities. Course work can be pre-approved by the State Engineer so that a licensee will know if credit will be granted for a class not on the approved list. Or a licensee may choose to take the course first and then ask for CE credit approval, however, there is no guarantee that the course will be approved. The following is a list of topics that relate to wells that would be applicable to the CE program. This list is by no means comprehensive and is for information purposes only.

Appendix 4 - Continuing Education Program Overview

Well Drilling-Related Education Topics

Rule Understanding	Drilling Muds
Water Rights Process	Pump Systems
Geologic Principles	Compressors
Groundwater Principles	Rigs
Cuttings Identification and Description	Bits, Drill Pipe, Collars, Stabilizers
Map Reading and GPS Use	Safety
Water Right Web Site Use	Screens and Perforations
Aquifer Testing	Explosives
Well Disinfection Issues	Horizontal Drilling
Well Rehabilitation Issues	Hydrofracturing
Water Quality and Geochemistry	MW Construction & Environmental Regulation
Surface Seals	Contracting & Business Issues
Groundwater Contamination	Client Relationships
Drinking Water Rules	Geophysics & TVing
Reg. & Local Water Issues/Requirements	Water Treatment Technology
Reg. and Local Hydrogeology	Rig Maintenance
Well Abandonment	Well Maintenance
New Technology	Water Quality Sampling & Analysis
OSHA Certifications	Well Development
MSHA Certifications	Welding
First Aid/CPR	Blue Stakes Training

Requesting Approval for a Training Course

It is a good idea to ask about course approval before taking the class if it is not already on the approved list. There is a form for licensee to use when asking the CEAC to evaluate a course they wish to attend. A licensee is asked to provide information on the course content, instructors, and course length. The form, called the “Provider/Course Approval Form,” is attached with this overview and should be used by the licensee when submitting a course to be evaluated.

An instructor or provider may also ask for State Engineer’s prior approval of a course. It would be useful to publicize that information when advertising the course. The same attached evaluation form can be utilized when making this request.

Obtaining, Maintaining, and Submitting Training Records

In order to receive credit for a course, the licensee must obtain a record of course completion and attendance from the course instructor/provider. This proof of attendance can consist of certificates, transcripts, diplomas, and attendance rosters. If a course provider does not offer this type of documentation, the licensee may use the attached “Documentation Form” as proof of class

Appendix 4 - Continuing Education Program Overview

completion. If this form is used, it must be completed entirely and be signed or stamped by the instructor/provider. It is the responsibility of the licensee to keep track of education records. Licensees must provide these proof documents at the time of renewal application.

Special Conditions and Appeals

Drillers/pump installers who do not renew their licenses, but who intend to renew within a 24-month period are also required to earn twelve CE credits each two-year licensing cycle. If a license is left un-renewed for more than a 24-month period, a driller/pump installer must reapply for license regardless of the number of CE credits earned.

A licensee may appeal the decision of the State Engineer to disallow a course approval or credits. An appeal must be made in writing and directed to the State Engineer. The CEAC and State Engineer will evaluate appeals and hold a hearing if necessary on a case-by-case basis.

Licensees who were not able to get the required continuing education credits because of a hardship situation may apply for an extension of time in which to acquire the required credits. The CEAC and State Engineer will review the merits of each situation and make a recommendation on whether or not the extension should be granted. Hardship claims must also be made in writing and directed to the State Engineer.

For More Information

Copies of any of the documents referenced in this program overview can be obtained on the Division of Water Rights web page at www.waterrights.utah.gov/wellinfo or by calling the Well Drilling Section at 801-538-7416 or 801-538-7314. Any written correspondence related to the CE program should be routed to the attention of 'Well Drilling Section' and can be faxed to 801-538-7467 or sent to Utah Division of Water Rights, PO Box 146300, SLC, UT 84114-6300.

Appendix 4 - Continuing Education Program Overview

UTAH WELL DRILLER & PUMP INSTALLER CONTINUING EDUCATION PROVIDER/COURSE APPROVAL FORM

PROVIDER (BUSINESS) INFORMATION

PROVIDER NAME: _____

PROVIDER ADDRESS: _____ CITY/STATE/ZIP: _____

PROVIDER REPRESENTATIVE: _____ TITLE: _____

DAYTIME PHONE NUMBER: (____) _____ FAX NUMBER: (____) _____

CONTINUING EDUCATION INFORMATION

COURSE TITLE: _____

(AS IT WILL APPEAR ON ADVERTISEMENTS, CLASS MATERIALS AND CERTIFICATE OF COMPLETION)

PLEASE PROVIDE A BRIEF DESCRIPTION OF THE COURSE AND HOW IT PERTAINS TO WELL DRILLING (ATTACH A COPY OF THE COURSE CURRICULUM SHOWING THE ACTUAL NUMBER OF HOURS OF TRAINING)

ANTICIPATED STARTING DATE AND DURATION OF COURSE: _____

WHAT TYPE OF DOCUMENTATION OF COMPLETION WILL BE PROVIDED TO THE DRILLER? _____

(e.g., diploma, certificate, transcript, roster, etc.)

INSTRUCTOR INFORMATION

INSTRUCTOR QUALIFICATIONS (LIST EDUCATION, TRAINING OR EXPERIENCE THAT REFLECT THE QUALIFICATION NECESSARY TO TEACH THIS COURSE)

Representative's Signature _____ **Date** _____

NOTE: Please return completed form to Utah Division of Water Rights, ATTN: Jim Goddard at PO BOX 146300, SLC, UT 84114-6300 or fax to 801-538-7467. Please contact Jim Goddard at 801-538-7314 with questions. Keep copy of form for your records.

Appendix 4 - Continuing Education Program Overview

UTAH WELL DRILLER & PUMP INSTALLER CONTINUING EDUCATION DOCUMENTATION FORM

This form, when completed correctly, can be used in place of other forms of CE credit documentation (diplomas, certificates, transcripts, rosters, etc.) to be submitted with CE credit summary form and attached to the license renewal application. Drillers may make as many copies of this form as necessary.

LICENSEE NAME _____ LICENSE # _____

COURSE TITLE _____

BRIEF COURSE DESCRIPTION _____

COURSE SPONSOR _____

COURSE INSTRUCTOR _____

COURSE DATE(S) _____

DURATION OF TRAINING ATTENDED BY DRILLER (HOURS) _____

VERIFICATION OF ATTENDANCE _____

(This must include instructor/sponsor signature, official stamp, or other means to verify class attendance)

LICENSEE SIGNATURE _____ DATE _____

UTAH WELL DRILLER & PUMP INSTALLER CONTINUING EDUCATION DOCUMENTATION FORM

This form, when completed correctly, can be used in place of other forms of CE credit documentation (diplomas, certificates, transcripts, rosters, etc.) to be submitted with CE credit summary form and attached to the license renewal application. Drillers may make as many copies of this form as necessary.

LICENSEE NAME _____ LICENSE # _____

COURSE TITLE _____

BRIEF COURSE DESCRIPTION _____

COURSE SPONSOR _____

COURSE INSTRUCTOR _____

COURSE DATE(S) _____

DURATION OF TRAINING ATTENDED BY DRILLER (HOURS) _____

VERIFICATION OF ATTENDANCE _____

(This must include instructor/sponsor signature, official stamp, or other means to verify class attendance)

LICENSEE SIGNATURE _____ DATE _____

Appendix 5 – Helpful Contact and Reference Information

Government Agencies

Utah Division of Water Resources: 801-5387230; <http://water.utah.gov>
Utah Division of Drinking Water: 801-536-4200; www.drinkingwater.utah.gov
Utah Division of Water Quality: 801-536-4300; www.waterquality.utah.gov
Utah Geological Survey Groundwater Program: 801-537-3300;
<http://geology.utah.gov/utahgeo/water/index.htm>
Local Health Departments and District Engineers:
www.drinkingwater.utah.gov/partners.htm
USGS Utah Water Science Center: 801-908-5000; <http://ut.water.usgs.gov/>
Natural Resources Conservation Service (NRCS) in Utah: 801-524-4550;
<http://www.ut.nrcs.usda.gov/>
Utah Department of Agriculture and Food Ground Water Program: 801-538-9905;
<http://ag.utah.gov/divisions/conservation/groundwater.html>

Well Driller/Pump Installer Associations

Utah Ground Water Association (UGWA): www.utahgroundwater.org
Mountain States Ground Water Association (MSGWA):
www.mountainstatesgroundwater.com
National Ground Water Association (NGWA): www.ngwa.org

Well Owner Information

American Ground Water Trust: <http://agwt.org/>
WellOwner.org: www.wellowner.org
Water Systems Council: <http://watersystemscouncil.org/>

Miscellaneous Information

GEOEXCHANGE: www.geoexchange.org
International Ground Source Heat Pump Association: www.igshpa.okstate.edu
The Groundwater Foundation: www.groundwater.org
Blue Stakes of Utah (Underground utility locator): 800-662-4111; www.bluestakes.org
Utah Geological Association: www.utahgeology.org
American Society for Testing and Materials (ASTM): www.astm.org
American National Standards Institute (ANSI): www.ansi.org
National Sanitation Foundation (NSF): www.nsf.org
American Water Works Association (AWWA): www.awwa.org
Rural Water Association of Utah: www.rwau.net