State of Idaho
DIVISION OF BUILDING SAFETY

Building a Safer Idaho

C.L. "BUTCH" OTTER
Governor
C. Kelly Pearce
Administrator

1090 East Watertower Street
Suite 150
Meridian, Idaho 83642
Main # 1-800-955-3044
Fax # 1-877-810-2840
dbs.idaho.gov

Issue: Use of Submersible Well Pumps in Bodies of Water

(Revised March 10, 2016)

Background:

Recently, the Division of Building Safety (DBS) enacted a new policy applicable to submersible well pumps being installed in bodies of water. For many years, these pumps have been routinely utilized to provide both domestic water and irrigation for properties bordering lakes, rivers, streams and ponds, primarily in northern Idaho.

At present there are thousands of submersible well pumps installed in Idaho's lakes, rivers, streams and ponds to supply water to nearby properties. These pumps have been declared by both users and installers as the most practical and efficient means of providing water service to waterfront properties. Use of these pumps in this way is not limited to individual users; DBS has confirmed that submersible well pumps are also being used to provide domestic water to large subdivision water systems and also for the irrigation of golf courses and other recreational facilities.

It has become apparent to DBS that the recently developed and posted policy does not allow affected parties sufficient latitude to identify and adopt practical alternatives to the submersible well pumps currently installed in natural bodies of water in Idaho.

Baseline requirements for utilization of electrical equipment in Idaho:

1. Title 54 chapter 10 §54-1001, Idaho Code states:

"From and after the taking effect of this act, all installations in the state of Idaho of wires and equipment to convey electric current and installations of apparatus to be operated by such current, except as hereinafter provided, shall be made substantially in accord with the National Electrical Code". Idaho currently enforces provisions of the 2014 edition of the National Electrical Code (NEC) as adopted and amended by the Idaho Electrical Board.

2. Article 110.3 of the 2014 National Electrical Code relating to the examination, identification, installation, and use of equipment stipulates:

"(A) Examination. In judging equipment, considerations such as the following shall be evaluated:

(1) Suitability for installation and use in conformity with the provisions of this *Code*

Informational Note: Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application. Special conditions of use or other limitations and other pertinent information may be marked on the equipment, included in the product instructions, or included in the appropriate listing and labeling information. Suitability of equipment may be evidenced by listing or labeling.

(B) Installation and Use. Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling."

2014 National Electrical Code
Article 90.4 Enforcement This *code* is intended to be suitable for mandatory application by governmental bodies that exercise legal jurisdiction over electrical installations, including signaling and communication systems, and for use by insurance inspectors. The authority having jurisdiction for enforcement of the *code* has the responsibility for making interpretations of the rules, for deciding on the approval of equipment and materials, and for granting the special permission contemplated in a number of the rules.

By special permission, the authority having jurisdiction may waive specific requirements in this *code* or permit alternative methods where it is assured that equivalent objectives can be achieved by establishing and maintaining effective safety…

Certification and approval of electrical products and materials:

All electrical materials, devices, etc. are required to be approved for the use intended. IDAPA 07.01.10 § 011 states the following:

011. CERTIFICATION AND APPROVAL OF ELECTRICAL PRODUCTS AND MATERIALS.

In the state of Idaho, all materials, devices, fittings, equipment, apparatus, luminaires, and appliances installed or to be used in installations that are supplied with electric energy shall be approved as provided in one (1) of the following methods:

01. Testing Laboratory. Be tested, examined, and certified (Listed) by a Nationally Recognized Testing Laboratory (NRTL). (3-20-14)

02. Field Evaluation. Non-listed electrical equipment may be approved for use through a field evaluation process performed in accordance with recognized practices and procedures such as those contained in the 2012 edition of NFPA 791 - Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation published by the National Fire Protection Association (NFPA).

Conclusion:

Submersible Well pumps are listed (approved) for specific purposes. Per Underwriters Laboratories, submersible well pumps approved under UL 778 (the only applicable standard identified to date) have not been evaluated for use in bodies of water where swimming, boating, and other recreational activities take place. Therefore, the listing of submersible well pumps under UL778 does not suffice to allow the Idaho Division of Building Safety to approve these types of pumps for applications other than those addressed in the listing of the equipment in question. Further, UL approvals are contingent on any listed equipment being utilized in conformance with the manufacturer's instructions for installation and use.

Submersible well pumps are not listed for use outside of their normal application in a well in the earth. Many manufacturers, in their instructions for installation and use, preclude the use of their products in swimming or marine areas. Additionally, UL778 requires a warning label be placed on submersible well pumps cautioning against the use of these pumps in swimming areas.

The Division of Building Safety has continued to search for another accepted standard that would apply to submersible well pumps being utilized in bodies of water, but to date remains unable to identify such a standard. The Division encourages interested parties to bring forward any information relative to an applicable standard, along with any pumps that have been tested and listed for utilization in the circumstances discussed in this paper. DBS has been recently advised that the pump industry has committed to addressing this issue in a timely fashion.

Employing an approved field evaluation testing agency to conduct a field evaluation of the pump for utilization in the proposed application is not a viable option unless/until a proper standard can be identified to facilitate the review process.

Other pumping equipment can be utilized in conformance within the listing parameters of alternative pumps to safely provide domestic and irrigation water to lakeside properties, but this may not be practical for all applications.

Policy:

As a result of this investigation process, and in accord with the provisions of Article 90.4 of the National Electrical Code, the Division of Building Safety is adopting the following policy. Said policy shall be in effect until definitive rules are promulgated by the Idaho Electrical Board, but in no circumstance shall this policy remain in effect beyond June 30, 2018.

Submersible well pumps may continue to be installed and utilized in the lakes, rivers, streams and ponds of Idaho subject to the following restrictions:

1. All submersible well pumps must be labeled and listed in compliance with UL778 or another appropriate standard.
2. Submersible well pumps shall not be employed contrary to the manufacturer's instructions for installation and use.
3. Swimming, wading, water skiing and other similar recreational uses must be prohibited within fifty (50) feet of a submersible pump location. A floating buoy with attached signage, or other means, may be employed to assist in accomplishing this.

4. The installation of all wiring and equipment installed in or adjacent to the bodies of water governed by this policy shall comply with the provisions of Article 682 of the National Electrical Code.
5. GFCI protection must be provided for the pump and wiring from the disconnecting means to the pump. GFCI protection shall be provided at the lowest practicable milliamp level and in no case shall that level exceed 30 milliamps.
6. A redundant insulated equipment grounding conductor of the same size as the circuit's equipment grounding conductor shall be installed from the disconnecting means to a metallic pipe or other conductive surface in the immediate vicinity of the pump. Said redundant equipment grounding conductor shall be exothermically bonded to the conductive surface and be bonded to the grounding connections at the disconnecting means.
7. Owners of submersible well pumps in bodies of water shall be responsible for conducting an annual evaluation of the wiring system, including the grounding components and the GFCI. Said evaluation shall be conducted by qualified parties.

Further information about hazards associated with the use of electrical equipment not listed for specific applications or equipment not properly installed is available from the National Fire Protective Association here: http://nfpatoday.blog.nfpa.org/2015/06/nfpa-journal-explores-issues-of-electric-shock-drowning-in-marinas-and-boatyards.html

And here: http://www.nfpa.org/newsandpublications/nfpa-journal/2015/may-june-2015/features/nfpa-303

And from the Electric Shock Drowning Prevention Association here: http://www.electricshockdrowning.org/

If you have any questions or concerns, please let me know.

Warren Wing

Electrical Program Manager
State of Idaho Division of Building Safety
1090 E. Watertower St, Ste 150
Meridian, Idaho 83642
Office (208) 332-7147

Warren.wing@dbs.idaho.gov