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Director of Environmental Health

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 To: Well Contractors
 Well Program Webpage <http://bit.ly/2pCSAXw>

SUBJECT: APPROVAL SEALING MATERIALS FOR WATER WELL SEALS

This memorandum was issued as a reminder to members of our regulated community that pursuant to the Department of Water Resources’ Bulletin 74-90 (California Well Standards), the minimum requirements for sealing materials read as follows:

1. Water: Meets potability standards
2. Cement based sealing materials:

Material	Mixing Method	Note
Neat Cement	Mixing with water at a ratio of 94 lbs Portland cement/5-6 gallons of water	Will be a fairly thick mixture.
Sand Cement	Mixing with water at a ratio of 188 lbs (max) sand, 94 lbs Portland cement in 7 gallons of water	Equivalent “10.3 sack” mix; Sand/cement must be less than or equal to 2:1, by weight.
Concrete	Mixing with aggregate at a ratio of at least six of 94 lb sacks of Portland cement per cubic yard of aggregates.	The size of aggregates cannot be larger than 1/5 of the radial thickness of the annular seal.

3. Bentonite

- Shall be commercially prepared pelletized or chipped/crushed sodium montmorillonite clay (*no slurry mixes*);
- Shall be mixed thoroughly with potable water prior to placement at a ratio of 2:1 (2 lbs bentonite: 1 gallon water);
- The largest dimension of pellets or chips shall be less than 1/5 of the radical thickness of the annular space;
- Shall not be used for sealing intervals of fractured rock or highly unstable, unconsolidated material that could collapse and displace the sealing material.
- Gravity (freefall) installation of bentonite chips is allowed for intervals of 30ft or less, in dry conditions only. To prevent bridging, installation below water will be allowed only for short sections of 10ft.

Important notes to well drillers:

- Sealing materials must be prepared according to the above methods to avoid rejection of trucks;
- Verification of sealing materials meeting standards will be conducted on site. We are asking that cement suppliers provide a copy of the batch slip to the inspector prior to sealing. On the batch slip, pounds of sand, pounds of cement, gallons of water and total cubic yards must be specified.
- **Any site time spent over 1 hour will be charged to the driller at our hourly rate of \$152/hour.**

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