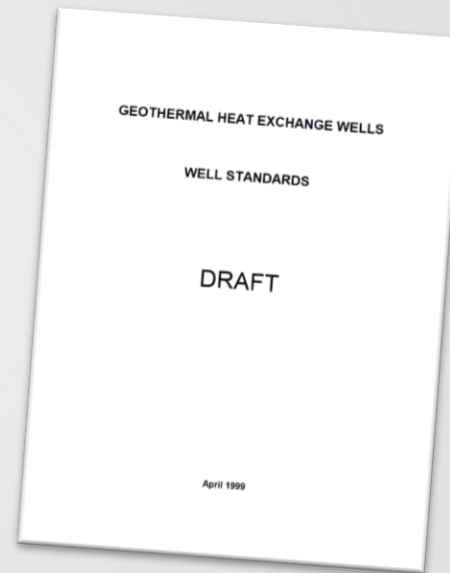
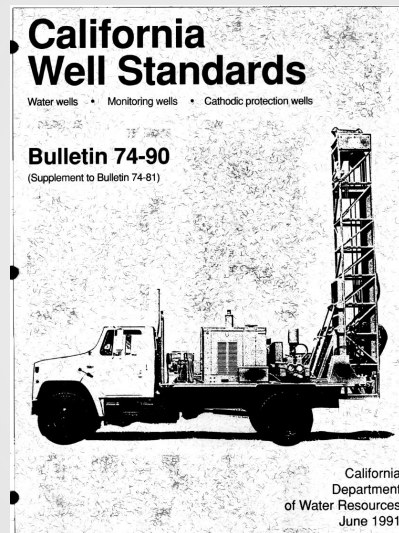
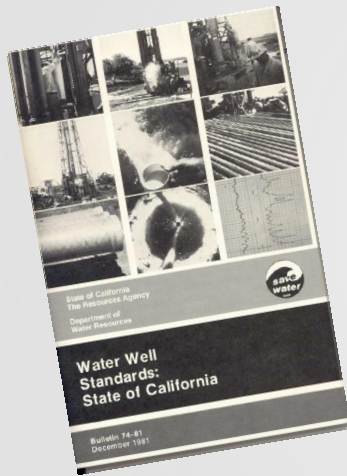


# Updating Bulletin 74: California Well Standards



ACWA Groundwater Committee  
August 7, 2019



CALIFORNIA DEPARTMENT OF  
WATER RESOURCES

# Overview of Presentation

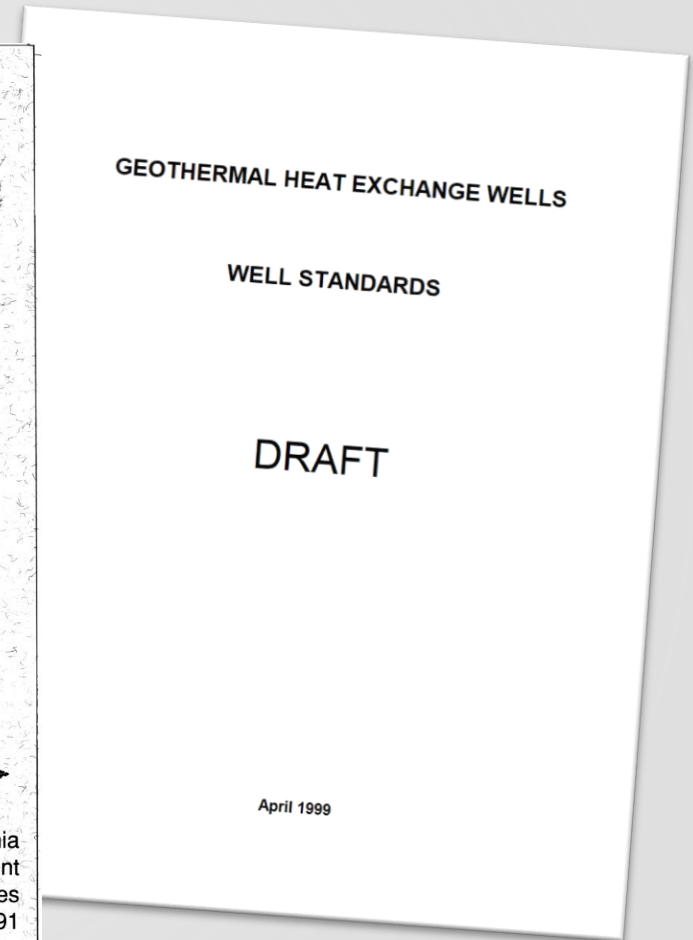
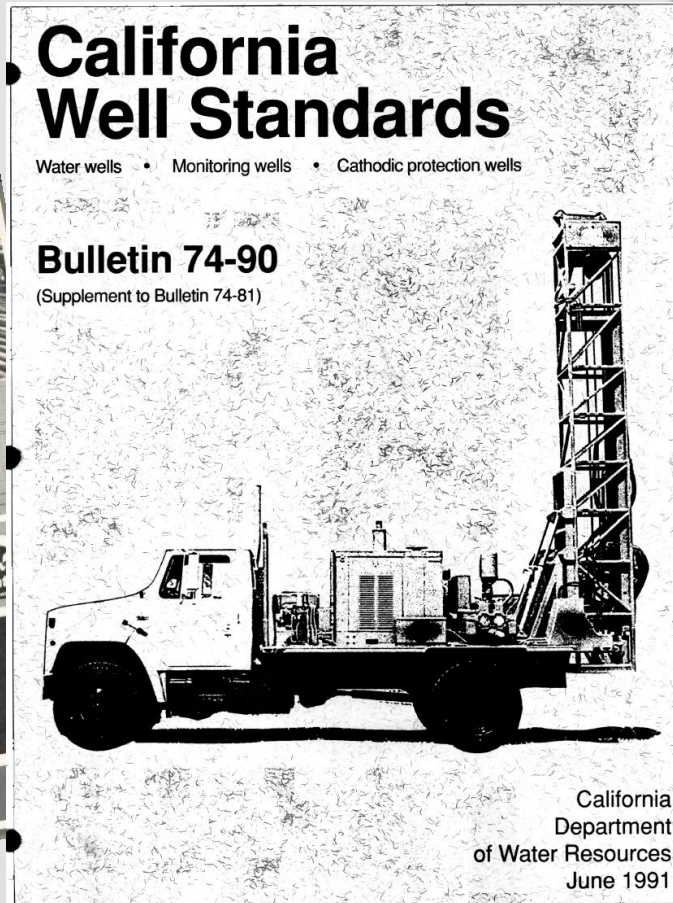
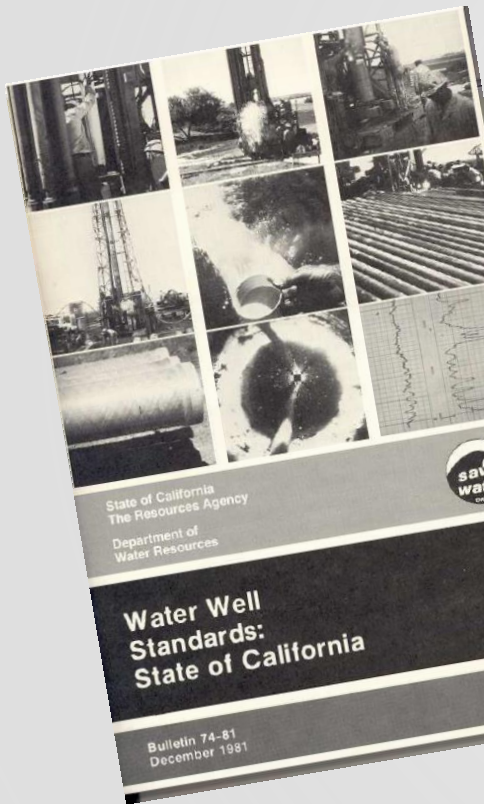
- Background
- Need for Updated Standards
- Plan to Update
- Ways to Participate



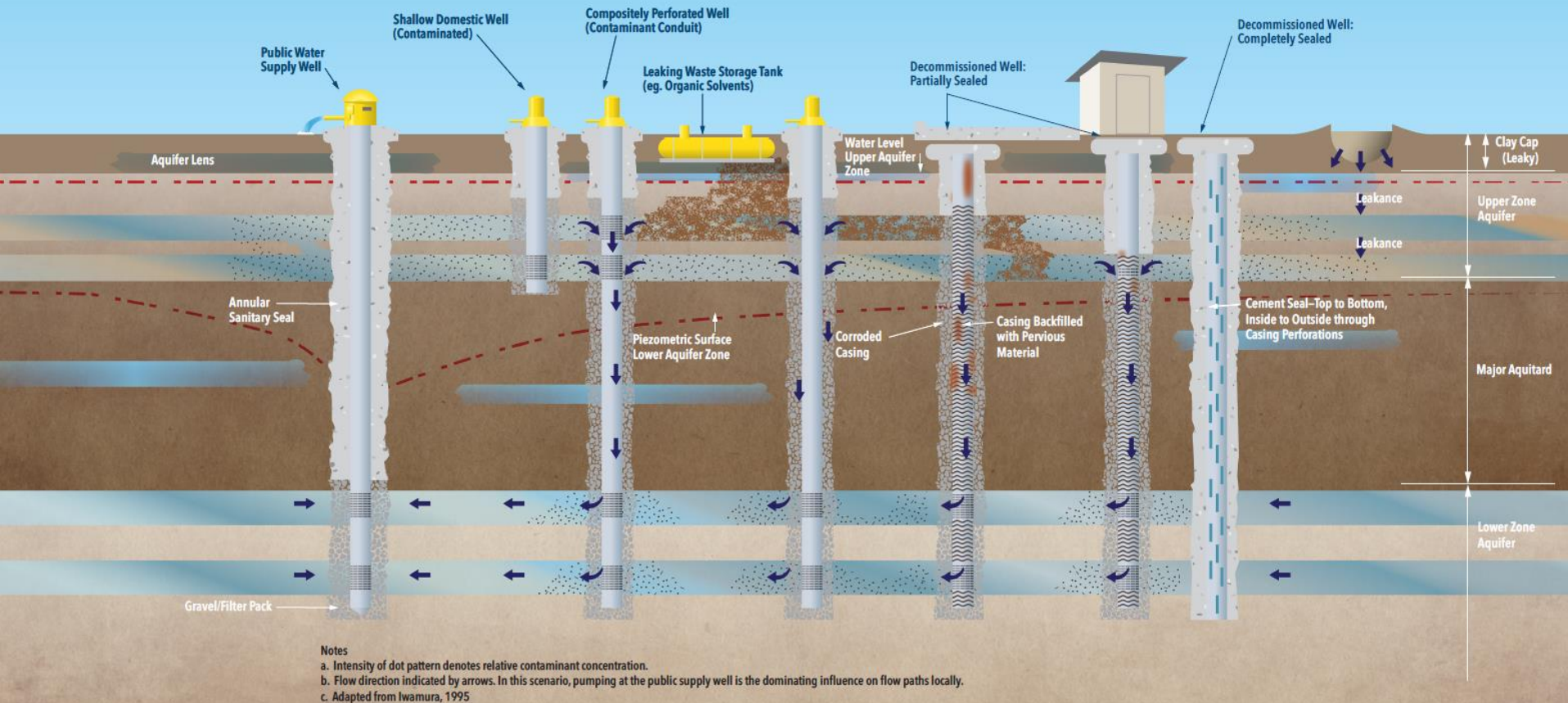
# BACKGROUND



# California Well Standards Documents



# Schematic Cross Section Illustrating Potential Vertical Conduit Conditions



# Bulletin 74 Overview

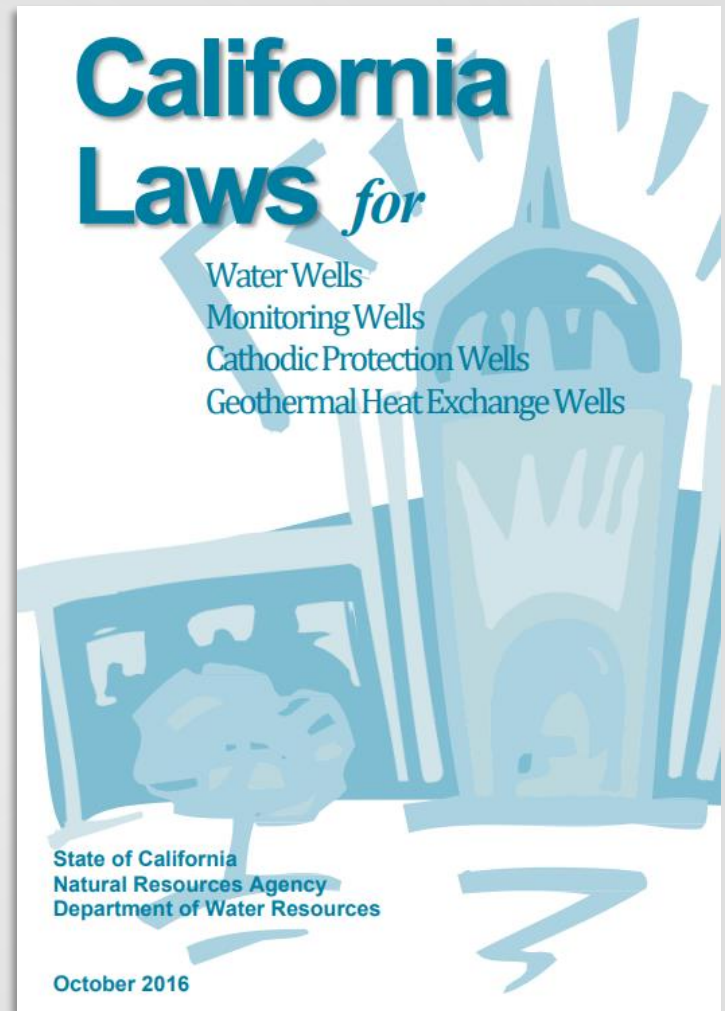
- Standards are for groundwater protection
- Standards cover four types of wells:
  - ✓ Water wells
  - ✓ Monitoring wells
  - ✓ Cathodic protection wells
  - ✓ Geothermal heat exchange wells
- Minimum statewide standards won't address every scenario but are intended to be adaptive to a variety of conditions



# Process of Implementation

Water Code §13800 et seq:

- DWR develops Standards
- DWR recommends to SWRCB
- SWRCB adopts Model Well Ordinance
- Cities, counties or water agencies adopt Local Well Ordinances
- Local Enforcing Agencies (LEAs) administer and enforce



<http://leginfo.legislature.ca.gov/>

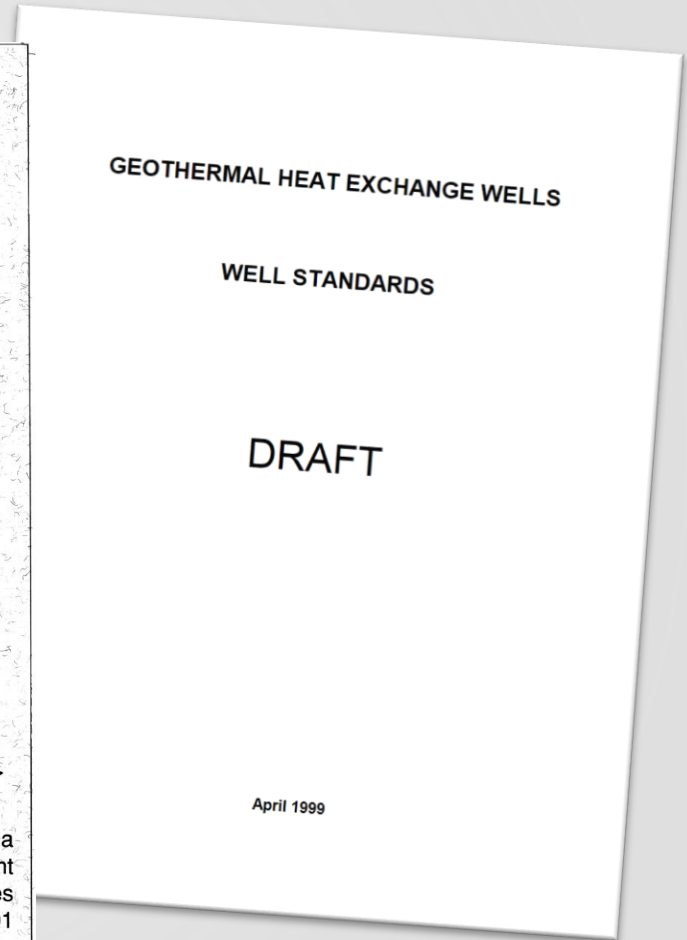
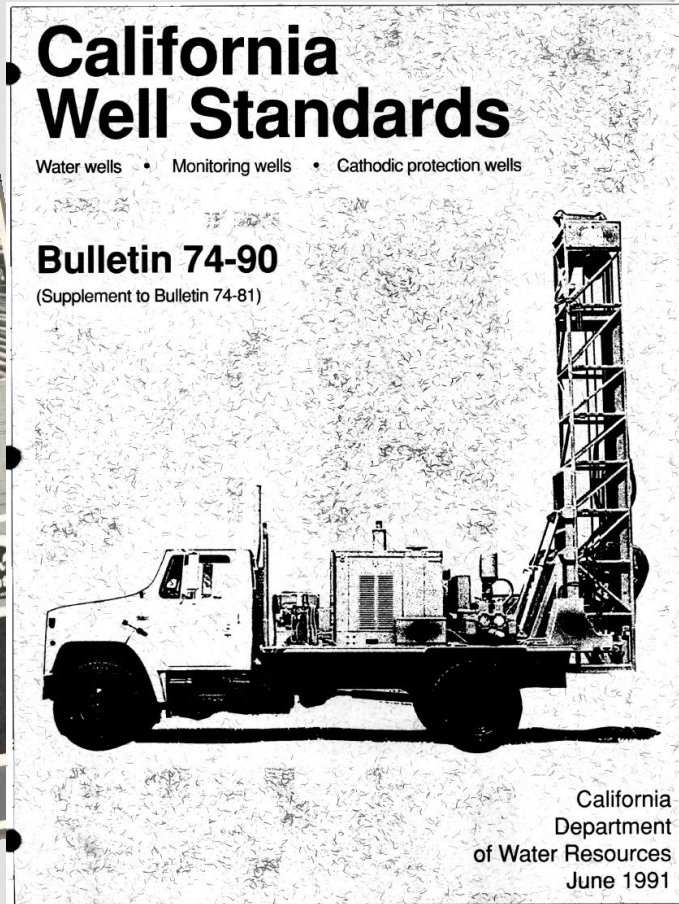
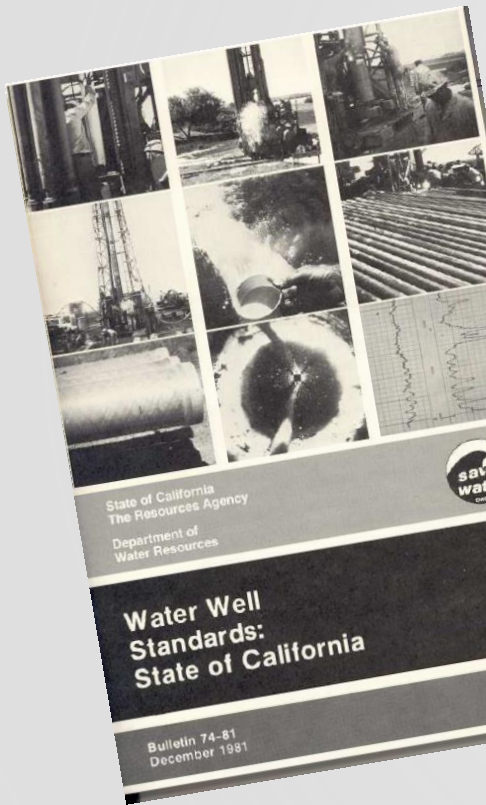


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# NEED FOR UPDATED STANDARDS



# California Well Standards Documents

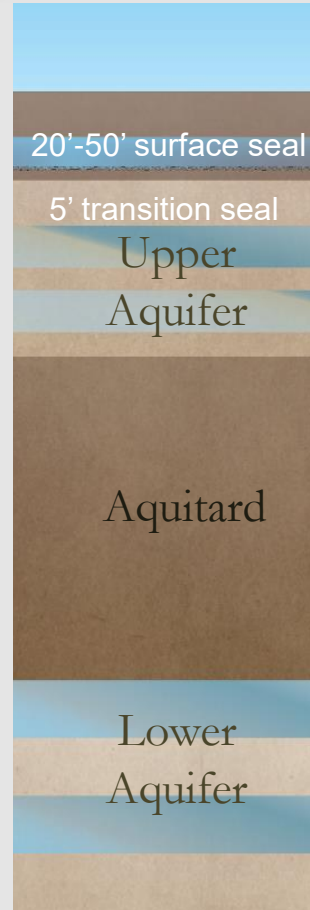


# Some Observations about the Current Standards

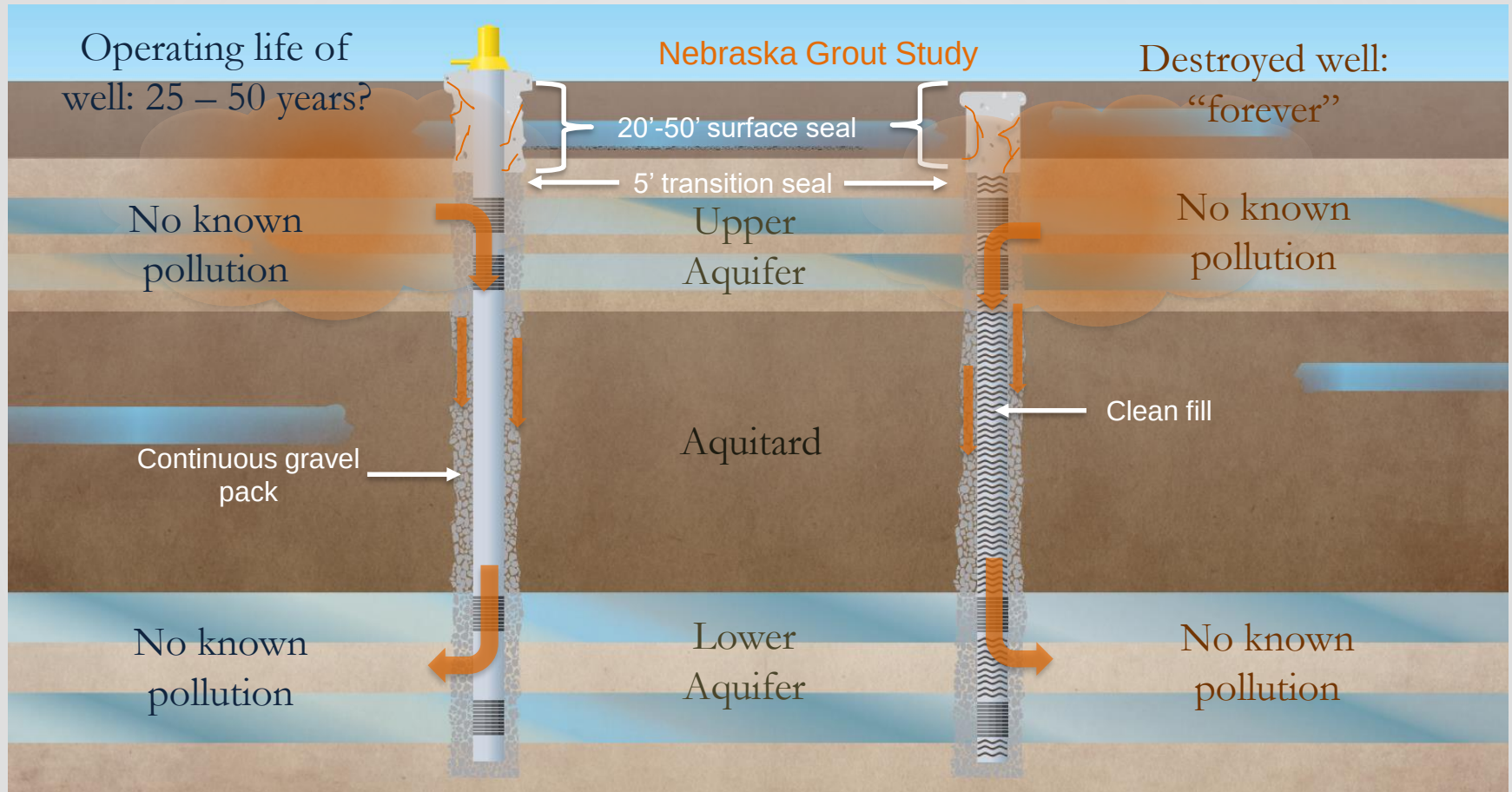
- Assume conditions won't change
- Assume sealing materials perform independently of soil moisture conditions
- Contain ambiguous language
- Based on past best practices, experience



# Current standards

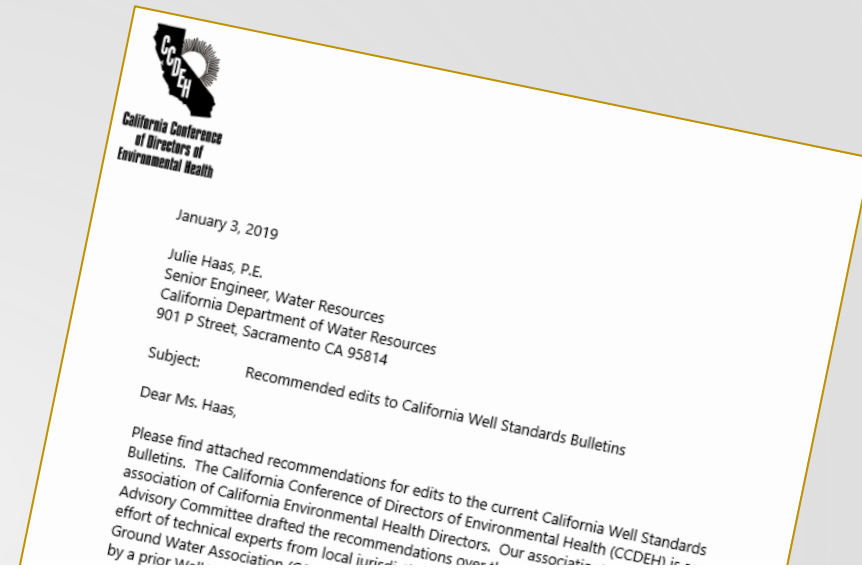


# Vulnerabilities



# WWTAC Recommendations

- 130 Comments
- Collaborative effort
  - CCDEH
  - CGA
- Initial: 2010-2013
- Revisited and submitted to DWR January 3, 2019



|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                  |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ch II, Part II, Section 9. Sealing the Upper Space (B)  | Sealing Conditions (8) Wells that penetrate zones containing poor-quality water, pollutants, or contaminants: if geologic units or fill known or suspected to contain poor-quality water, pollutants, or contaminants are penetrated during drilling and the possibility exists that poor-quality water, pollutants or contaminants could move through the borehole during drilling and well construction operations and significantly degrade groundwater quality in other units before sealing material can be installed then precautions shall be taken to seal off or isolate zones containing poor-quality water, pollutants, or contaminants during drilling and well construction operations. Special precautions could include the use of temporary or permanent conductor casing, use of <b>borehole liners</b> , <b>"Strata sealing-off procedures" described in Section 13</b> and specialized drilling equipment. The conductor casing is described in item 1 above. | Deletion of "borehole liners" from special precautions and addition of "Strata sealing-off procedures".                                                                                                                                          |
| Ch II, Part II, Section 9. Sealing the Upper Space (D)  | Sealing material. Sealing material shall consist of neat cement, sand cement, <b>concrete</b> or bentonite. Cuttings from drilling or drilling mud shall not be used for any part of the sealing material.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Deletion of concrete from approved sealing material.                                                                                                                                                                                             |
| Ch II, Part II, Section 9. Sealing the Upper Space (D)2 | <i>Pozzolan (also commonly known as "fly ash") combined with Portland cement contributes "cementitious" properties. Some principal benefits of the use of Type F coal fly ash as a component of cement sealing material include enhanced workability, less water demand, reduced permeability and chloride penetration, greater resistance to sulfate attack, and reduced shrinkage during curing. When a deep annular seal is to be emplaced, pozzolan may be mixed up to a 50/50 ratio with cement. This mixture having lighter unit weight reduces the potential for borehole formation breakdown and the resulting lost circulation of sealing material.</i>                                                                                                                                                                                                                                                                                                                 | Further research may be needed to determine if generally available fly ash can meet DWR standards ASTM C494 and ASTM C618 or the latest revisions thereof. Consideration should take into account possible metal contamination from the fly ash. |



# PROPOSED APPROACH & TIMELINE



# Vision

- *Updated Well Standards that are enforceable, protective, and based on current state of knowledge and best practices*



# Timeline

|                                                               |                         |
|---------------------------------------------------------------|-------------------------|
| Draft content, form expert panel, design expert panel process | Summer 2019             |
| Develop content with guidance from Expert Panel               | Fall 2019 – Fall 2020   |
| Prepare Public Review Draft                                   | Fall 2020 – Spring 2021 |
| Release Public Review Draft                                   | Spring 2021             |
| Incorporate Comments, Finalize Bulletin 74                    | Summer 2021             |
| Submit to Water Boards for MWO                                | Fall 2021               |
| Training and Local Assistance                                 | Fall 2021 – Spring 2022 |



# Ways to Participate

- Visit our webpage:  
<https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Standards>
  - Comment Portal [Bulletin 74: California Well Standards Comment Portal](#)
  - Join [email service](#) for announcements/updates
- Contact us:  
Julie Haas, PE, Senior Engineer, Water Resources  
[Julie.Haas@water.ca.gov](mailto:Julie.Haas@water.ca.gov)  
916-651-0140  
[Bulletin74@water.ca.gov](mailto:Bulletin74@water.ca.gov)



# Thank you

-The Bulletin 74 Project Team



# The Bulletin 74 Project Team

- Julie Haas, PE, Senior Engineer, Water Resources

[Julie.Haas@water.ca.gov](mailto:Julie.Haas@water.ca.gov)

916-651-0140

[Bulletin74@water.ca.gov](mailto:Bulletin74@water.ca.gov)

- James Albertoni, PE, NACE Cathodic Protection Specialist, Associate Corrosion Engineer
- Jorge Baca Jr., PG, Senior Engineering Geologist
- Ben Brezing, M.S., PE, Engineering Geologist

- Eric Gorman, PG, CHG, Engineering Geologist
- Brent Lamkin, PG, CEG, Senior Engineering Geologist
- Jason Preece, PG, CEG, CHG, Senior Engineering Geologist
- Paul Shipman, PE, Water Resources Engineer
- Mark Souverville, PG, Engineering Geologist
- Debbie Spangler, M.S., PG, Engineering Geologist
- Matt Zimmerman, M.S., PG, CEG, Engineering Geologist

