SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-D**

FROM: Steve Mack, General Manager

Meeting Date : May 5, 2016

SUBJECT: DISCUSSION/ACTION RE DISTRICT'S MEETING WITH THE STATE RE EL BONITA WELL FIELD FLOODING PREPARATIONS

RECOMMENDED ACTION: Receive a presentation by the General Manager regarding meeting with Division of Drinking Water staff on flooding impacts on the El Bonita Well Field and the Guerneville Water Supply System.

FISCAL IMPACT: none

DISCUSSION:

The El Bonita Well Field is at a relatively low level near the Russian River. It is the source of water for the Guerneville Water Supply System of Sweetwater Springs Water District. When the River water elevation gets to 29 feet the well field starts to become inundated. Flood stage for the Russian River at Guerneville is officially at 32 feet elevation. The near flooding in March raised an issue that is concerning to staff - we learned in preparation for anticipated flooding of the El Bonita Well Field that the State Division of Drinking Water would expect the District to issue boil water notices if the wells at that location need to be operated while under water. We had thought that we had addressed that issue to the State's satisfaction (the last large inundation and boil water notice was in 2006 and was due to flood water infiltrating the raw water line because of a leak in the raw water line from the wells) but we learned during this last event we had not. We had a meeting with State staff on April 28 to discuss this matter. Attachment A is the information we presented at the meeting and gives some background.

Attending were me and Kevin Gilman, Field Manager, representing the District, Stefan Cajina, chief of the North Coastal Section, Janice Thomas, Sonoma District Engineer, Waldon Wong, Associate Sanitary Engineer, and Misha Anderson, Water Resources Control Engineer, representing the Div of Drinking Water. Stefan reiterated (heard by me the first time directly) that he was concerned that flood waters could contaminate the pumped water by negative pressures somewhere along the piping that is under the flood waters. We stated our position that District water is continually monitored for turbidity which should show increased turbidity and that we have a plan for addressing this situation, that boil water notices are a hardship for everyone, if not needed, and we want to find out what we can do to satisfy the Division of Drinking Water staff so that boil water notices are only used when needed. Mr. Cajina stated that wells are always turned off or boil water notices given when wells are inundated; our point is that this is an annual thing for

us - doesn't happen every year but we are prepared for it. The situations he brought up were when the flooding is a surprise.

We discussed what we can do to make this work for us - annual boil water notices are not acceptable to us or our customers; these floods are not extraordinary events - they happen all the time and we must be prepared to deliver water in the smaller of these events. Some possibilities:

- Move the well field. Not feasible, but we possibly could drill one well near the generator on Old River Road and that might be able to get us through the floods. It might be possible to get a grant for this (but I don't think it would be likely).

- Better develop the existing plan - put together the existing plan with supporting documentation, perhaps have a temporary extension on the vaults or walls around the wells, discuss our regular maintenance for these wells.
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I'll be getting together with the field staff next week to put together what we have and what we can do to move forward on this.

4-17-2016

Sweetwater Springs Water District
Guerneville System

Subject: History of well field flooding, and the effects each event had in our ability to provide safe drinking water.

1998-2016

Background:

Prior to 1998 only one of the existing new wells was on line. The other two wells in operation at the time were not adequately sealed. Additionally, when flood waters rose above 39ft, the chlorine injection system was not operational.

By 1998 we had all three of our existing new wells on line. These wells have sanitary seals that were approved by California Department of Health Services. Each well head is further protected by a reinforced, sealed, above ground concrete vault with a steel cover to protect from debris. The height of the air vent for the wells is above any historical flood level. The chlorination system was relocated high out of the flood zone to the area that is now the Highland Treatment Plant.

List of flood dates:

Dates: 2/3/1998 – 2/7/1998 Flood water reached 38.6ft. (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 2/20/1998 Flood water reached 31.5ft (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 2/14/2000 Flood water reached 31.9ft (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 12/17/2002 Flood water reached 31ft. (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 12/30/2003 Flood water reached 30ft. (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 2/18/2004 Flood water reached 38ft. (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 12/31/2005 – 1/3/2006 Flood water reached 45ft (Well pumps active)
Boil water was ordered due to high turbidity. Disinfection not interrupted.
Cause for turbidity: After flood waters receded, operators began an investigation to determine the cause of the turbidity increase. Two problems were discovered at the well field area:

The first discovery was that a drain valve on the raw water line used to flush wells to waste, had not completely sealed shut and allowed a slight back flow. The leak caused water to flow back from the backwash recovery tank through the filters and into the raw water line where the turbidity line picks up the sample water. The faulty valve was replaced and an additional valve was installed at the end of the drain line as a fail safe. We know this was a cause because after repairs were made to the drain line valve, we performed a test by purposely duplicating the scenario by slightly opening the raw water flush to waste valve, and got the same result. We can demonstrate this scenario anytime to prove the point. Now, at least once every two weeks the valves are exercised and the drain line is inspected for any leakage. We have not had a problem since.

The second discovery was a cracked fitting on an air vent line for one of the wells. (Well # 4) We discovered this when we were inspecting around the well heads, and the surrounding area of the vaults. A small indentation in the soil next to one of the vaults was noticed. We excavated this area and found a cracked fitting on the vent pipe directly under the indentation. It appeared that the soil around the fitting may not have been adequately compacted, causing the pipe to move enough to stress the fitting. This too could have possibly caused a spike in turbidity and if so would have been true flood water intrusion. We replaced the fitting, backfilled and provided proper compaction. As a precaution we also inspected the air vent fittings on the other wells. We completed our inspection by installing valves on each of the wells vent line, and then performed a pressure test to be sure there were no other breaks throughout the line. During periods of well field inundation we close the air vent valves as a precaution.

Prior to a flood occurring we perform a test to assure there is a tight seal around each well head. The vaults are filled with water and the well pumps are turned on. While the pump is in operation and after the pump is shut off we observe the water for any air bubbles. We also monitor the water level in the vault.

Date: 12/24/12 Flood water reached 30.4ft (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

Date: 12/12/2014 Flood water reached 34.7ft. (Well pumps active)
No boil water order. Disinfection was not interrupted.
Turbidity remained stable.

From 1998 – 2014, there have been nine events where flood waters have inundated our well field. Of the nine flood events, there was one event (New Years2006) where turbidity was affected. The cause was identified and repaired. Additional protection has been installed. Test procedures occur prior to flood water inundation. Turbidity and chlorine are constantly monitored. We have an alarm system and a backup alarm system on-line at all times for turbidity and for chlorine levels. Our well pumps can be shut off remotely.

What happened before 1998 has nothing to do with our present day system. From 1998 forward it's a completely different system; the well designs, the disinfection delivery, the filtration system and in large part the distribution system. We take pride in our water system and we have justified confidence in our ability to deliver a safe product to our customers at all times.

We feel very strongly against the idea to require a precautionary boil water order to our customers anytime the area around our wells become inundated during floods. We hope that the information provided here will give you a clearer picture of how our system is now, and an understanding of why we feel such an order would be unjustified.

We appreciate your thoughtful consideration to all of this.

Thank you.

Sincerely,

Kevin Gilman, Field Manager