Fifteenmile Watershed Council
Post -Fifteenmile Action Plan to Stabilize Temperatures Alert Debrief
Barlow Ranger District Office, Dufur **July 18, 2013** **6:30 – 7:45 PM**

MINUTES

Attendees

Vince Cobb	Rosemary Furfey, NOAA/NMFS
Bob Wood, *OWRD*	Chris Rossel, *USFS*
Brian Poxon, ODFW	Bob Durham
Shane Smith, ODFW	Natasha Bellis, *Freshwater Trust*
Derrek Faber, ODFW	Anna Buckley, *coordinator*
Matt Fox, *CTWS*	

Introductions
Everybody introduced themselves. Many of the council members and irrigators weren't able to make the meeting because they were in the midst of wheat harvest.

Overview summary of the alert
An overview summary of the alert was provided, as follows. The Fifteenmile Watershed Council implemented the first trial run of a stream temperature alert per the Fifteenmile Action Plan to Stabilize Temperatures (FAST). The goal of the alert was to inform irrigators that lethal stream temperatures were in the forecast, so they could opt to voluntarily self-regulate their surface water diversions to reduce Endangered Species Act liability, should a fish kill occur.

An alert phone message went out to all irrigators with water rights on Fifteenmile, Ramsey, and Eightmile Creeks, watershed council members, and other interested parties at 9:30 AM on Thursday June 27th. An end of the alert phone message was delivered on July 3rd at 8:30 AM. During this time period, forecasted temperatures were predicted to exceed the temperature criteria set in the Plan: 72 deg. F or greater at two or more locations for more than one day within the 7-day forecast. The 7-day forecast is generated from a model developed by ODFW fish biologist, Derrek Faber, that predicts daily average stream temperatures based upon stream flow and weather data. The model generates a daily email of the 7-day forecast.

The alert phone message instructed irrigators who voluntarily cut back or completely shut off during the lethal temperature period to report the details of their reductions (i.e. when and rate) to the watershed council coordinator.

The goal of the alert debrief was to review the alert specifics, discuss the success of the implementation, and identify any areas for improvement.

Presentation of fish observations during the alert period
ODFW fish biologists, Derrek Faber and Brian Poxon, shared observations of the fish in Fifteenmile during the alert period. They said that although they found some dead fish, the number of mortalities was a normal amount and they weren't attributing their death to high temperatures. The live fish observed in the creek didn't appear thermally stressed and seemed to be congregating in deeper, cooler pools of water. Along one stretch of the creek, a school of fish was observed with their heads nearly buried into the overhang of the

bank, apparently seeking out cooler temperature. A follow-up question was asked how one could tell if a fish was killed due to temperature. The response was that an autopsy could reveal for certain if the cause of death was due to temperature but certain physical characteristics can be indicative of thermal stress, as well.

Matt Fox reported on observations of the Pacific lamprey at the mouth of Fifteenmile above Seufert Falls. He said they found 22 dead lamprey but were likely mortalities associated with harvest.

Review of actual stream temperatures vs. modeled forecasted stream temperatures

Derrek Faber presented a summary of actual stream temperatures and model forecast performance during the alert.

Derrek said, in general, the model was under-predicting temperatures for the lower Fifteenmile watershed, and over-predicting temperatures for the Dufur Valley when water temperatures exceeded 65 F. Also, the model's connection to the Dufur area weather stations in the IFP network was interrupted during the alert , which fixed one of the prediction variables to June 20, resulting in under-predicting stream temperature for the first four days of the forecast. Unfortunately, this malfunction occurred while he was on vacation out of cell phone range and instructions to troubleshoot the model hadn't been written down. Despite the problems with the model and the slight discrepancy of predicted water temperatures with observed water temperatures, the alert was correct in the initial timing and duration for water temperatures exceeding 22 deg C (72 deg F), as observed at three out of four locations.

The temperature forecast model has been updated to more accurately predict higher water temperatures throughout the watershed. The recent alert provided elevated water-temperature data that was previously unavailable with combined flow data, and allowed calibration of the model to the higher temperatures at all four sites.

The figure below shows the actual average stream temperatures in degrees F at the four predicted locations during the alert. RM stands for river miles measured from the confluence of Fifteenmile Creek with the Columbia River. As noted in the figure, during the alert, the Watermaster started regulating to water rights holders junior to1960 on June 28th and those junior to 1909 on July 2nd.

- Fifteenmile Ck at Eightmile Ck Confluence (RM 2.8) is the 200 feet elevation location.
- Fifteenmile Ck at Emerson-Roberts Market Rd. (RM 19.3) is the 900 feet elevation location.
- Fifteenmile Ck at Dufur (RM 31) is the 1200 feet elevation location.
- Fifteenmile Ck at Ramsey Ck (RM 35.5) is the 1525 feet elevation location.

Measured Stream Temperatures 2013 (daily average Deg. F) on Fifteenmile Creek

	Elevation (ft) 200′	900′	1200′	1525′
6/27 – Alert	• 68.7	66.9	61.3	56.4
6/28 – Reg 1960	• ***73.0***	71.6	65.4	59.3
6/29	• ***75.6***	***75.0***	69.1	62.3
6/30	• ***75.4***	***75.7***	***72.2***	62.8
7/1	• ***77.9***	***78.6***	***72.8***	65.3
7/2 – Reg 1909	• ***77.5***	***79.2***	69.8	66.4
7/3 – End Alert	• ***73.9***	***76.3***	65.9	64.2
7/4	• 69.4	71.8	65.9	62.0

* Red color indicates above threshold for alert

The stream temperatures from this alert were compared to the stream temperatures observed during the 2009 fish kill (figure below). In 2009, the high temperatures persisted for a longer period of time. Based upon the temperature data collected during the alert and the 2009 temperature data during the fish kill, the alert trigger threshold has been increased to 23 deg C (73 deg F) for the two lower sites (at Eightmile and at Emerson-Roberts Market Rd.). The alert trigger threshold will remain 22 degrees C (72 deg F) for the upper sites (at Dufur and at Ramsey Creek).

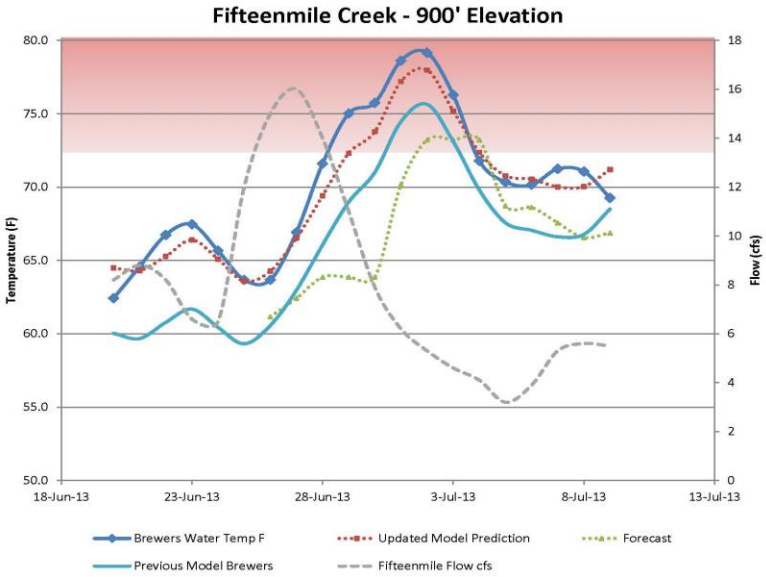
Fifteenmile Creek Water Temperatures - 2009

Date	200′	900′	Dufur-1200′
16-Jul-09	72.1	70.3	63.5
17-Jul-09	73.6	72.7	65.5
18-Jul-09	72.9	72.7	65.7
19-Jul-09	70.5	72.1	65.3
20-Jul-09	70.7	71.4	64.8
21-Jul-09	72.7	72.9	66.7
22-Jul-09	72.9	74.1	67.5
23-Jul-09	69.3	72.0	65.7
24-Jul-09	69.3	71.6	65.5
25-Jul-09	71.6	72.7	66.7
26-Jul-09	74.1	74.5	68.9
27-Jul-09	77.4	77.0	70.9
28-Jul-09	77.9	78.4	72.0
29-Jul-09	78.1	78.8	72.5
30-Jul-09	75.7	77.5	71.2
31-Jul-09	76.5	79.0	72.0
1-Aug-09	76.6	79.5	72.1
2-Aug-09	75.7	79.2	72.5
3-Aug-09	72.5	77.0	71.2
4-Aug-09	69.8	74.3	68.9
5-Aug-09	68.4	73.6	67.8
6-Aug-09	63.9	68.9	62.8
7-Aug-09	62.4	66.9	62.2
8-Aug-09	63.0	66.9	61.9
9-Aug-09	65.8	68.4	64.0
10-Aug-09	68.0	69.3	64.0
11-Aug-09	69.1	70.0	64.4
12-Aug-09	70.2	70.7	65.5
13-Aug-09	67.8	70.0	63.1
14-Aug-09	64.4	65.8	60.3
15-Aug-09	63.9	64.6	59.5

Fish Kill Observed (2009)

This graph below depicts model performance at 900’ elevation during the alert. The dark blue line is the actual water temperature measured with an instream sensor, the light blue line is the previous model prediction, the red line is the model prediction updated with the actual data collected during the alert, and the green line is what was forecasted during the alert when the model was malfunctioning . The gray dashed line is the stream flow during the alert. Graphs of model performance at the other three stations can be found here

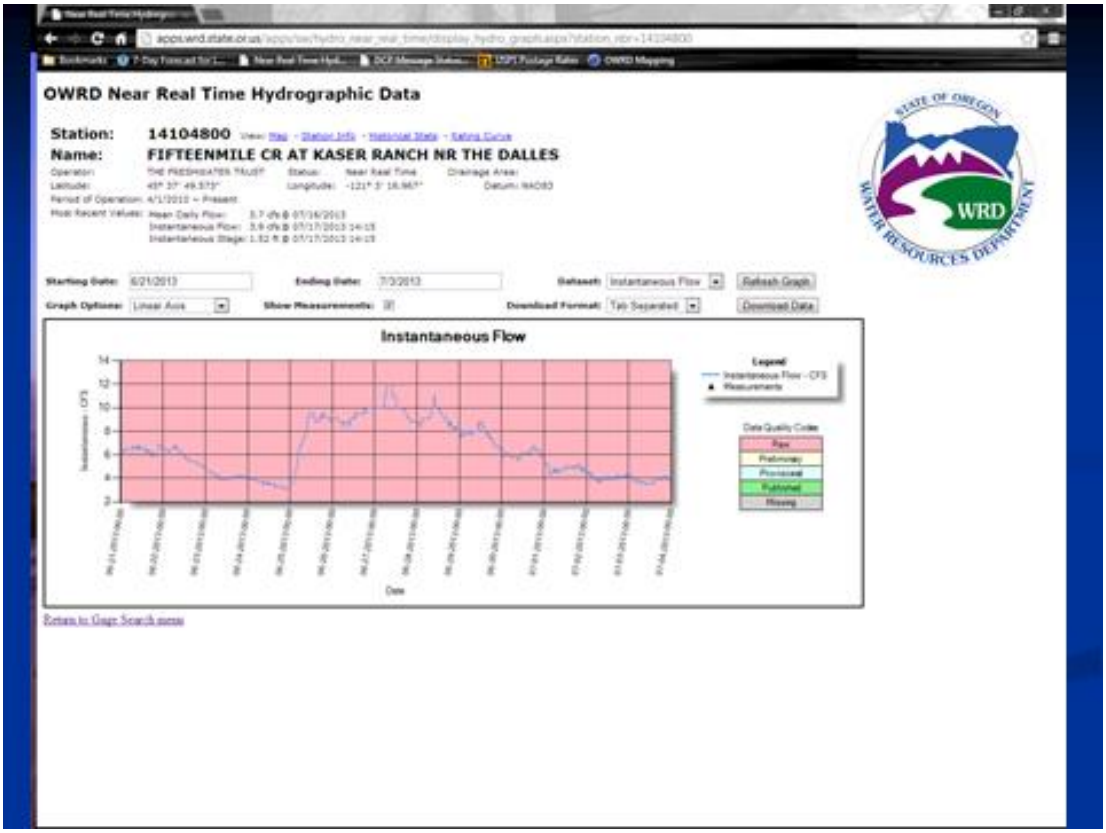
on the Fifteenmile Watershed Council's project website: http://wascoswcd.org/wcswcd_026.htm.



Stream flow analysis during the alert

The OWRD Watermaster, Bob Wood, provided a review of the stream flow during the alert. According to the Kaser Gage located at RM 6 (see figure below), the stream was running around 4 cfs on June 24th. It rained about an inch in Dufur (RM 30.5) on Tuesday June 25th – two days prior to the alert, which is about the same amount that normally falls during the entire month of June. The runoff from the rain bumped it up to 12 cfs by June 27th. By June 28th, it had dropped down to 8.6 cfs and cycled up and down daily (due to plant respiration/photosynthesis and/or irrigation schedules) but, overall, trended downward. The last morning of the alert the creek was running at 4 cfs, where it stayed until July 5th when it dropped to 2 cfs. Stream flow data for the Kaser Gage can be viewed on the OWRD's website a http://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/display_hydro_graph.aspx?station_nbr=14104800)

Stream flow from Kaser gage. Rainfall on 6/25/13. Alert between 6/27 -7/3.



Reports of voluntary self-regulation

Reports of voluntary self-regulation to the watershed council coordinator during the alert are summarized below. All of the irrigators who self-regulated held water rights senior to 1909. It's likely there were other irrigators that participated in the self-regulation, but didn't report it. For instance, Vince Cobb, said at this alert debrief meeting that he had reduced his diversion rate but hadn't reported it to the watershed council coordinator. Based upon the irrigator reports to the watershed council, the amount of the voluntary curtailed diversions was estimated to be about 4.5 cfs. In some cases, this estimate was based upon the water right rate filed with the Watermaster, rather than an actual reported reduction rate. The Watermaster started regulating to 1960 on June 28th, a day after the alert, and to 1909 on July 2nd. The Freshwater Trust's full season in-stream leases started on July 1st.

A combination of factors, including the significant rainfall just prior to the alert, the losing reach (RM27 -13) between a majority of the voluntary shut-offs and the stream flow gage at Kaser (RM 6), and the start of water rights regulation, made it difficult to tease out the specific effect of the voluntary shut offs on stream flow measured at the Kaser gage.

Irrigator (oldest water right year)	Dates during the alert (6/27 - 7/3) ?	Reduce rate	Approximate POD location
Vince Cobb (Welp prop.) (1879)	?	?	RM 35.9
Ryan Clausen (1860)	6/28 – at least thru end of alert	Cut back by 200-250 gpm (~0.4 cfs)	RM 31.4
Stan Ashbrook (1860)	At least entire alert	Cut back by 850 gpm (~1.9 cfs)	RM 31
Charlie Hanna (Limmeroth prop.) (1896)	At least entire alert	40% of normal (~0.36 cfs)	RM 27.5
David Brewer (1870)	6/29 (AM)– 7/4 (AM)	Completely off (0.12 cfs)	RM 19
Charlie Remington (Jim Markman prop.) (1869)	At least entire alert	Completely off (~1.14 cfs)	RM 9.6
Phil Kaser (1869)	6/29 – at least thru end of alert	Completely off (~0.57 cfs)	RM 6.1- RM 13.5

Feedback and Recommended changes

The overall feedback from the limited people at the debrief meeting was that the implementation was executed as planned and worked well.

Vince said he cut back but didn't call the coordinator. He asked for clarification if any amount of cut back would help or was the expectation to completely shut off. The group agreed that any reduction would help. He said next time he would call.

The coordinator shared a bit about questions that came up during the alert. One was about how many days before the predicted lethal temperatures should an irrigator start cutting back or shutting off. A day or two before the forecasted lethal temperatures was suggested.

The Watermaster recommended that The Freshwater Trust consider starting full season instream leases earlier in the season next year on June 1st or 15th. The Freshwater Trust said they would explore that option.

There were also questions about how to convert a reduction in irrigation lines/sprinklers to a rate in gpm or cfs when reporting a voluntary reduction. Since most irrigators have diversion meters, it was recommended to hold a refresher training on meter reading at a future watershed council meeting.

The coordinator, also, shared some of the skepticism that she heard about the accuracy of the model and the need to ground truth the forecasts with actual temperatures. Everyone agreed that the model is a great early warning tool that will continue to get refined with additional data. Everyone thought that it would be helpful to have actual temperature data readily available, especially at sites with stream flow. Each of the forecasted stations has temperature sensors deployed collecting actual data, but ODFW has to physically visit each site to download the data. Additionally, only one (200' location) of the forecasted temperature sites is located next to a real time stream flow gage. There is a temperature probe deployed at the Kaser gage (RM 6) maintained by The Freshwater Trust, but the data is not being reported real time, nor is the data incorporated

into the model. An additional temperature probe will be added to the new gage on Fifteenmile below Pine Creek near Dufur (RM 29) (OWRD station number # 14104190). The Council, The Freshwater Trust, and OWRD are in the process of figuring out where the data will be hosted. Ideally, the data will be served up with the flow data on the OWRD web site. However, OWRD doesn't traditionally host water quality data since their focus is water quantity (DEQ deals with water quality). Inquiries are being made to OWRD management to see if they could make an exception and host the temperature data real time for both gage sites.

Derrek said that in preparation for future alerts he would draft instructions and train one of his staff and/or the watershed coordinator on how to trouble shoot the model so there will be back-up when he is not available.

As mentioned previously, the trigger threshold was increased to 23 deg C (73 deg F) for the two lower sites (at Eightmile and at Emerson-Roberts Market Rd.). The trigger threshold will remain 22 degrees C (72 deg F) for the upper sites (at Dufur and at Ramsey Creek).

A suggestion was made to mail out a one-page summary of the plan to all irrigators at the beginning of next year so those who aren't familiar with the Plan or haven't attended the council meetings would have background information when they received the alert call.

A suggestion was made to repeat the watershed coordinator's phone number twice in the alert message to ensure the recipient has time to write it down.

There was general agreement that the compensation piece needed to be worked out in order to make the plan sustainable. OWEB grant funds for the compensation program will be pursued for the upcoming grant cycle. Rosemary said she was very supportive of the Plan, impressed by the first alert implementation, and encouraged application to OWEB, which receives funding from the Pacific Coastal Salmon Recovery Funds from her agency, NOAA.

The group decided to debrief any after future alerts that occur this summer at the next full Watershed Council meeting scheduled for September 17th (6:30 PM, at the Barlow Ranger District office), unless a fish kill occurs, and then an earlier meeting should be convened.

The meeting adjourned at 7:45 PM.