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BEFORE THE

STATE WATER RESOURCES CONTROL BOARD

In Re:
Emmerson Investment Inc.

Shasta River Tributary to Klamath River in
Siskiyou County

Proposed Revocation of Permits 19164 and
19165 (Applications 26306 and 26307)

**WRITTEN TESTIMONY OF PETE
SCALA, RANCH MANAGER, HOLE-IN-
THE-GROUND RANCH**

DATE: July 20, 2009
TIME: 9:00 a.m.

I have been employed by Emmerson Investment, Inc. ("Emmerson") as a Ranch Manager since 1993. I am responsible for several ranch operations, and my work involves day-to-day management including cropping, irrigation decisions, and coordination with the Watermaster to schedule diversion of irrigation water. I am responsible for several Ranches in the vicinity of the Shasta River, including the Hole-in-the-Ground Ranch ("Ranch"). I became responsible for day-to-day Ranch operations when Emmerson took ownership of the Ranch in 1995. Through this experience, I am familiar with the operation of the Ranch's Shasta River water rights and diversion facilities. Before working for Emmerson, I worked on other ranches in the area. I have been involved with irrigation using water from the Shasta River since about 1974 or 1975, and have been working with the Watermaster since that time.

Exhibit 41 is a map which shows some of the significant features of the Ranch and its locale. For orientation, the northern portion of Lake Shastina is shown in the lower right-hand part of the map. The boundary of the Ranch is shown by the light blue line, and the approximate location of the irrigated lands is shown with the green cross hatching. The two red dots show the location of the two diversions on the Shasta River, which flows generally northwesterly through the Ranch. The upper gravity diversion is labeled with the associated water right Permit number 019164, and the lower pumped diversion is labeled with the Permit number 019165.

1 **Physical Facilities Used for Diversion of Shasta River Water**

2 Shasta River water is diverted to the Ranch at two points of diversion, known as the upper
3 and lower diversions. The upper diversion is also known as the “gravity” diversion, and the
4 lower diversion is known as the “pumped” diversion. Both diversions have fish screens installed.

5 **Upper Diversion - Permit 019164 (Application 026306)**

6 The upper point of diversion, for Permit 019164 (Application 026306), operates by
7 gravity and serves water to lands located generally east of the Shasta River. The diversion itself
8 is equipped with a gate and fish screen. Past the gate, a 24” Parshall Flume is installed to allow
9 measurement of flows. The flume is also equipped with a Stevens f-type recording device.
10 Exhibit 42 is a photograph showing the Parshall Flume and Stevens f-type recording device for
11 the upper diversion. The Parshall Flume is permanently installed, and the related recording
12 device has been installed on the upper diversion every irrigation season since Emmerson took
13 ownership of the Ranch and I became involved in its operation in 1995.

14 The upper diversion depends on checking up Shasta River water levels at the diversion
15 point to provide sufficient head to operate the diversion. The specific design of the facilities to
16 check up the water levels has changed since 1995 when I began to manage the Ranch. From
17 about 1995 to 2007, the upper diversion consisted of an earth diversion dam, with two
18 approximately 24” culverts extending through the dam. From 1995 to about 2002, the water level
19 was checked up behind the dam by placing 2”x6” boards vertically over the opening to the
20 culverts. The boards were held in place by water pressure, and were spaced to allow bypass flows
21 between the boards.

22 Around 2002, I worked directly with the Watermaster and Board staff to develop an
23 alternate system of checking up the water levels and providing a measured minimum bypass flow
24 of 1 cubic feet per second (“cfs”). The solution, which was proposed by Board staff, involved
25 placing flash boards horizontally in front of the culverts. One of the flash boards included an
26 orifice, a cut notch. The size of the orifice and its position relative to the checked water level
27 were prescribed by the Board staff. After the original design was installed and inspected by the
28 Board staff, they noted that the depth of the orifice could affect the amount of flow. Based on

1 that, the Board staff suggested a relocation of the orifice from the bottom of the stream bed to
2 higher in the water column. I had the flashboards modified to reflect this change in design.

3 Exhibit 43 consists of a photograph showing the horizontal boards and bypass flows at the
4 upper diversion during the period after 2002.

5 In late 2007 or early 2008, the earth diversion dam was replaced with a rock weir. While
6 the rock weir does check up the water levels, a portion of the water also passes over the rock weir.
7 Because of the design of the rock weir it is not possible to measure the bypass flow. However,
8 my observation of the weir in operation is that there appears to be greater flow below the rock
9 weir than occurred with the earth diversion dam. Exhibit 44 is a photograph of one of the rock
10 weirs, illustrating the nature of these weirs and the resulting stream conditions.

11 **Lower Diversion – Permit 019165 (Application 026307)**

12 The lower point of diversion, for Permit 019165 (Application 026307), is a pumped
13 diversion, and serves water to lands located generally west of the Shasta River. This diversion is
14 equipped with a gate and fish screen. Past the gate, the water flows into a stilling basin, from
15 which it is pumped into the Ranch irrigation system by two pumps. Past the pumps, a 24”
16 Parshall Flume is installed to allow measurement of flows. During the irrigation season, the
17 flume is equipped with a Stevens recording device. The Parshall Flume is permanently installed,
18 and the related recording device has been installed on the lower diversion every irrigation season
19 since Emmerson took ownership of the Ranch and I became involved in its operation in 1995.

20 The lower diversion depends on checking up water levels at the diversion point to provide
21 sufficient water levels to operate the diversion. As with the upper diversion, the design has
22 changed since 1995 when I began to manage the Ranch. From about 1995 to around late 2007 or
23 early 2008, there was an earth diversion dam, with an approximately 10’ wide, concrete-lined
24 opening in the center. Water was checked up by placing boards horizontally in the opening, and
25 bypass flow occurred through an orifice cut in one of the flashboards.

26 Exhibit 45 consists of a photograph showing the horizontal boards and bypass flows at the
27 lower diversion during the period prior to 2008.

28 In late 2007 or early 2008, the earth diversion dam was replaced with a rock weir. While

1 the rock weir does check up the water levels, a portion of the water also passes over the rock weir.
2 Because of the design of the rock weir it is not possible to measure the bypass flow. My
3 observation of the weir in operation is that there appears to be greater flow below the rock weir
4 than occurred with the earth diversion dam. Exhibit 46 is a photograph of one of the rock weirs,
5 illustrating the nature of these weirs and the resulting stream conditions.

6 **Physical Operation of Shasta River Diversion Facilities**

7 The physical operation of the diversions on the Shasta River is coordinated with the
8 Watermaster, and the Watermaster physically performs a number of the actions needed to operate
9 these diversions. In my experience, the diversion gates at the upper and lower diversions are
10 always opened by the Watermaster, and often no-one from the Ranch is at the diversion when the
11 Watermaster operates it. The gates are generally also closed by the Watermaster. However,
12 Ranch staff may close the gates in certain circumstances, such as avoiding flooding during high
13 flow conditions, to coordinate specific irrigation practices on the Ranch, or at the end of the
14 irrigation season. The Watermaster is given notice when we close the gates. This notice is
15 needed to inform the Watermaster to stop releasing the Ranch's share of water stored in Lake
16 Shastina.

17 The gates can be adjusted to vary the flow rate at each diversion. However, as a practical
18 matter once the diversion flow rate is set it is generally maintained at that rate for an extended
19 time. Our operations of the Ranch irrigation system (after the diversion works) are then adjusted
20 to reflect the diversion rates at each point of diversion.

21 Prior to the installation of the rock weirs, Ranch staff would place the flash boards over
22 each diversion point. With the rock weirs, no action is needed to check up water levels for the
23 diversions. I periodically visit the diversions. I am familiar with how the River appears when the
24 1 cfs flows are bypassed. Based on that, I believe that the 1 cfs flows have generally been
25 bypassed when the diversion gates have been open every year since 1995. During the period
26 when the diversions consisted of flashboards, the 1cfs bypass flows came from gaps between the
27 boards, the cut orifices, and/or through seepage in the diversion dams. The rock weirs allow at
28 least 1 cfs bypass flows at all times.

1 The Watermaster operates the flow recorders at the diversions. Those recorders are
2 locked, and not available for the Ranch to operate. However, I have observed the Watermaster
3 checking the flow records produced by the recorder. I always understood that the Watermaster
4 would take the flow measurements and keep those records.

5 **Process of Ordering Diversions from the Watermaster**

6 Diversion operations involve coordination between the Ranch and the Watermaster. The
7 Ranch will put in an order for water about 2 or 3 days in advance of starting diversions at the
8 Ranch. When the order is to be supplied from water stored for the Ranch in Lake Shastina, that
9 time allows the Watermaster to release that stored water, and allows time for the released water to
10 reach the Ranch. I generally make the diversion requests directly to the Watermaster over the
11 telephone. While not a formal part of the process, the Watermaster will generally inform me
12 whether the diversions will involve drawing on water stored in Lake Shastina, or if diversions
13 will involve surplus water under the Permits.

14 **Water Use on Hole-In-The-Ground Ranch**

15 Water use on the Ranch is largely for pasture irrigation and for stock watering. These
16 have been the primary uses of water during the entire period I have managed the Ranch, from
17 1995 to present, although the Ranch did produce grass hay through approximately 2002. There
18 has been some change in the relative proportions of these activities over time. Specifically, other
19 ranch land has been obtained in the area since 1995, and since about 2002 we have shifted some
20 of our hay production to these other lands, and have increased the number of cattle on the Hole-
21 in-the-Ground Ranch. Rather than baling the hay on the Ranch, irrigation water is used for
22 pasture, which is consumed directly by the cattle. This shift in operation has only had a minor
23 impact on our annual water use.

24 Typically, irrigation begins within a few weeks of April first, and continues through
25 September. I understand that the Watermaster typically works from April 1 to October 1, which
26 covers our typical season of operation. Therefore, we use the same water ordering system with
27 the Watermaster throughout the year. On rare occasions, the Ranch may begin irrigation before
28 April 1. During those times the Ranch uses the same water ordering system with the

1 Watermaster.

2 An important element of operating the Ranch is the management of the available water. I
3 am generally aware of water conditions on the River, and will also discuss those conditions with
4 the Watermaster early in the year to understand how much water may be available to the Ranch
5 for the upcoming year. My general goal is to preserve enough of the adjudication water stored in
6 Lake Shastina early in the year so that I can spread out water deliveries so that sufficient water
7 remains available through the end of our irrigation season in September. This means we will try
8 to maximize our use of surplus water during the early irrigation season. Surplus water is
9 frequently available in April, May and early June, and occasionally may still be available in July
10 in some years.

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