



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE

West Coast Region  
777 Sonoma Avenue, Room 325  
Santa Rosa, California 95404

September 14, 2015

Barbara Evoy, Deputy Director  
Division of Water Rights  
State Water Resources Control Board  
P.O. Box 1000  
Sacramento, California 95812-0100

Re: NMFS Comments on Potential Amendments to State Water Board's Order  
WR 2009-0060 (Carmel River CDO)

Dear Ms. Evoy:

Thank you for the opportunity to provide comments on your consideration of California American Water's (CAW) proposal to amend the Order WR 2009-0060 (Carmel River Cease and Desist Order). Below are NOAA's National Marine Fisheries Service's (NMFS) comments and analysis of impacts to the steelhead population in the Carmel River from CAW's water withdrawals.

*Background*

The Carmel River once contained the largest southernmost steelhead run in the present range of the South-Central California Coast (S-CCC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS). The Carmel River population of S-CCC steelhead is considered a very important population within the DPS, as it likely provides frequent dispersal to the smaller coastal populations. While the coastal populations are in better condition than the populations in the larger interior rivers (like the Pajaro River), the populations in the smaller coastal watersheds (e.g., in the Big Sur Coast and San Luis Obispo Terrace Biogeographic Population Groups (BPG)) may depend on occasional or frequent adult dispersal pulses from populations in the larger inland watersheds (e.g., Interior Coast Range or Carmel River BPGs) (NMFS 2013). Therefore, the Carmel River S-CCC steelhead run is one of the core populations within the DPS that is targeted by NMFS for increased conservation and recovery efforts. If this run is improved, it will likely significantly contribute to the recovery of the DPS. Moreover, the Carmel River Watershed is considered unique from the other watersheds supporting the DPS in that the watershed provides habitat which results in a population that possesses both interior and coastal population attributes. These attributes may provide more resistance to environmental variability as well as maintain genetic diversity (NMFS 2013).



### *NMFS Recovery Strategy for S-CCC Steelhead*

The basic strategy for recovery of S-CCC steelhead is to recover steelhead in a minimum number of rivers in each biogeographic region (NMFS 2013). Since the Carmel River is the only watershed in the Carmel Biogeographic region, the recovery of the S-CCC steelhead population in the Carmel River is essential to the recovery of the S-CCC steelhead DPS - not just because of its unique status, but also because it is historically one of the largest and, therefore, potentially more viable steelhead populations within the S-CCC steelhead DPS.

NMFS' S-CCC Steelhead Recovery Plan was completed in September 2013. The Recovery Plan states that an average of 4,150 spawners per year, persisting through a cycle of poor ocean conditions would be adequate to safeguard a population. Because of the uncertainty regarding the applicability of the 4,150 spawners for each watershed in the S-CCC Recovery Planning Area, the Recovery Plan proposes that a performance-based run-size criteria be developed for different core populations, though in general, the 4,150 number can be thought of as the upper bound of what the ultimate viability target would be (NMFS 2013).

Based upon steelhead adult migration counts at the San Clemente and Los Padres Dams, data indicate steelhead in this watershed have undergone a steady decline. The San Clemente Dam (SCD) was built at River Mile (RM) 18.6 in 1921, and the Los Padres Dam (LPD) was constructed 28 years later at RM 24.8 in 1949. Using observations from local field personnel, the California Department of Fish and Game (now called California Department of Fish and Wildlife (CDFW)) estimated the annual steelhead spawning population in the mainstem Carmel River to be about 1,650 fish in 1965 (Titus *et al.* 2009). More recent data estimate the historical population in the Carmel prior to the construction of the dams was a run size somewhere between 1,500 – 8,000 adults annually (Becker *et. al* 2010).

During the 1980s, using a combination of ladder counts, spawning redd surveys, and angler surveys, about one half (55 percent) of the adults that entered the Carmel River moved upstream of SCD (Dettman and Kelly 1986). The remaining adults spawned in tributaries or the mainstem of the river downstream of the dam. Most recent spawning survey data from the Monterey Peninsula Water Management District (MPWMD) for the years 2007, 2008, 2009, 2012, and 2013 report the number of steelhead redds observed in the lower river (defined as the river below SCD) were 210, 135, 39, 58, and 54, respectively. The years with the lower number of redds were attributed to dry winters with low flows. MPWMD noted during the surveys since 2008 that the lower river spawning habitat was the best that staff had seen in over 15 years (MPWMD 2015).

Adult steelhead returns to the Carmel River are highly variable because of fluctuating environmental conditions and year class sizes. Returns to the SCD ladder since 2001 have averaged about 390, with a low of 95 and a high of 804 (MPWMD 2013). Return counts for the entire river are estimated to be double the ladder counts (Dettman and Kelly 1986). Data from 2000-2013 show ladder counts for steelhead adults returning to the SCD numbered 472, 804, 642, 483, 388, 328, 368, 222, 412, 95, 157, 452, 470, and 249 (MPWMD 2013). In 2014, the drought resulted in the river being inaccessible to steelhead to and from the ocean, thus no fish entered or left the river. These years generally indicate a downward trend in numbers, although

in some years the numbers did show an increase. Fisheries staff from MPWMD consider the apparent decline in counts at the SCD ladder to be due to mortality from various sources, and partly due to increased numbers of fish spawning before they reach the fish ladder perhaps in response to improved habitat conditions and access to these areas downstream of the dam. If an increase in spawning is occurring downstream of the dam, the decline in run size would be less steep than the decline in fish numbers at the ladder indicates (Williams *et al.* 2011).

MPWMD's records of adult steelhead at the LPD ladder fish trap from 1949 to 2013 ranged from 558 in 1962 to just two in 1973, with an average of 113 for the years in which counts were made (MPWMD 2013). In the drought years of 1976 to 1977 no adult steelhead were captured in the LPD ladder trap<sup>1</sup>, and none were observed at the SCD fish ladder. In addition, during the three year period from 1988 to 1990 as well as 2014, the river never breached the sandbar at the mouth due to drought conditions.

The failure of steelhead numbers to return to levels seen before the 1976-1977 drought is more likely than not a result of the degradation of habitat in the Carmel River as a result of partial barriers to historic spawning and rearing areas due in part to dam presence at the LPD, SCD, and Old Carmel River Dam (OCD, RM 18.3), flow reductions from water diversion, and habitat fragmentation and degradation (MPWMD 2004; Titus *et al.* 2009).

#### *Impacts of CAW Water Withdrawals*

The decrease in flows caused by CAW withdrawals has a significant adverse effect on S-CCC steelhead, and critical habitat in the Carmel River by: (1) decreasing the amount of habitat available for juvenile rearing, potentially resulting in overcrowding in the areas where streamflow is still present, increasing competition for food, and causing a decrease in food production; (2) stranding and killing steelhead as the stream channel dries back; and (3) increasing predation by birds and other animals due to fish being trapped in isolated pools.

While large numbers of steelhead spawn below the SCD, survival depends upon streamflow remaining in the river throughout the entire summer, fall, and following winter. MPWMD annually rescues steelhead that are stranded due to dewatering between the Narrows (RM 9.5) and the Lagoon. Without these conservation efforts, many juvenile steelhead would become stranded, with no chance of survival during the dry summer months, when the decline in surface flows strand juvenile steelhead in drying isolated pools or stream sections.

During spring months, when steelhead smolts are actively emigrating from freshwater to the ocean, the diversion of surface and groundwater from the river and alluvial aquifer often interferes, and in some cases, blocks migration into the ocean. When streamflow is too low for natural emigration, or when smolts are at risk of being stranded, MPWMD monitors streamflow, captures emigrating smolts, and transports them to the lagoon or ocean. The trap was operated in 2013 and before that in 2007, when similarly dry conditions occurred. During the 2013 trapping, a total of 102 smolts and three kelts were captured and transported to Carmel Bay, acclimated to seawater, then released (MPWMD 2013).

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<sup>1</sup> Although it should be noted that the trap was only sporadically functional and likely only captured a portion of the actual number fish attempting to pass the dam.

MPWMD rescues juvenile steelhead during the summer months as the lower reaches of the river become dry. The Sleepy Hollow Steelhead Rearing Facility (SHSRF) was constructed in 1997 to hold and rear the juvenile steelhead. Rescued steelhead are either released to permanently flowing upstream reaches of the river, the lagoon, or reared at the SHSRF. Those fish that are reared in the SHSRF and survive through the summer and fall are released back into the river once winter flows have connected the lower river to the lagoon.

From 2000 to 2009, juvenile rescues occurred for an average of 6.95 miles. Since 2009, rescues occurred for an average of 5.95 miles (Table 1) (MPWMD 2015). Two of those years were considered dry and one was a critically dry water year with the natural hydrology contributing to some of this dryback (Table 1). The average number of juvenile steelhead rescued per year from 1989 to 2012 was 15,626 fish. Since 2009, the average annual rescue is approximately 12,145 fish. Since 2001, the number of juvenile steelhead rescued per year ranged from a low of 1,751 fish in 2011 to a high of 84,322 fish in 2008 (MPWMD 2013). The number of fish released into the river varies each year depending on water quality and space available for additional fish in those sections of stream channel.

Year	Water Year Type	River Mile of Rescues (distance from ocean)	Total Number of Steelhead Rescued	Total Number of Steelhead Reared at SHSRF	Percent Mortality (%)
2009	Normal	6.7	13,477	12,773	31
2010	Above Normal	3.13	3,858	1,957	14
2011	Above Normal	3.2	1,751	1,734	17
2012	Dry	6.5	8,159	7,566	28
2013	Dry	8.1	41,805	28,139	61*
2014	Critically Dry	8.1	3,820	0*	0*
<b>Average</b>		<b>5.95</b>	<b>12,145</b>	<b>8,695</b>	<b>25%</b>

**Table 1.** Number of steelhead rescued in Carmel River and reared at SHSRF between 2009-2014. (MPWMD 2015). \* Note: Preliminary data. In 2013, fish were brought to the SHSRF and then released back into the river in September because flows were too low to operate the facility. Mortality was higher that year because of the dry conditions. In 2014, SHSRF was not operated because flows were too low during the critically dry year. All fish rescued were placed in upstream reaches of the river.

MPWMD's rescue efficiency ranges between 82-99% (Kevan Urquhart, MPWMD, personal communication 2014). The average number of steelhead reared in the SHSRF since 2009 is 8,695 (Table 1). SHSRF's 17-year average survival rate is 43% (MPWMD 2013). Improvements to the facility have resulted in an average survival rate of 75% since 2009.

The mortality attributable to CAW's pumping operations would be less than the total amount, on average, because there are other major pumpers on the river contributing to the dry back, and the river would likely dry back in some dry years even without CAW's pumping (such as the past

two years of drought). However, due to the large volume of CAW's diversions, NMFS is of the opinion they are the primary party responsible for the take of listed species. While ongoing mortalities of this magnitude represent a clear threat to the long-term viability of steelhead in the Carmel River, this level of mortality has occurred for several decades and the fish have continued to persist, albeit at levels far below the ESA recovery target.

#### *Current and Future Remediation of CAW's Operations*

In 2009, CAW agreed to remove SCD as well as OCRD and the Sleepy Hollow ford. Construction of the three-year Carmel River Reroute and Dam Removal project began in 2013 and should be completed by 2016. This project will remove three out of the four fish passage barriers to steelhead on the river (with LPD being the fourth). The removal of SCD, OCRD, and Sleepy Hollow ford will improve habitat below the dams through increased transport of sediment for spawning and rearing that is not currently present in those reaches. The removal will also provide access to habitat upstream that remains wetted year round for rearing of juveniles. Juveniles that were spawned out in the lower river would be able to migrate upstream into wetted habitat instead of being stranded in the lower section of river that dries back, which could increase the survival rate of those juveniles from downstream.

In 2011, CAW agreed to provide interim downstream fish passage on LPD. Construction of this project will be completed in 2015. The installation of the downstream fish passage facility on LPD will allow smolts, kelts, and juveniles a safer passage out of the reservoir than down the spillway ramp that currently causes abrasions and mortality, and also out of the reservoir when it is not spilling. This would increase the survival rate of smolts and juveniles that reared above LPD that are now migrating downstream to the ocean, and increase the survival rate of kelts returning to the ocean.

Currently, MPWMD is proceeding on a project to improve the water supply at the SHSRF. The changes would consist of modifying or relocating the intake and providing clarification/filtration for river flow diverted to the facility, and incorporating a recirculating aquaculture system to allow operation to continue at a wide range of flows without a significant input of river water. This would allow more flexibility to operate the facility both at extreme low flows and during winter season high flows. It will also allow operation of the facility during any period for as long as it takes for suitable conditions to develop in the Carmel River to release reared fish back into the river or lagoon. This new water supply system should be built by 2016. With this new system, survival rates at SHSRF should increase and the facility would be able to be used every year, independent of stream flow or drought conditions, resulting in an increased number of juveniles returning to the river to complete their life cycle.

Additional remediation to improve survival of steelhead in the Carmel River would be for CAW to screen all of the outlet valves on LPD to prevent mortality to juvenile steelhead entering the outlet pipes.

*Conclusion*

Put simply, fish need water to survive and S-CCC steelhead need water of a certain quality to thrive. The current situation is providing neither in the lower river nor the lagoon, and without the direct intervention of the annual MPWMD rescue operations, the status of the S-CCC DPS steelhead would be significantly worse.

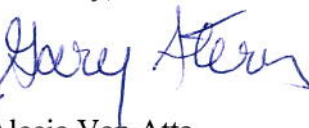
Any additional increase in flow in the summer low flow season will also improve the survival of S-CCC steelhead in the Carmel River. It is difficult to give a specific answer on the level of benefit to the species/habitat that would come from an additional volume of water being left in the river, but NMFS believes that any additional water allows for:

- A longer period of wetted river habitat available for rearing and migration,
- Improved habitat in the lower river (increased rearing capacity, increased food production, more favorable water temperatures),
- A longer period of connectivity between the river and lagoon, allowing more steelhead access to/from the lagoon for rearing,
- Improved habitat/water quality within the lagoon for a longer period, and
- Improved drought tolerance in the lower river.

The continued loss by take of juvenile steelhead for four additional years will contribute significantly to the threats faced by steelhead in the Carmel River but the population will likely continue to persist beyond the time CAW is scheduled to have a new water supply on line and the unlawful water withdrawals cease. With the current and future remediation of CAW's operations, impacts to steelhead will decrease thereby improving the chances of survival for individual fish.

Please direct questions regarding this letter to Ms. Joyce Ambrosius, North-Central Coast Office, at (707) 575-6064, or via e-mail at [joyce.ambrosius@noaa.gov](mailto:joyce.ambrosius@noaa.gov).

Sincerely,

*For* 

Alecia Van Atta  
Acting Assistant Regional Administrator  
California Coastal Office

cc: Rob MacLean, CAW, Coronado

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**Personal Communication**

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