Lower Eel River Temperature and Sediment TMDLs
Comment Responsiveness Summary

US Environmental Protection Agency, Region 9,
San Francisco, California
December 18, 2007

Commentors:

Scott Downie, California Department of Fish and Game
Sharon Duggan, Environmental Protection Information Center
Robert Klamt, North Coast Regional Water Quality Control Board
Cheryl Laffranchi, Interested party
Syd Lehman, Garberville-Redway Chamber of Commerce
Michael Long, United States Fish and Wildlife Service
Denver Nelson, Salt River Watershed Council
Hank Seemann, County of Humboldt Department of Public Works
Ed Voice, Interested party

EXECUTIVE SUMMARY

This document summarizes the comments submitted for the Lower Eel River Temperature and Sediment TMDLs, identifies the commentor, and responds to those comments. The summary of comments and responses are arranged by commentor. When multiple comments were received on a single topic, the response generally refers to the most extensive comment and additional details are included for the specific comment(s), as necessary. Any change made to the TMDL in response to the comment is summarized in the response. If no change is noted in the response, then no change was needed in the TMDL.

Summary of Changes to the Final TMDLs

Several changes were made to the final document as a result of public comment. These include:

- Various editorial changes and clarification of details regarding sediment and temperature problems, the Eel River Estuary, and current information on the status of fish species.
- Additional implementation and monitoring recommendations and background.
- Text to address two FWS-listed species that are present in the Lower Eel River area and could be affected by implementation efforts.
- Updated information on Chinook, steelhead, and coho.

SUMMARY OF COMMENTS AND RESPONSES

Commentor 1: Scott Downie, California Department of Fish and Game

Comment 1-1: "These days 'chinook' should be 'Chinook' and coho 'coho' not 'Coho.' NOAA Fisheries is now called NMFS again; you have it both ways in your document. When referring to multiple creeks, use 'creeks' not 'Creeks'."

Response: The suggested typographical changes have been made to the TMDL report.

Comment 1-2: "On page 8, your discussion of the 1938 CDFG "rescue" ops is so terse that is either needs development or omission. Regardless, as is it has no relevance or significance as is."

Response: Additional details regarding the CDFG fish rescue program of 1938 have been incorporated in the TMDL report.

Comment 1-3: "On page 9, coho use the lower Eel to get to lots of places besides Outlet Creek, especially the SF Eel, which is the major coho stream in the system."

Response: The TMDL report has been revised to highlight use of the Lower Eel River by coho, including its importance for access to the South Fork Eel River and other waterbodies.

Comment 1-4: "Also on page 9, we found coho juveniles last year in Francis Creek (Salt River), so your observation, and mine, are wrong as presented."

Response: The text was revised to note the presence of coho in Francis Creek.

Comment 1-5: "Also on page 9, what is the first sentence in the Chinook section mean? What nearby watersheds? Bear, Mattole, Humboldt Bay, Cottonwood Creek, Russian, etc. Dump this as written."

Response: Details regarding the historical Chinook abundance have been clarified.

Comment 1-6: "On page 11, the second paragraph in the temperature effects on juvenile steelhead section makes no sense at all as written. I cannot even offer advice since I cannot figure out what you are trying to say."

Response: The second paragraph under the "Evaluation of effects of stream temperatures on juvenile steelhead" heading of Section 3.2 has been modified.

Comment 1-7: "On page 25, the last paragraph implies the plug in the Salt River channel is the fault of high sedimentation rates. Although the latter is a fact of the catchment, it is not true that is the cause of the stream diversion to Perry Slough and Old River. A tree fell, or was pushed, into the Salt River channel. Additional sediment was trapped, or pushed in until the channel was dammed, and 42% of the catchment was detached from the historic Salt River basin."

Response: The cause of the stream diversion in the Salt River watershed has been clarified in this paragraph.

Comment 1-8: "On page 26, CDFG has 27 stream surveys on mainstem lower Eel tributaries. Why do you use only 2 in your embeddedness analysis?"

Response: Fifteen CDFG stream surveys conducted on the Lower Eel River tributaries were incorporated in the embeddedness analysis. This includes all of the stream inventory reports that EPA had available during TMDL development. The citations in Table 3 listed a range of dates, rather than the individual years, which may have led to the assumption that only two surveys were used for the analysis. The Table 5 citations have been updated to identify each of the reports used.

Comment 1-9: "My most major issue with the TMDL is the inclusion of Larabee Creek in the assessment area, especially when it is used as the temperature model representative of all streams outside of Salt River. You are correct in your observation and treatment of Salt River as an anomaly in the Lower Eel Assessment Area; you should treat Larabee Creek in the same manner."

Response: EPA disagrees. The downstream three subwatersheds of Larabee Creek were selected to represent the tributaries in the watershed (with the exception of the creeks draining to Salt River) because the vegetation characteristics are similar to many other areas of the watershed. While the streams draining directly to the Lower Eel River in the Scotia HSA consist of a greater density of redwood forest, temperatures influenced by the marine layer, and afternoon topographic shading, the current TMDL for tributaries better represents the conditions in the watershed as a whole. For comparative purposes, EPA evaluated a stream located in the southwestern portion of the Larabee HSA individually. Specifically, the average simulated percent shading under historical riparian conditions on Balcom Creek, which has similar vegetation and stream orientation to many of the streams in the Scotia HSA, is 86%. The shade allocation in the TMDL for all tributaries is 83%. These values are very similar. In addition, as noted in the TMDL, future modeling of additional subbasins, if undertaken, can be used to refine the TMDL for specific tributaries.

Commentor 2: Sharon Duggan, Environmental Protection Information Center

Comment 2-1: Various standards associated with TMDLs are cited, including the Code of Federal Regulations (CFR), USEPA fact sheets, and previous litigation decisions, and the following comment is provided: "the proposed TMDLs do not meet these standards."

Response: EPA disagrees. The Lower Eel River TMDLs for temperature and sediment meet all the requirements of a TMDL under Section 303(d) of the Clean Water Act and EPA regulations. As described in Chapter 1 of the document, EPA is establishing the TMDLs because the State of California, which has been delegated authority and responsibility for implementing the Clean Water Act in the State, will not be able to adopt the TMDLs in

accordance with a consent decree time deadline (Pacific Coast Federations of Fishermen's Associations, et al. v. Marcus, No. 95-4474 MHP, 11 March 1997). The TMDLs identify the loading capacities for heat and sediment, respectively, in Sections 3.3 (heat/temperature) and 4.2 (sediment). These TMDLs are set at the loading capacity, which is equivalent to the level necessary to attain the applicable water quality standards, and they are allocated amongst the various sources. Seasonal variations, critical conditions, and margin of safety are also addressed in those sections. TMDLs not addressed by the consent decree are developed and adopted by the State of California, subject to EPA approval.

Comment 2-2: The TMDLs must take into account the contribution of climate change. "In the absence of considering human caused climate change, the proposed TMDL cannot guarantee that the proposed limits will ensure that no net temperature increase occurs in receiving waters, or that sediment will not exceed the proposed standard of 125% above background."

"In order to restore the Eel River, and to return it to viable water quality that can protect beneficial uses, the TMDLs must proposed standards that protect water quality and assume only prudent risk. They do not do this as currently designed. It is imperative that the EPA consider what in this watershed contributes to climate change and what measures can be taken to insulate the watershed from the devastating effects of global warming."

Response: EPA set the TMDLs in order to attain the existing water quality standards for temperature and sediment, including considerations of critical conditions, seasonal variations, and a margin of safety. If ambient temperatures increase over the next several decades, the temperature TMDLs and allocations would remain the same, since they are expressed as natural shade conditions. The current required reductions are based on recent conditions (2005); therefore, it is anticipated that changes to ambient air temperatures that are significant enough to raise stream temperatures would occur well into TMDL implementation. The Regional Water Board can adjust the required reductions during implementation based on subsequent analyses of future conditions.

Several recently-developed models have attempted to estimate expected rises in temperature, and the estimates of changes (in air temperatures) range from about 7°-10°F globally over the next century, with estimates of about 4°-11°F in the western United States (e.g., IPPC, 2007). Warming is expected to accelerate over time, so estimates for the next 30 years are lower: on the order of 1°-3°F, with some of that change occurring within the range of natural variability (Collins, 2007). Coastal areas would warm less than inland areas, because the ocean tends to act as a thermal reservoir, and warming over the ocean will lag behind warming over land areas (W. Collins, personal communication, 2007). Thus, temperature changes in the vicinity of the Lower Eel River would probably be on the lower end of these estimates. A small change in air temperature would not likely have a large effect on water temperatures; shade is the most sensitive parameter in the temperature models undertaken for the TMDLs.

While these TMDLs are not intended to specifically address impacts on climate change, in a qualitative sense it is likely that they will have a net beneficial effect (i.e., they would not contribute to global warming, and would likely contribute to efforts to counter global warming), because the temperature TMDLs call for increased riparian vegetation.

It is not known whether or to what degree global climate change would affect the mix of vegetation in the watershed, or on a site-specific basis, or when such a change could occur. Also, it is not known whether increases in precipitation, which could coincide with increases in global warming, could affect conditions in the Lower Eel basin. Any detailed assessment of these issues is premature, and the results would be speculative and highly uncertain.

Comment 2-3: "The TMDLs also wrongly omit consideration of gravel extraction and operations within the Lower Eel and its tributaries. Gravel extraction activities are but one factor affecting temperature and sediment increases in the mainstem, yet these are not considered at all. Gravel mining within the mainstem is perpetually desertifying the river, and destroying the mouth of the river. Ed Voice and Family submitted extensive comments on this issue, which we adopt. Gravel mining and extraction is an intensive and increasing activity within the Lower Eel and its tributaries, and its impacts must be considered in the development of TMDLs for temperature and sediment for the entire Lower Eel River watershed."

Response: Please see response to Comments 4-1 and 9-1.

Comment 2-4: "A temperature TMDL for the mainstem Lower Eel must be established. The Lower Eel River is designated as impaired for temperature due to removal of riparian vegetation and nonpoint source. It is stated that there is no need for a TMDL because it is assumed the water quality standards for temperature are not being violated. However, this is contrary to the determination by the State Water Board which found the Lower Eel to be impaired for temperature. Moreover, the proposed TMDL wrongly assumes that shade and flow alterations do not adversely influence stream temperatures, even though under "natural" conditions the river temperatures would remain lethal within hours for salmonids. We do not believe the determination of what constitutes natural conditions is adequately documented or supportable, as historically the river had cooler temperatures, because it was narrower and deeper near its mouth. The EPA also assumes that stream temperatures have not been altered significantly. These assumptions are flawed because they fail to take into account all sources of pollution and activities."

The TMDL does not account for human-induced climate change and gravel operations. Temperature cannot be separated from sediment.

Response: The water quality objectives for temperature state: (1) "at no time shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature" and (2) "the natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such an alteration in temperature does not adversely affect beneficial uses." To specifically address the first temperature water quality objective, analyses were performed that compared natural and current stream shading. These analyses concluded that current conditions are not significantly different than natural (historical) stream shading, and that any resulting changes in stream temperatures from historic conditions to current conditions were not significant. In other words, current temperatures are only slightly warmer than historic temperatures (i.e., temperature increases much less than 5° F, so they are well within the water quality standard).

In addition, while it is possible that parts of the Lower Eel River delta area are currently wider than they were historically, EPA does not have information indicating where river widths were historically narrower than today, or what those widths might have been.

EPA also performed analyses of flow alterations on the main stem of the Middle Main Eel River using a series of modeling scenarios to address both temperature objectives. These analyses concluded that stream temperatures on the main channel have not been altered significantly due to flow alterations; therefore, temperature increases are less than 5° F (achieving the first water quality objective above). Temperatures in the Lower Eel River main stem were naturally warm (approaching lethal conditions in some locations); thus, the incremental increases to natural temperatures have not adversely affected beneficial uses (achieving the second water quality objective above). Because the Lower Eel River is farther downstream from the flow diversions than the Middle Main segment, it is even less likely to have been influenced by these alterations.

Based on the similar results of these two analyses (shading and flow alterations), EPA concluded that the water quality objectives for temperature are not being exceeded on the main stem. The Regional Board can pursue delisting of this portion of the waterbody at a later date based on these analyses.

Please also see responses to Comments 2-2, 4-1, and 9-1.

Comment 2-5: "The EPA has not adequately justified its determination of naturally occurring background levels of sediment in the Lower Eel River. It appears that wherever the EPA could not determine a land-use designation, it wrongly then determined it was not associated with anthropogenic activity, resulting in a 48% sediment allocation as naturally occurring. This is wrong because it fails not only to consider other sources of sedimentation, such as gravel, rail, and other industrial uses, but also because it fails to determine what the actual natural background level is. Instead, it assumes that this current 48% of sediment constitutes natural background."

"Equally inappropriate is the proposed TMDL for sediment at 125% above background, because there is no clear measurable understanding of natural background. Additionally, the assumption of natural background and the proposed standard do not take into account gravel mining, other industrial operations, or climate change – all of which must be considered for development of a legally adequate TMDL. Allowing a proposed TMDL with a 25% increase above that already over-estimated and invalid background as the TMDL is not consistent with the law."

Response: In determining sediment sources (i.e., anthropogenic vs. natural source), EPA carefully considered all of the best available information. Thus, the estimate of current sediment production is as close an estimate as is reasonably possible given existing information. Every erosion feature identified in the air photo analysis was assigned a land use/causal mechanism attribute based on its proximity to anthropogenic activity. Land use attribution was based on a specific agency-accepted methodology (CDF, CDFG, CGS, NMFS, NCRWQCB) that has been used in nearby watershed analyses. The land use attribute methodology defines management-associated landslides as: (1) open slope landslides

occurring on hillslopes that have been clear-cut harvested less than 20 years prior to the air-photo date of the landslide; (2) open slope landslides occurring on hillslopes that have been selectively harvested less than 15 years prior to the age of the landslide; (3) landslides associated with post-1975 earthwork (including skid trails and yarding corridors); and (4) landslides associated with roads. Natural landslides are defined as: (1) earthflows: (2) rotational/translational landslides; (3) open slope landslides occurring on hillslopes that have not been tractored and have been clear-cut harvested more than 20 years prior to the age of the landslide; (4) open slope landslides occurring on hillslopes that have not been tractor-yarded, but which were selectively harvested more than 15 years prior to the age of the landslide; and (5) open slope landslides occurring on harvested hillslopes that have been tractor yarded more than 30 years prior to the occurrence of the landslide.

With regard to "other industrial land uses," gravel extraction is not considered a sediment input because it involves removing sediment from the river system. Although it affects the general biological health of the river system and salmonid habitat, it is not considered to be an input in the sediment source assessment. In addition, identifiable sediment sources associated with the railroad alignment would have been identified as part of the sediment source air photo analysis.

The "natural" sediment allocation of 48% for the Lower Eel River TMDL is lower than observed in TMDL analyses conducted in other north coast watersheds. For example, the "natural" or non-management percent allocations in the South Fork Eel River, North Fork Eel River, Middle Main Eel River, Upper Eel River, and Van Duzen River were estimated at 54%, 55%, 57%, 65%, and 61%, respectively. The Lower Eel River natural sediment allocation was developed using the best available science and data and is also considered reasonable when compared with nearby watershed analyses.

Moreover, as described in the text, EPA is using a method of setting the TMDL and allocations similar to that employed in other basins, and it is based on the assumption that a certain amount of loading over that which is natural is acceptable, and will still result in meeting water quality standards.

Comment 2-6: "The proposed TMDLs are unreliable because they are not based on best available science. This is true not only because of the glaring omission of information and data about industrial activities such as gravel mining, as well as about climate change, but also because the EPA was forced to extrapolate data due to the unwillingness of Pacific Lumber (PL) to cooperate in providing access to lands and information. A clear example is the dated temperature data from the PL stations, which is only as recent as 2005, ignoring increases in temperature which have occurred since then. A larger example is the unavailability of actual information for conditions in watersheds located on PL's lands."

"EPA mischaracterizes point sources as non-point sources, thereby increasing the allowable pollution load. We believe this is legal error, and is not supported by science. The proposed temperature TMDL assumes that point source discharges are not a contributing factor because they are required to result in no net increase in temperature. There is no documentation referenced from actual monitoring or other data to justify the assumption that these standards are

in fact being met. Moreover, the proposed TMDL also assumes that most heat is from nonpoint sources, which the TMDL does not accurately define. It is unclear whether the EPA considers discrete conveyances carrying pollution from timber harvesting to constitute point or nonpoint source pollution."

Response: Well-documented and readily-available data, information, methods, and models were used to develop the TMDLs. For the temperature analyses, a modeling period of 2005 was selected due to the availability of local weather and temperature data for model calibration. This is a very recent year and, because of the time necessary to conduct thorough analyses, subsequent data could not be incorporated. EPA regrets the lack of data from the Pacific Lumber Company (PL) for the sediment analyses. To overcome this data limitation and complete the TMDLs, EPA made use of the best available data and methodologies to characterize the sediment loading on PL lands. This is consistent with other TMDLs; namely EPA always strives to use the best available data.

EPA disagrees with the comment that point sources and nonpoint sources were mischaracterized. It was necessary to distinguish between ***wasteload allocations***, which are for ***NPDES-permitted*** sources and include both pipe-end sources and some diffuse sources, such as municipal stormwater runoff, construction sites, or industrial facilities; and ***load allocations***, which are nonpoint sources that are ***not subject to NPDES permits***, such as stormwater runoff in forested lands. We regret any confusion this may have caused.

The diffuse dischargers of heat that are subject to NPDES permits have "0 increase in receiving water temperature" wasteload allocations, consistent with limitations in their permits. These sources are not expected to be significant sources of heat. Pipe-end NPDES sources are not permitted to discharge flow during the summer months, and there are no wasteload allocations for these sources (i.e., no heat may be discharged). The Regional Board is responsible for enforcing these permits and can undertake regulatory actions if permit limits are violated. In addition, the Regional Board has discharge monitoring reports that document attainment of permit limits.

In general, land uses such as timber harvesting operations or rural residences are diffuse sources of heat and sediment (i.e., not pipe-end sources), and are not subject to NPDES permitting. These are characterized as nonpoint sources, and they have been assigned load allocations.

Please also see responses to Comments 2-2, 4-1, and 9-1.

Commentor 3: Robert Klamt, North Coast Regional Water Quality Control Board

Comment 3-1: "Regional Water Board staff has been, and intends to continue, performing technical analyses for some Lower Eel subbasins, specifically the Bear and Jordan Creek subwatersheds. These technical analyses could be used to supplement or revise if appropriate, the more general Lower Eel TMDL analyses conducted by EPA and its contractors. We are working with the Pacific Lumber Company to develop watershed-wide waste discharge

requirements for the Bear and Jordan Creek subwatersheds, and anticipate that the permits will serve as a single regulatory action to implement TMDLs. Regional Water Board staff request that USEPA explicitly recognize the Regional Water Board's authority to supplement or revise the TMDL for subwatersheds and acknowledge the Regional Water Board's implementation efforts."

Response: EPA encourages the Regional Water Board to supplement or revise, if appropriate, the information used to develop the Lower Eel River TMDLs, or any other TMDLs that EPA establishes, and we strongly encourage efforts to implement TMDLs. The Regional Water Board may develop and adopt TMDLs for subwatersheds or develop and adopt revised TMDLs for the Lower Eel River watershed as a whole. Any new or revised TMDLs will need to be submitted to EPA for approval. Additional text has been added to Chapter 5 to explicitly recognize the Regional Water Board's authority.

Commentor 4: Cheryl Laffranchi, Interested party

Comment 4-1: TMDL should consider the actual width of the Eel River bar at various locations to provide a better understanding of: why riparian areas may not influence temperature, how much gravel influences the river, and why it is difficult for the river to remove silt. More water should be released from the dams year round, which would help reduce accumulated solids and remove the silt that has been deposited.

Response: The Lower Eel River is the lowest gradient reach of the Eel River, and, as a result, this section of the Eel River is a depositional sink for the Eel River and Van Duzen River watersheds. Because this section of the river is a low-gradient sink, excessive coarse- and medium-grained sediment derived from upstream erosion are deposited. This results in localized aggradation, decreased river depths, increased channel widths, and increased bank erosion. The County of Humboldt Extraction Review Team (CHERT) has recently conducted numerous extensive analyses focused on historic and current channel conditions in the Lower Eel River. None of the data from these studies have been analyzed to date, and, therefore, no information is available for the Lower Eel River TMDL sediment source assessment. The final CHERT report summarizing the study results is due for public review in 2008 (Randy Klein, personal communication with E. Weppner, PWA, November 29, 2007). The data analyses and results of the 2008 CHERT study may provide a better understanding of the type and magnitude of channel morphologic changes and their effects on bed elevation, channel width, temperature, and turbidity.

These TMDLs do not address flow releases from dams or make recommendations regarding flow releases, which fall under the authority of the Federal Energy Regulatory Commission (FERC). As the TMDL is implemented and sediment inputs from upstream sources are reduced, the available water from storm flows and dam releases will likely facilitate the flushing of accumulated solids in the river. In regard to channel width, where the width of the river channel is wider than the shadow that would be cast by riparian vegetation, riparian areas would not influence water temperatures. As described in Chapter 2, for the case of the mainstem Lower Eel River, the river channel was wide enough that the riparian vegetation did

not historically influence water temperatures, which would have been warm even under natural conditions.

Please also see responses to Comments 2-4 and 9-1.

Comment 4-2: The elevation differences between the upper reaches of Larabee Creek and the Eel River delta should be considered. The elevation differences affect runoff rates and average temperatures. Sediment is deposited in the Eel delta when runoff meets high tide.

Response: Elevation differences were taken into account in the temperature analyses by applying different weather and solar radiation monitoring stations, depending on stream location in the watershed. In addition, the differences in temperature between sea level and higher elevation areas of the watershed (about 3° F per 1,000 feet) are caused by natural conditions and would not affect the outcome of the modeling. The sediment analyses indirectly considered elevation differences in the watershed, specifically while considering the impact of slope on sediment delivery. Although it is not accurate to state that elevation differences affect runoff rates, EPA agrees that runoff from steep areas can have a scouring effect, which can flush out sediments in higher-gradient areas, or contribute to downstream sediment deposits in lower-gradient areas. This was considered in EPA's analysis.

Comment 4-3: "The average winter temperatures for Upper Larabee Creek drainage can include long periods of near freezing or below freezing. The spring can warm quickly at the higher elevation and reach highs of 115F through September. The Eel River area west below the Van Duzen River averages 30F to 58F in the winter and averages 50F to 60F in the spring through fall, with lots of fog (Fortuna is not part of this weather pattern as the Eel River acts as a warm weather wall)."

Response: The temperature TMDL focused on a critical period in which the stream temperatures are expected to be highest and, thus, most stressful for cold water fish. This critical period occurs during the mid to late summer months; therefore, freezing (or near freezing) winter temperatures were not considered because they are not expected to create stressful conditions for salmonids. To best represent varying weather patterns, different weather and solar radiation monitoring stations were applied throughout the watershed, depending on stream location.

Comment 4-4: "There was no mention of earthquake activity and the effects the April 1992 earthquakes had on the elevation, sedimentation, and erosion in the study area. It is locally accepted that flow patterns changed after the 1992 events."

Response: Earthquake activity, including the April 1992 seismic events, could predispose potentially unstable areas to the risk of landslide failure, and likely caused localized changes on a scale not addressed by the TMDLs. Large earthquake events can disrupt or redistribute slope water pore pressures, and can affect landslide factor of safety. The role of seismic activity in the generation of landslides is still highly debated, and therefore it is difficult to accurately determine the magnitude of effects from seismic activity on landsliding in the Lower Eel River.

Comment 4-5: Eel River estuary reaches above Fernbridge to almost Fortuna.

Response: Text has been added to clarify the estuary issues, and also to explain that the analysis for these TMDLs focuses on the watershed areas in the Lower Eel River Hydrologic area, and the upland influences of sediment and temperature on the waterbodies within that area. EPA did not specifically analyze ocean influences to the waterbodies, or the complex interactions between river runoff and tidal action in the estuary. The Regional Board's ongoing evaluation of the estuary as part of an effort to consider alternatives to the City of Ferndale's wastewater disposal alternatives does not influence the sediment or temperature analyses for the TMDLs. EPA believes that the load limits set by the TMDLs will achieve water quality standards; the Regional Water Board or the City of Ferndale may decide to undertake a more detailed analysis in the future, in conjunction with efforts to finalize decisions related to the waste water treatment plant (WWTP).

Commentor 5: Syd Lehman, Garberville-Redway Chamber of Commerce

Comment 5-1: During rain events, waste from homeless camps gets washed into receiving waters of the Lower Eel River watershed. This waste includes human excrement, animal waste, rotting food, drug paraphernalia, and garbage. Cleanup efforts are "critical to the health of the Eel River, its fishery and those people who rely on its water."

Response: While the Lower Eel River Temperature and Sediment TMDLs do not address garbage, human waste or homeless camps in the Lower Eel River watershed, the Regional Water Board is authorized to implement water quality protections under both the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act. The Regional Water Board may address these issues from a water-quality perspective. We will pass your letter on to the Regional Water Board, and we encourage you to work with them to address these problems.

Commentor 6: Michael Long, United States Fish and Wildlife Service

Comment 6-1: "Two species, Federally listed under the Endangered Species Act (ESA), by the U. S. Fish and Wildlife Service (Service) are not addressed in the document. We are concerned that future planning efforts and potential development of implementation plans based on this draft TMDL document may not adequately consider impacts to these species. More specifically we are concerned with potential effects to the endangered tidewater goby (*Eucyclogobius newberryi*), and the threatened western snowy plover (*Charadrius alexandrinus nivosus*). Tidewater goby are known to be present in Eel River estuarine habitat, and several of the lower Eel River gravel bars are important snowy plover nesting sites.

"Since most of the draft TMDL's "Fish Population Concerns" analysis, suggested allocations and targets are based on habitat requirements for salmonids, they do not address the habitat requirements our listed species. Attainment of most of the presented targets will not [a]ffect, or

may also be beneficial for our species habitat requirements. However, some activities, like gravel bar removal, tide gate replacements, tributary channel and estuarine habitat modification undertaken to meet some of the TMDL targets may impact them."

Response: EPA agrees that attainment of the TMDL should not adversely affect these species. With regard to the concerns about implementation of the TMDL, EPA has added language recommending that agencies undertaking any activities that could affect those species, either for TMDL implementation or other activities, consider the unique habitat needs of these two species, and to consult with FWS as appropriate. Text has been added to Chapter 2 and Chapter 5 to identify and describe the two additional species of concern that were not identified in the draft TMDLs and to highlight additional concerns that should be addressed when developing implementation plans. Tidewater goby is threatened in the Eel River delta largely by physical and chemical alteration of habitat and water flows, including effluent from sewage and agriculture (USFWS, 2007a). The western snowy plover is threatened by human disturbance, including recreation, predation, and loss of nesting habitat to non-native species and urban development (USFWS, 2007b). Reducing sediment and returning to conditions more reflective of natural temperatures are not expected to adversely affect the species. EPA added text to Chapter 5 to suggest that it would be helpful to identify and avoid potential actions that could adversely affect the species, even though such actions may not be a direct result of TMDL implementation.

Comment 6-2: "We suggest that you include some general language that mentions the occurrence of these listed species that in the TMDL project area. In addition, under Chapter 5, state that some activities undertaken to meet the suggested TMDL targets, such as restoration actives for salmonids may not as be beneficial for the tide-water goby, unless goby habitat is also addressed or enhanced as part to the project. Removal of gravel for the lower Eel River gravel bars may affect snowy plover nesting habitat. ESA Section 7 consultation with the Service will be required for activities that may affect our species."

Response: Text was added to Chapter 2 and Chapter 5 to address these concerns.

Commentor 7: Denver Nelson, Salt River Watershed Council

Comment 7-1: "The Salt River TMDL accuracy is limited by poor data. There are conclusions which appear to be derived from very few on the ground measurements. Much of the data is based on analysis done in other watersheds with similar geologic types and then extrapolated to the lower Eel and Salt River. Other data is based on computer models which are often not checked for accurate correlation with real data. There are no cross sectional analysis of the main Eel or the Salt River on a yearly basis."

Response: Well-documented and readily-available data, information, methods, and models were used to develop the TMDLs. Field inventories were conducted in the Salt River terrain types to support quantification of sediment delivery rates (Appendix C). In other cases, applicable studies on similar terrain and vegetation types were used to represent the Salt River area. In addition, the models used are publicly available, thoroughly tested, and previously

applied for TMDL development. They were populated with the best available data and information. These are scientifically acceptable methods for sediment delivery estimation. EPA agrees that there are no annual cross sectional analyses on the main stem of the Eel River or Salt River. This suggestion has been incorporated into the implementing and monitoring recommendations chapter of the TMDL report (Chapter 5).

Comment 7-2: "Our observation is that the lower Eel was filled with sediment during the floods of 1955 and 1964 and the Salt River filled with sediment after the 1992 earthquake and 1995 heavy rains. Contrary to these TMDL results; the sediment is not decreasing but is actually increasing."

Response: Please see response to Comment 4-4. The channel migration zone (CMZ) study conducted in the Lower Eel River showed a net decrease in stored sediment of 637, 000 yds^3, representing only 2% of the total net stored sediment in the Lower Eel River CMZ study area (28,320,000 yds^3). As outlined in Appendix C: Sediment Source Assessment for the Lower Eel River Watershed, the CMZ study and results only apply to the section of the Eel River between the confluence with the South Fork Eel River and Fortuna, California. The area downstream of Fortuna was not included in the CMZ study because of the extensive man-made levee system within the lower reaches of the Eel River and Salt River. Therefore, the results of the analysis do not pertain to the Salt River. The slight decrease in stored sediment estimated in the CMZ study area (upstream from Fortuna) may reflect a long period (1965-1996) of gradual sediment flushing through the river mouth coupled with increased sediment inputs from the 1996/1997 storm. The upcoming 2008 CHERT report (see response to Comments 4-1 and 9-1) may provide greater detail on the historic and current channel conditions in the Lower Eel River.

It is possible that local increases in channel-stored sediment may occur periodically throughout time as sediment moves into and flushes through the system. The analysis considers the watershed area as a whole, as well as three sub-areas. Small-scale, localized and temporary effects of sediment movement through the system were not within the scope of this TMDL analysis. The sediment allocations are set at the watershed level; the Regional Water Board may decide to conduct analyses on a subwatershed basis, and may also set TMDLs on a subwatershed basis in the future, subject to EPA approval.

Comment 7-3: "There are members of the Salt River Watershed Council who have lived here for multiple generations. It might be helpful to include an oral history as part of the TMDL process."

Response: While EPA appreciates the local knowledge of many residents in the Salt River watershed, oral histories are not routinely incorporated as part of a TMDL analysis. EPA summarized the watershed background in Section 1.2 of the TMDL report and provided additional details throughout the document. The goal of a TMDL is to quantify the maximum levels of pollutants, in this case, heat and sediment, that the waterbody can receive without exceeding water quality standards to assure that beneficial uses are protected. We encourage local residents and the Regional Water Board to consider such information, as appropriate, to refine the analysis in the future.

Comment 7-4: "Site specific recommendations should include: (1) Removal of sediment from the Salt River so as to restore flow, limit flooding and restore fisheries; (2) Wetland restoration; (3) Road assessment and upgrading of deficient roads; (4) Periodic monitoring of restoration efforts; (5) Modifying the restoration activities depending on the results of monitoring."

Response: The suggested recommendations have been incorporated in Chapter 5.

Commentor 8: Hank Seemann, County of Humboldt Department of Public Works

Comment 8-1: "EPA should incorporate the provided data and analysis from the Salt River Ecosystem Restoration Project into the Lower Eel River TMDL for Temperature and Sediment as appropriate."

Response: The data and ongoing analysis from the Salt River Ecosystem Restoration Project appears to be consistent with the goals of achieving the sediment TMDL load allocations, and the project may very well facilitate attainment of the sediment TMDL. While the plan itself is most appropriate as part of an implementation plan, and an Environmental Impact Report (EIR) is currently being prepared, references to the project have been included in the document. It is helpful that the restoration project to addresses turbidity, expressed as suspended sediment; suspended sediment is one component of total sediment, which is the pollutant addressed in these TMDLs. We have added text to Chapter 5 to acknowledge that the Salt River Ecosystem Restoration Project is an example of a tool that can assist with implementing the TMDLs.

Comment 8-2: "EPA should evaluate whether the lower Eel River TMDL for Temperature and Sediment should account for the likely future effects of the Salt River Ecosystem Restoration Project."

Response: EPA believes that the TMDLs are set appropriately to achieve water quality standards for temperature and sediment. Because the future effects of the Salt River Restoration Project are not specifically known at this time, any potential beneficial effects can be considered incorporated implicitly in the margin of safety. Text to this effect has been added to Chapters 3 and 4.

Comment 8-3: "EPA should clarify why the temperature data justify development of a temperature TMDL for the Salt River subbasin when 94% of the measured streams had good or fair temperature conditions."

Response: TMDLs need to be established when water quality standards are not being met. EPA acknowledges in the document that much of the Salt River subbasin area has good or fair temperature conditions, which suggests that the scope of needed improvements in the subbasin will be limited. Water quality objectives are based on natural receiving water temperatures. Therefore, the Lower Eel River temperature TMDLs and confirmation of impairments are based on a comparison of natural and current conditions. These analyses

concluded that current temperatures, in which 94% of stream miles were categorized as good or fair, are significantly higher than natural temperatures, where 100% of stream miles were categorized as good or fair (note that the proportion of "good" stream miles is 16% higher under natural conditions when compared with current conditions). Specifically, as described in the TMDL report, the historical riparian vegetation scenario was selected to represent natural conditions. When comparing conditions for the creeks draining to the Salt River system, current temperatures were considered significantly different than natural conditions (42% of stream miles under current conditions were classified as "good," while 58% of stream miles under natural conditions were classified as "good"), thus justifying the development of a TMDL for these waterbodies.

Comment 8-4: "EPA should be aware that within certain areas of the Salt River subbasin, stream temperature conditions will actually improve with selective removal of riparian vegetation and removal of large quantities of sediment currently stored in the Salt River."

Response: EPA appreciates this information. The TMDL report does not specify exactly how the temperature TMDL load allocations should be achieved, as this is the responsibility of the Regional Water Board. However, we acknowledge that in many cases restoring riparian vegetation will improve conditions. EPA understands that the scenarios presented in the comment may actually cause less shading on selected streams, and these streams may not achieve their heat load allocations even though temperature conditions are improving. Stakeholders should work with the Regional Board during implementation to discuss specific projects and their impact on the watershed. EPA will provide the Regional Board with a copy of this comment.

Commentor 9: Ed Voice, Interested party

Comment 9-1: The impacts associated with instream gravel extraction on the Lower Eel River should be included in the TMDL reports. "NOAA Fisheries biological opinion stated that there has been significant degradation to the channel bed from extensive historic gravel mining. While adverse impacts may be reduced by restricting volumes of extracted gravel based on site-specific conditions, there is the potential to exceed sustained yield in river reaches where numerous mining sites are concentrated, such as on the lower Eel River."

"Each subsequent action may have only a small incremental effect, but taken together with past, present, and reasonably foreseeable future actions, will have a significant effect that would further degrade the watershed's environmental baseline and undermine the improvements in habitat conditions necessary for listed species to survive and recovery. The EPA should analyze the cumulative effects of Instream Gravel Extraction activities in conjunction with other current activities up-stream and down-stream in the watershed and river."

Response: Please see response to Comment 4-1. CHERT has recently conducted numerous analyses as part of the EIR for gravel extraction, including historic analysis of channel morphologic changes, bank erosion, bed elevation changes, fish habitat, and riparian function. Although all of the data have been collected, they have not been analyzed and no results have

been provided. No other extensive analyses have been conducted in the Lower Eel River that can address the issue of gravel extraction. CHERT will provide a final report of their findings in 2008. Pertinent data and information will be incorporated in future TMDL revisions and/or implementation plans.

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Personal Communications

W. Collins, PhD., University of California, Department of Earth and Planetary Science. Phone call with Janet Parrish, December 4, 2007.