ALBION RIVER SEDIMENT TMDL
SUMMARY OF COMMENTS AND RESPONSES
Prepared by USEPA, Region 9, Water Division (WTR-2), San Francisco
December, 2001

COMMENTORS:

Vivian Bolin, Watershed Conservation Director, Pacific Coast Federation of Fisherman's Associations (PCCFA) (via email)
Alan Levine, Coast Action Group, Point Arena
B.C. MacDonald (via fax and email)
Bryan McFadin, North Coast Regional Water Quality Control Board (via email)
Linda Perkins (via fax and email)
Chris Surfleet, Mendocino Redwood Company (via email)
Rixanne Wehren (via fax and email)
Harold (Skip) Wollenberg, for the Albion River Watershed Protection Association, (via email and regular mail)

INTRODUCTION

This document summarizes the comments that were submitted, identifies the commentor or commentors (at the end of the comment), responds to the comments, and summarizes changes that were made to the final TMDL. They are arranged by topic wherever possible. When multiple comments were received on a single topic, the multiple commentors are identified under the single comment. Any change that is 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 deemed to be needed in the TMDL.

Summary of Changes to the Final TMDL

Several changes were made to the final document as a result of public comment. These include: deleted references to the relative disturbance index and the associated Figure 9 and Table 2; additional text regarding the estuary; addition of an estuary depth indicator; and modification of text to correct or clarify information, as noted below.

COMMENTS AND RESPONSES

PROBLEM STATEMENT

Comment 1: The draft TMDL cites 1994-95 fish numbers for Mendocino County of over 4,000 coho, yet Larry Week of the California Dept. of Fish and Game (CDFG) publicly announced that as few as 2,000 adult coho were left in California in 2000-2001 (no reference given for this statement). This is supported by the NMFS "Status Review Update for Coho Salmon from the Central California Coast and the California portion of the Southern Oregon/Northern California Coasts Evolutionarily Significant

Units," prepared by the Southwest Fisheries Science Center, Santa Cruz Laboratory (March 31, 2001), in Figure 21 (Bolin).
Response: The data that was available to Regional Water Board staff (NCRWQCB 2001) was used for the Problem Statement, which is provided to give the reader an impression of the conditions in the Albion River watershed. The commentor does not provide a reference for her statement that as few as 2,000 adult coho were left in California in 2000-2001; however, EPA did review the NMFS reference cited (NMFS Southwest Fisheries Science Center, Santa Cruz Laboratory, 2001). According to this status review update, population trends in California have generally declined from 1989-2000, though there are variations in individual watersheds. In addition, the 1995-1997 period was generally strong. Abundance data for the Albion River indicated a general downward trend from peak abundances in 1992 and 1993, though the numbers have remained fairly constant since then, with the 1996 year class being the strongest within the last five years. Regardless of the specific number, EPA states in the TMDL that coho populations in Mendocino County have declined significantly.

Comment 2: The Draft TMDL does not address the influence of sediment on the estuary, which extends 5 miles inland, which is one quarter of the mainstem river miles. The estuary receives sediment and other pollutants from the entire watershed, as well as from the residential and forestland management activities that surround it. Much of the sediment remains in the estuary, impacting the estuarine ecosystem and subsequent salmonid rearing habitat. The Problem Statement should include information on this habitat (Wehren).
Response: Although the Problem Statement in the draft TMDL included a description of historical influences and the currently aggraded conditions in the estuary, additional information was added to the description of current conditions.

WATER QUALITY INDICATORS

Comment 3: Is the description to "sample in potential spawning reaches" meant to be inclusive of restorable Class 1 streams? (Perkins).
Response: The list of water quality indicators recommends that riffle embeddedness and substrate composition be obtained from potential spawning reaches. Given that Class 1 streams are generally those in which spawning would potentially occur, it would be appropriate for sampling to occur in Class 1 streams. Specific locations for monitoring would be the responsibility of the Regional Water Board.

Comment 4: Riffle embeddedness is a useful indicator tool for assessing habitat conditions, but it is qualitative and subject to individual interpretation, and therefore an unreliable indicator of changes over time. MRC (Mendocino Redwood Company) suggests removing this target (Surfleet).
Response:EPA acknowledges that the target is subject to some individual interpretation. However, EPA believes that as an improving trend, evaluated on a weight-of-evidence approach over the long term, the indicator will be adequately reliable and will be useful for assessing conditions relative to sediment, for the purposes of the TMDL.

Comment 5: A target of greater than 40% pool habitat is a reasonable target for a "good" pool frequency in the Albion River watershed, at least until better information is available. Flosi suggests that greater than 40% of habitat length in pools and that pools greater than 3 feet in depth are desirable. The TMDL combines these two factors, which is not consistent with Flosi's report, and is probably an unachievable target, because smaller streams are unlikely to achieve even two foot pool depth on a regular basis. Commentor included charts based on CDF surveys of South Fork Nolo River and South Fork Caspar

Creek on two dates in 1995 (no reference provided), comparing mean width and maximum pool depth, to suggest maximum pool depth is limited by stream width, and that pools deeper than three feet do not occur for streams that average less than 15 feet wide. Commentor supports the use of a mean of maximum residual pool depth corrected for stream width as the best indicator of pool habitat quality because it considers the variability in pool depth across a stream reach. (Surfleet).
Response: EPA used the reference from Flosi et al. (1998), as reported by the Regional Water Board (2001). The reference is appropriate as used in the TMDL. Flosi et al. (1998, p. V-15) states the following: "DFG habitat typing data indicate the better coastal coho streams may have as much as 40 percent of their total habitat length in primary pools. In first and second order streams a primary pool is defined to have a maximum depth of at least two feet, occupy at least half the width of the low-flow channel, and be as long as the low-flow channel width. In third and fourth order streams the criteria is the same, except maximum depth must be at least three feet." EPA will retain the target as described, which is for an increasing trend of primary pools, as defined by depth, toward 40% by length. The target does not state that all stream reaches must have 40% primary pools at all times, but a trend toward this would reflect better stream conditions. Regional Water Board may choose to modify the indicator in the future, if monitoring data suggests that it is appropriate.

Comment 6: In our opinion the turbidity target is impossible to conclusively measure without considerable resources and time. MRC suggests that this target and subsequent language in the basin plan be put for review with qualified scientists (Surfleet).
Response: The turbidity target was included to reflect the existing water quality objective in the Basin Plan. Accordingly, EPA feels that the target should remain in the TMDL. However, it is EPA's understanding that the Regional Water Board may consider revising the turbidity objective in the future to reflect ongoing developments in scientific understanding. The Regional Water Board may choose to modify both the water quality objectives and the TMDL targets in the future.

Comment 7: Although measures of aquatic insects can be useful tools for evaluating stream health, MRC cautions that meaningful results require considerable resources to obtain appropriate sample sizes, and MRC cannot use the technique on its ownership. MRC also cautions that comparing insect populations in the Albion River to an index developed out of the area would be inappropriate (Surfleet).
Response: Responsibility for developing a monitoring plan, and details of monitoring methods lies with the Regional Board. However, EPA expects that a monitoring plan for aquatic insect production that not require excessive resources could be developed, and would provide valuable information for MRC on its ownership. For example, EPA's Rapid Bioassessment Protocol (*Biological Criteria: Technical Guidance for Streams and Small rivers, Revised Edition (1996), EPA/822/B-96/001*) has been designed for simple monitoring and analysis, and requires classification of aquatic insects into broad categories, while still providing information from which to assess water quality. This has been used successfully in many regions nationwide for water quality assessment and in some cases, to set biologically-based water quality standards. References can be developed for watersheds or ecoregions, provided that similar conditions are present (e.g., habitat, flow, etc.), and the California Department of Fish and Game has developed a standardized protocol for assessing biological and physical/habitat conditions of wadeable streams in California. No target threshold has been set for this indicator, as no appropriate target level has been determined for the Mendocino Coast region. However, improving trends in the indicator will reflect improving conditions in the streams. Furthermore, the California Department of Fish and Game has been working with local information in the North Coast to identify appropriate indicator conditions in the region. We encourage both MRC and the Regional Board to develop a workable monitoring program that includes this indicator.

Comment 8: Diversion potential is probably an unnecessary target, as this is already required in the California Forest Practice Rules, and failure of <1% in a 100-year storm is unreasonable. The standards for road construction, maintenance and monitoring are appropriate. MRC suggests that high design standards for road crossings be the target, not a failure rate that seems unachievable (Surfleet).
Response: The Forest Practice Rules only apply to timber harvesting. EPA believes that the diversion potential target is appropriate, as explained in the TMDL. The targets are not enforceable on their own, but they should be used to evaluate progress toward achievement of water quality standards. We expect that all the targets will be evaluated on a weight-of-evidence basis; therefore, occasional failure of individual targets to be achieved on an instantaneous basis in the midst of significant progress toward achievement of targets overall and over time would not be evaluated as regression.

Comment 9: A target of reducing road hydrologic connectivity to <1% is unreasonable, and MRC suggests that high design standards for road crossings reducing hydrologic connectivity would be a better target. MRC agrees that reducing hydrologic connectivity is valuable, but EPA is suggesting that water is better sent onto fill materials above road crossings, and to place roads on mid-slope areas in order to eliminate crossing headwall swales and inner gorge roads (Surfleet).
Response: EPA believes that high road design standards will reduce hydrologic connectivity adequately over time; however, the Regional Water Board will determine implementation measures to address this issue.. EPA is not suggesting that water be directed solely to road fills or solely to mid-slope areas, as there are other options available for road construction and design, such as locating roads at the ridgetops, or eliminating some roads altogether. Again, the implementation details will be addressed by the Regional Water Board.

Comment 10: The draft TMDL on page 24 states that GMA (2001) noted few steep slopes in the watershed. However, Table 2 of the GMA report indicates that 26 percent of slopes in the watershed are greater than 50%. Mendocino Redwood Company's watershed assessments show that well over half of their holdings are characterized by steep slopes with gradients between 40 and 90%, in addition to stream-side steep inner gorges where gradients exceed 65% (Wollenberg).
Response: EPA agrees that GMA (2001) states that 26 percent of slopes in the watershed are greater than 50%. The statement on page 24 is deleted from the text. This does not change the indicator.

Comment 11: The proposed disturbance index will typically show negative results for MRC, because the only variable that can be improved is the landslide rate. MRC now uses selective harvest techniques as opposed to clear cut techniques, so the harvest area factor will increase even with these better practices. Furthermore, the high road standards in the TMDL suggests roads being closed and made hydrologically maintenance free, which MRC is attempting to include in its road management, but some roads will remain. Given MRC's selective harvest approach and attempts at closing roads appropriately, the disturbance index for our practices will always be high. Is this what EPA intends? In addition, the relationship that shows relative disturbance to substrate quality is weak (Surfleet).
Response: EPA commends MRC efforts at improving its road building practices, eliminating unused roads, and improving harvesting techniques. The disturbance index in the draft TMDL was provided as an example of an index that could be used. However, EPA agrees with the commentor that the relationship is weak (see also response to Comment 12, below). Therefore, we have eliminated the reference to that specific disturbance index, and we hope that the Regional Water Board will develop a more appropriate disturbance index to reflect improvements in chronic sediment inputs to the system.

Comment 12: Please explain the statement (p. 24) regarding the "relative disturbance index" that "available information is insufficient to identify a threshold below which effects on the Albion River

watershed would be insignificant." The abstract from Reeves et al.(1993) (reprinted in the commentor's letter) indicates that thresholds for level entry have been researched and some determinations made (Perkins)
Response: The abstract that the author included states that, for 14 small-to intermediate-sized basins in coastal Oregon between 1985 and 1989, species diversity in stream basins with harvest levels <25% of the basin area was greater than in streams with harvest levels >25% of the basin area. The authors concluded that a community and basin-level perspective is necessary to fully assess the effects of timber harvest and other human activities on stream fish. EPA disagrees that these conclusions indicate that threshold levels generally have been determined. However, EPA did determine that the disturbance index used in the draft TMDL is a weak indicator, and it has been removed. See response to Comment 11, above.

Comment 13: Of the 14 identified indicators on p. 13, 12 of these can be met by "improving trends." While this sets a direction for improvement, it could be interpreted to mean that minimal efforts toward meeting water quality standards would satisfy achieving targets. (Perkins).
Response: EPA disagrees. Of the 14 targets, four are described as improving trends, either because no particular target level is appropriate, or because available information does not identify the appropriate target. Four target levels are described as improving trends toward a goal, which is appropriate for those indicators, either because a rigid target is not appropriate or because the improvement toward those target goals is the most important indicator at this time. The remaining indicators have specific targets. Furthermore, the document clearly states that improvements are needed, and in fact many of these improving trends may reflect achievement of water quality standards right away. It is important to note, as stated in the TMDL, that achievement of water quality standards is the ultimate goal of the TMDL, and achievement of the indicators and target conditions will reflect good water quality conditions. No single indicator is sufficient in itself, and the indicators are to be evaluated on a weight-of-evidence basis, over time. The Regional Water Board may choose to modify these indicators and targets in the future.

Comment 14: Five of the six "watershed indicators" state that no data is available, in spite of information available for Louisiana Pacific's Sustained Yield Plan and Mendocino Redwood Company's Albion watershed analysis. If there are no baselines established, landowner and agencies need to confer and agree upon protocols, then gather this information. Because this could delay recovery of water quality uses, this indicates the necessity for a scheduled timeline for protective measures (Perkins).
Response: EPA agrees that monitoring is necessary, and a timeline for implementation is necessary. Responsibility for development of implementation and monitoring measures lies with the Regional Water Board. EPA expects that the Regional Water Board will develop an implementation and monitoring measures in a timely fashion.

Comment 15: Please include a discussion of anthropogenic barriers. At least one dam on a Class I tributary to the Albion is a barrier to fish migration, and there are undoubtedly a number of improperly placed culverts that are barriers as well. We request that a numeric target of zero for these barriers be included in the Albion TMDL (Perkins).
Response: EPA agrees that improper culvert sizing and installation are common problems which can result in excessive sediment delivery to streams. EPA addressed these factors in the TMDL through the inclusion of water quality indicators for stream diversion potential at road crossings (which is related to improper culvert sizing, maintenance and placement), stream crossings with high risk of failure, and stream crossing failures. EPA is retaining all three indicators in the final TMDL; therefore, an additional indicator is unnecessary to address sediment conditions. The Regional Board may choose to address barriers to fish migration as a separate issue.

Comment 16: The Water Quality Indicators section should include information on estuary habitat (see also Comment 2). (Wehren).
Response: Although EPA believes that sediment reduction in the watershed will result in reduced sediment deposition in the estuary, EPA agrees that an indicator for estuary depth is appropriate to indicate achievement of water quality standards relative to sediment in the estuary; therefore, a depth indicator has been added.

Comment 17: In Section 5.3 (Margin of Safety), the draft TMDL suggests making conservative assumptions where data are sparse. Yet in 3.2 (Instream Indicators), the draft states that fine sediment does not appear to be adversely affecting the fishery, and represents only a moderate impairment, even though it also states that it is difficult to draw any definitive conclusions from the limited data. It would be more proper to state that there is not enough data to draw a conclusion. Figure 2, Relative Disturbance Index v. Instream Substrate Quality is based on meager substrate quality data. Other indicators point to degradation of fisheries habitat due to sediment, low numbers of pools, high level of embeddedness and lack of shelter complexity in Section 2.6, for the South Fork Albion River. Section 2.5, Habitat Conditions, states that excess sediment is adversely impacting the number and volume of pools (Bolin).
Response: EPA agrees that the conservative assumptions in the TMDL are appropriate. In Section 3.2, EPA modified the wording to state more clearly that although data are limited, analysis of the data does not indicate a significant impairment from very fine sediment in the channel substrate. There are two stations of the 22 sampled that exceeded target levels. Because the indicators are intended to be evaluated over time, this data set does not show trends, and it is possible that future trends relative to the data set may show either that conditions are remaining about the same, declining or improving. However, it is appropriate to state that the available data do not suggest a significant impairment. Figure 2 and Table 9 have been removed from the document; see responses to Comments 11 and 12. The document does state that sediment appears to represent an impairment to the beneficial uses.

Comment 18: Please explain why width-to-depth ratios and median particle size diameter (D50) were not considered suitable parameters for monitoring sediment-related trends in the Albion TMDL (Perkins).
Response: EPA feels that the water quality indicators included in the draft TMDL will adequately protect water quality. However, the TMDL states that additional monitoring would be desirable. This includes such possible measures as determination of the median particle size diameter, which could be determined when analyzing other data for the sediment substrate composition indicator, as well as width-to-depth ratios, which can also be determined at the same time. EPA believes that a range of parameters should be monitored, and expects that the Regional Water Board will determine appropriate parameters in coordination with landowners.

SOURCE ANALYSIS

Comment 19: I question the concept of using rates based on comparisons with presently "unmanaged" areas, such as the Caspar Creek watershed, as bases for determining "background." Although the Caspar Creek studies cited in the Source Analysis are excellent indicators of sediment yield from terrain presently not managed for timber production, and valid comparisons can be made between recently logged and historically logged tracts, I question that these represent true "background." Rather, I believe that a more valid assessment of "background" rates should be based on data and observation from

historically unentered terrain, such as substantial-sized tracts in state parks and/or state preserves to represent true background (Wollenberg).
Response: EPA agrees that the ideal method of estimating background rates would be to assess rates over time in large tracts of historically unentered terrain. However, large enough tracts of historically unentered terrain similar to the Albion River watershed do not exist. GMA (2001) used a combination of methods to estimate background rates for the Albion River, including use of data from Caspar Creek studies, and estimates of long-term sediment yield in the basin. An estimate of sediment yield from terrain not managed for timber production represents the best available information, and is an adequate estimate for the Source Analysis.

Comment 20: Regional Board staff is concerned that fluvial erosion associated with roads (stream crossing washouts and diversions, gully erosion, etc.) is assumed to be negligible in the Albion River watershed, as fluvial erosion associated with roads has been shown to be significant in other areas of the north coast. The Regional Water Board is in the process of developing a region-wide Basin Plan amendment for sediment, and subsequent watershed-specific TMDL implementation plans, which will address all sources of human-caused delivery of sediment to waters of the State. Any efforts to comply with the Albion River Sediment TMDL should address fluvial erosion associated with roads as well as all other significant human-caused sources of sediment delivery to waters of the State (McFadin).
Response: EPA agrees that fluvial erosion is a concern. The data available for the sediment source analysis did not allow a detailed assessment of the sources of all sediment. Investigating fluvial erosion specifically associated with roads would have required more field investigation. The sediment source analysis (GMA 2001) discusses the estimate of fluvial sources of erosion; a unit-area rate was determined using other studies, and this would include some fluvial erosion associated with roads. EPA feels that this level of detail is adequate for the TMDL; however, EPA encourages the Regional Water Board to improve upon the analysis in the future and modify the conclusions from the sediment source analysis, and the TMDL, in the future, if the estimates are found to be inadequate.

Comment 21: Sediment transport within the estuary cannot be estimated with the same formulas as within the freshwater segments... Some areas of the estuary have received up to four feet of mud aggradation in the last two decades, as evidenced by five-foot fencing now just 6" high (Wehren).
Response: EPA agrees that sediment transport within the estuary is complex. EPA believes that the sediment source analysis is adequate for the TMDL, and that reductions of sediment in the watershed will also result in reductions in sediment in the estuary. However, we have added an indicator for depth in the estuary, which will provide information over the longer term to support that assumption. If the Regional Water Board finds that improvements are not adequate, additional analysis can be conducted specific to the estuary.

LOADING CAPACITY AND ALLOCATIONS

Comment 22: The Coastal Land Trust welcomes the proposed sediment reductions (Wehren).
Response: Comment noted. No response needed.

Comment 23: I question the geomorphological portion of the reasoning used to substantiate a loading capacity of 150% for the Albion River, compared with loading capacities of 125% for the nearby Noyo and Ten Mile Rivers. In particular, there are many steep slopes in the watershed (see also Comment 10). In addition, steep inner gorge slopes adjacent to streams are able to deliver sediment directly to the river and its tributaries. Also, the draft TMDL states that the geology of the Albion is more stable, with

virtually none of the more erodible melange terrain found in nearby watersheds, yet the upper reaches of the Noyo and Ten Mile watersheds barely extend into the melange terrain. I recommend that the loading capacity of the Albion River be established in keeping with those already set for the Noyo and Ten Mile rivers, at 125% (Wollenberg).
Response: A loading capacity of 150% of background is appropriate for this watershed, as described in the text. Additional detail in the available data resulted in a more accurate estimate of the background and management-related sediment sources than was available for the Noyo or Ten Mile Rivers. The actual loading capacity and the overall reductions called for in the Albion River TMDL are in fact similar to those for the Noyo and Ten Mile River TMDLs. No change is needed in the TMDL.

Comment 24: Considering that the coho population is in a critical state and the Albion River is one of the few remaining refuges, but that roads continue to contribute sediment, and sediment has increased while coho numbers drop, it seems prudent, and we recommend, that the estimated background level for the Albion not be increased to 150% of background loading based on its comparison with streams in worse shape, but that it remain at 125%. We also agree with Skip Wallenburg's comments on the background level estimates for the Albion, and that Mendocino Redwood Company's Watershed Assessment maps indicate a large percentage of steep slopes in the watershed. Reeves et al. 1993 recommends a disturbance threshold no more than 25% for salmonid survival. Please reference this document for information on disturbance (Bolin).
Response: EPA recommends a reduction in sediment loading from its current rate of 258% to 150% of background loading. Regarding the determination of loading capacity, please see the response to Comment 23, above. Regarding Reeves et al. (1993), please see the response to Comment 12.

Comment 25: The accuracy of load allocations is low, at best an order of magnitude. To suggest that certain sediment loads can be managed for, on a long-term averaged basis, is a reasonable hypothesis but very unpractical to measure or determine. Using the surface erosion model in the Standard Methodology for Conducting Watershed Analysis manual (Version 3.0, Washington Forest Practices Board), MRC calculated surface erosion from closed roads. Using data from the Albion Sediment Source Analysis (GMA 2001), suggesting a road density of 7 mi/sq. mi., a 1% hydrological connectivity (to meet the TMDL target), assuming no use of the roads, the model suggests 7 tons/mi^2/year eroded. This gives the conclusion if any of the roads would be used there would be no possible way to meet a load of 16 tons/mi^2/yr and roads on MRC lands will be used. The current estimated load of 90 tons/mi^2/yr can be improved on, but in our opinion not to the level that EPA is suggesting (Surfleet).
Response: EPA has determined from its analysis that the allocations are appropriate. Because the analysis does involve some uncertainty, the Regional Board may choose to modify it in the future if additional information becomes available. The allocations are set to determine the level of pollutant that can be added to the waterbody and still meet water quality standards, not to maintain existing conditions. The Regional Board may determine that implementation measures addressing road density may need to be developed in order to meet the load allocations.

GENERAL COMMENTS

Comment 26: I support the TMDL process (McDonald).
Comment 27: PCCFA supports TMDLs for cold-water fisheries. In order to be effective, TMDLs must be accurate and careful conclusions are necessary (Bolin).
Comment 28: We strongly support the adoption of a TMDL for the Albion and the setting of numeric targets for recovery of beneficial uses (Perkins).

Response (26, 27, 28): Comments are noted. No response is required.

Comment 29: The two-week time extension on comments was appreciated (Wollengberg, Perkins).
Response: Comment noted. No response needed.

Comment 30: The Coastal Land Trust extends compliments on producing a cohesive document under severe time constraints (Wehren).
Response: Comment noted. No change needed.

Comment 31: The TMDL report is well done in scope, methodology, and quality (McDonald).
Response: Comment is noted. No response is required.

Comment 32: Mendocino Redwood Company (MRC) appreciates that EPA used MRC watershed data and presents targets of fish habitat and water quality that fitwith measurements andobservations that MRC currently are using (Surfleet).
Response: Comment noted. No response is required.

Comment 33: I request that Salmon Creek be included in this TMDL effort, because Salmon Creek and the Albion River are closely linked, and in fact, comprise a watershed system in their geology and biology (Bolin, McDonald, Perkins).
Response: EPA developed this TMDL to fulfill its commitment in accordance with a consent decree specifying that a TMDL be developed for the Albion River (*Pacific Coast Federation of Fishermen's Associations, et al. v. Marcus,* No. 95-4474 MHP, 11 March 1997). Salmon Creek is not presently listed by the State as a water-quality-limited water body. If Salmon Creek is listed on a future State 303(d) list, then the State will be responsible for developing a TMDL.

Comment 34: The TMDL states that very few data are available (p.14), and states that it is difficult to draw any definitive conclusions from the limited McNeil sample data set (p. 24), but the document also concludes that the fine sediment represents a moderate impairment. It also states that the concentrations of fine sediments <0.85 mm in channel bottom samples are generally within target ranges (p. 35). The limited McNeil data is given an entire page of the TMDL, and an even more limited subset is used (Table 9) to draw conclusions on a "relative disturbance index." The document also notes that "embeddedness is an indication of fine sediment, and that embeddedness values "generally" meet target conditions in only three locations, whicle most gravels in the watershed are moderately embedded, and South Fork and Little North Fork gravels are heavily embedded. This indicates that either the limited sediment sampling cannot be used to draw good conclusions or the fine sediments result in greater embeddedness values than would be expected from the fine sediments present. Could one reason be that the low flows (p. 30) magnify the effect of fine sediments in the spawning graves? If so, should the target values for sediment substrate composition be less than the "standard" 14% and 30% shown on Table 3, p. 13? And that the riffle embeddedness simply be $\leq$25% rather than a decreasing trend toward $\leq$25%? Also, if the underlying geology of the Albion is relatively more stable, are the relatively low fine sediment levels found by the limited sampling in the river in fact a *high* rate for the watershed, suggesting that the fine sediment targets should be more stringent? Will these values be allowed to increase as long as they are maintained at less than the 14/30% targets? (Perkins).
Response: EPA assumes that the commentor is suggesting that target values should be lower than they are for sediment. EPA believes that the target values presented in the draft will adequately protect water quality, and the reasoning behind the target values is included with each target. See also response to Comment 17 regarding clarification of the wording in the TMDL. It is possible that low flows could

magnify some sediment conditions, for example higher embeddedness values or fine sediment concentrations in channel bottom samples. However, this is not a reason to change the target values, which are reflective of water quality protection. EPA also believes that the watershed is relatively stable, as described in the document, and that the indicators and target values are still appropriate. Water Quality Standards include three components, one of which is an antidegradation policy; thus, an overall decrease in water quality, reflected by overall declines in the indicator values, would not be allowed. See also responses to Comments 11 and 12 regarding elimination of references to the relative disturbance index.

Comment 35: We agree with comments submitted by Skip Wollenberg and Alan Levine (Perkins).
Response: See responses to comments by those commentors.

COMMENTS RELATED TO STATE IMPLEMENTATION, MONITORING, STATUS OF SALMON POPULATION, ETC.

Comment 36: We expect that the North Coast Regional Water Quality Control Board will follow the TMDL promptly with an implementation and monitoring plan, and that landowners in the watershed will make concrete efforts to minimize sediment production (Wehren).
Response: Comment noted. Responsibility for developing implementation and monitoring measures lies with the Regional Water Board. EPA will provide copies of all documentation for the TMDL development to the Regional Water Board, and encourages timely adoption of implementation and monitoring measures.

Comment 37: We urge that you use all necessary measures to ensure that the North Coast Regional Water Quality Control Board and the State Water Quality Control board approve an Albion TMDL and binding Implementation and Monitoring Plans for inclusion as an amendment into the Basin Plan. We encourage your continuing review of these plans to ensure that load allocations will be met (Perkins).
Response: See response to Comment 36

Comment 38: Timelines and numeric targets for sediment reduction are needed for this TMDL to be effective in reducing sediment in time for threatened fish to have a possibility of recovery, particularly given the critically low levels of the coho population (Bolin, McDonald, Perkins).
Response: See response to Comment 36.

Comment 39: With the erosion/siltation data available, a direct, mathematically quantifiable model for management-associated loads must be discovered and instituted as a decision tool to regulate road building/maintenance and yarding techniques. Non-point sources of soil erosion are problematic and require much more sophisticated regulation, particularly in smaller tributaries (McDonald).
Response: EPA will provide background information used to develop the TMDL, as well as suggestions provided during the public comment period, to the Regional Water Board, which will develop the implementation measures and future revisions to the TMDL or its background analysis.

Comment 40: Continued water quality monitoring in the estuary should be included in the recommendations. While the TMDL timeline will not allow investigative field work to address additional information needs for the estuary, we hope that EPA will acknowledge the lack of information and conduct a follow-up study of the effects of sedimentation and turbidity on estuarine habitats, for the Albion, Noyo, Big, Garcia, Mattole and Gualala River estuaries (Wehren).

Response: EPA acknowledges the need for additional information on the effects of sedimentation on the estuarine habitats, and has added text to the TMDL. See response to Comment 2.

Comment 41: Low DO may be a limiting factor in the estuary, and increased sedimentation may also have led to increased temperatures (Wehren).
Response: EPA notes in the text that DO may be a limiting factor in the estuary. EPA will provide this information to the Regional Water Board to consider in their future listing cycles. The Regional Water Board will determine whether the Albion River estuary should also be listed for temperature.

Comment 42: The report lacks recent data on anadromous species. I suggest a statistically significant data base be assembled from all sources in order to determine the slope of the extinction curve, in order to intercept species extinction (McDonald).
Response: EPA will forward this suggestion to the National Marine Fisheries Service (NMFS), which has primary responsibility for ensuring protection of species. See also response to Comment 1.

COMMENTS FROM ALAN LEVINE, COAST ACTION GROUP

Mr. Levine provided a set of comments to EPA for both the Albion River and the Gualala River sediment TMDLs. Because the comments for the two TMDLs were essentially identical, EPA has incorporated in this summary the summary of comments and responses for the Gualala River draft TMDL. We have edited the comments and responses where appropriate to reflect differences in the Albion River TMDL.

Comment 43: The commentor makes several observations and statements regarding the adequacy of the TMDL. "thorough assessment...has been accomplished", "The proposed TMDL takes a much needed science based step... The TMDL includes adequate...assessment."
Comment 44: "EPA is to be commended in including targets for ...embeddedness, large woody debris, turbidity, and aquatic insects, as well as upslope and land management targets."
Response: In the final TMDL, EPA has retained the elements discussed by the commentor.

Comment 45: "The amount of coordination, information, analysis and synthesis is impressive. The Regional Board Staff deserve recognition for their work."
Response: EPA agrees with the positive comments regarding the Regional Board staff work.

Comment 46: The commentor outlines the TMDL requirements.
Response: No response needed.

Comment 47: "The final TMDL should result in a Basin Wide Conservation Plan with the incorporation of Site Specific Conservation plans..."
Response: EPA agrees that measures to implement the final TMDL are needed. The authority for developing implementation measures resides with the North Coast Regional Water Quality Control Board (Regional Board.) EPA will provide a copy of the public comments we received on the draft TMDL, including those pertaining to implementation, to the Regional Board for their consideration during development of implementation measures.

Comment 48: The commentor makes several observations that the TMDL and TSD provide adequate information and have supported reasonably accurate findings.
Response: In the final TMDL, EPA has retained the elements discussed by the commentor.

Comment 49: The TMDL "should be used to support future implementation and monitoring strategy..."
Response: See response to Comment 47.

Comment 50: The commentor makes several observations about how land management activities have increased erosion and limited fish. He notes high levels of turbidity.
Response: EPA agrees with that land management activities have increased erosion and that this has adversely affected fish habitat. Water quality monitoring conducted by GMA (2001) during development of the TMDL suggested possible elevated levels of sediment, as noted in the TMDL. Due to the lack of rainfall, flows throughout the winter were relatively low. Thus, insufficient samples were collected during high flows, which is when higher suspended sediment and turbidity typically occur. EPA is unaware of other turbidity or suspended sediment sampling in the watershed.

Comment 51: Stream bank condition and Large Woody Debris should be included in the assessment.
Response: The State of California has listed sediment as the pollutant that is causing impairment of the Albion River. Thus, this TMDL focuses specifically on sediment. Although some information factors indirectly related to sediment are included in the TMDL and supporting documents, the documents are not intended to be watershed assessments where all possible factors that could affect fish are assessed. However, recognizing that there is a connection between large woody debris and sediment, EPA included a water quality indicator for large woody debris in the draft TMDL, and is retaining it in the final TMDL.

Comment 52: Turbidity is not listed as a limiting factor. There is evidence of elevated levels of turbidity in the Albion River.
Response: As mentioned in the response to the Comment 49, GMA (2001) collected water quality information, including turbidity data, which is reported in the TMDL. The TMDL is not intended to be a limiting factors analysis for fish. However, the turbidity indicator included in the TMDL reflects included in the TMDLthe existing water quality objective for turbidity.

Comment 53: The commentor talks about overwintering habitat and large woody debris.
Response: The State of California has listed sediment as the pollutant that is causing impairment of the Albion River. Thus, this TMDL focuses specifically on sediment. See responses to Comment 50.

Comment 54: Discussion of culvert sizing and installation deserve their own individual consideration in the problem statement and targets section.
Response: EPA agrees that improper culvert sizing and installation are common problems which can result in excessive sediment delivery to streams. EPA addressed these factors in the draft TMDL through the inclusion of water quality indicators for stream diversion potential at road crossings (which is related to improper culvert sizing, maintenance and placement), stream crossings with high risk of failure, and stream crossing failures. EPA is retaining all three indicators in the final TMDL.

Comment 55: Findings from the Caspar Creek study may have relevance.
Response: EPA and the Regional Board considered the Caspar Creek study during development of the TMDL. References to this information are included in the TMDL and supporting documents.

Comment 56: The commentor notes agreement with the water quality indicators for turbidity, % fines, cobble embeddedness, V*, pool frequency/depth, large woody debris, stream crossing with diversion potential, hydrological connectivity, annual road inspection, disturbed area and activity in unstable areas. The commentor makes several suggestions regarding proper monitoring techniques and implementation of indicators in timber harvest plans.

Response: These indicators are retained in the final TMDL. Implementation planning is the responsibility of the Regional Board. EPA will provide a copy of the public comments we received on the draft TMDL, including those pertaining to implementation, to the Regional Board for their consideration during development of implementation measures.

Comment 57: The commentor recommends adding a target for backwater pools and suspended sediment as a target.
Response: EPA agrees that measurements of backwater pools can add additional valuable information for a watershed assessment. However, EPA believes that the pool frequency target, in combination with other targets, adequately describes water quality conditions that will meet water quality standards. In addition, the numerous water quality targets that address sediment issues directly and indirectly will adequately substitute for suspended sediment. The Regional Water Board may choose to monitor additional parameters, if it is found to be necessary in the future.

Comment 58: The commentor recommends adding discussion on fish/food production, canopy and temperature.
Response: The State of California has listed sediment as the pollutant that is causing impairment of the Albion River. Thus, this TMDL focuses specifically on sediment.

Comment 59: The commentor recommends including land use tables (by planning watershed) of % of activity, and type of silvicultural technique and road density.
Response: A table showing road densities by planning watershed is included in the TMDL. The best land use information and silvicultural information available was utilized in developing the sediment source analysis (GMA 2001).

Comment 60: Skid trails are not included and are a major erosional process.
Response: EPA agrees that skid trails are an important source of sediment. In the TMDL, EPA identified a load allocation for skid trail surface erosion, which is retained in the final TMDL. Estimates of sediment from skid trails is included in the source analysis (GMA 2001).

Comment 61: Commentor provides data on the road density in the Gualala.
Response: EPA assumes that the commentor intended this information for the Gualala River TMDL public comment. Including this information in the Albion River TMDL would not be appropriate.

Comment 62: The commentor states that a high level of timber harvest plans have been approved by CDF resulting in erosion.
Response: As described in the TMDL, EPA also found that elevated levels of sediment have resulted from roads and timber harvest in the Albion watershed.

Comment 63: The commentor states that the Regional Board's analysis of roads added fundamental information on sediment delivery. The commentor also reiterated and agreed with many of the TMDL's findings on roads.
Response: EPA has retained the analysis of roads in the final TMDL.

Comment 64: The commentor states that the sediment source analysis relies on the work of Matthews & Associates, and accurately recognizes that 2/3 of the sediment production is human caused.

Response: EPA assumes that the commentor is referring to a different source analysis. The source analysis and TMDL for the Albion River state that 55% of the sediment production is management-related.

Comment 65: The commentor states it is difficult to quantify sediment from aerial photographs.
Response: The TMDL and source analysis discuss this issue. Sources of sediment were analyzed using a combination of methods, including aerial photos, field work and GIS data. Aerial photo analysis was used to estimate quantities of sediment from larger erosion sources.

Comment 66: The commentor states that the loading analysis should be based on three methods: 1) comparison of average sediment loading rates per square mile in highly impacted and relatively unimpaired basins in the North Coast region, and applying these comparisons in the Albion River setting; 2) qualitative analysis of the linkage between sources and instream conditions; and 3) comparison of existing and historical conditions with target levels for the instream indicators.
Response: The methods that were used to determine loading capacity incorporate some of these suggestions, and are adequate for determining the loading capacity.

Comment 67: Harvest units are a significant factor in mass wasting and surface erosion, though no methodology has been proposed for control, other than limiting some harvest of active slides.
Response: The TMDL appropropriately calls for reductions in harvest-related landsliding. Specific controls are the responsibility of the Regional Water Board.

Comment 68: The commentor makes several comments regarding attainment strategy for timber harvest.
Response: See response to Comment 46 regarding responsibility for implementation of the TMDL.

Comment 69: "Land management related fluvial erosion was not evaluated because of the lack of existing data."
Response: A long-term estimate of fluvial erosion was developed for the basin; however, separating between management- and non-management-associated was problematic. See response to Comment 20.

Comment 70: The commentor discusses the inexact nature of linkage analysis and states that the linkage analysis was sufficient and supports the general conclusions that sediment loadings must be reduced. Commentor also states that linkage analysis was not included.
Response: While the TMDL does not have a chapter titled "linkage analysis," the analysis nevertheless considers linkages between instream conditions and loading rates to determine the loading capacity, using methods similar to other TMDLs in the North Coast region. EPA is retaining the methods and calculations used to determine the loading capacity in the final TMDL.

Comment 71: Commentor describes regulations for load allocations, states various opinions and characteristics of the Albion River load allocations, and states that "the reductions sought, approx.60% to 75% reduction per watershed assessment, are appropriate." Commentor then states that the sediment is probably underestimated, and that mass wasting, surface erosion, and fluvial erosion from harvest sites are underestimated and "linkages with current intense harvest activity would suggest greater allocation in these areas." Allocations from surface erosions from skid trails have not been properly (accurately) analyzed nor have they received their appropriate percentage reduction goal.
Response: Although the Albion River TMDL allocations are not expressed as "watershed assessment," EPA agrees that the reductions sought are appropriate. EPA disagrees that other sources are underestimated or that greater allocations are needed. Skid trail surface erosion was adequately

analyzed, and received an appropriate load allocation. EPA is retaining the load allocations in the final TMDL.

Comment 72: Monitoring of parameters should be put in place to establish trends and relationships in mass wasting, surface erosion, and fluvial erosion from harvest sites.
Response: See response to Comment 47.

Comment 73: The commentor suggests an explicit margin of safety by increasing the overall percent reduction needed.
Response: EPA regulations allow for the use of either an explicit or implicit margin of safety. EPA believes that the use of an implicit margin of safety is appropriate in this TMDL, because the assumptions in the analysis adequately account for uncertainties.

Comment 74: The TMDL clearly accounts for seasonal variation.
Response: EPA has retained the seasonal variation discussion in the final TMDL.

Comment 75: Given the uncertainties associated with the supporting documentation, appropriate conservative assumptions have been made regarding loading reductions.
Response: EPA agrees that the conservative assumptions made in the TMDL are appropriate.

Comment 76: The commentor discusses implementation program ideas and monitoring suggestions.
Response: See response to Comment 47.

Comment 77: The commentor submits rebuttal to "technical comments commonly supplied by Industry on TMDLs."
Response: Because this comment is not directed to the TMDL itself, no response is needed.