condition of the station. The results will be the same regardless of the tables used.

4) Relationship to the Aquatic Life – Benthic Community Protection Narrative Objective.

a. The categories designated as **Unimpacted** and **Likely Unimpacted** shall be considered as achieving the protective condition at the station. All other categories shall be considered as degraded except as provided in b. below.

b. The Water Board shall designate the category **Possibly Impacted** as meeting the protective condition if the studies identified in Chapter IV.A.4.f demonstrate that the combination of effects and exposure measures are not responding to toxic pollutants in sediments and that other factors are causing these responses within a specific reach segment or waterbody. In this situation, the Water Board will consider only the Categories **Likely Impacted** and **Clearly Impacted** as degraded when making a determination on receiving water limits and impaired water bodies described in Chapter IV.A.4.

j. MLOE Approach to Interpret the Narrative Objective in Other Bays and Estuaries

Station assessments for waterbodies identified in Chapter IV.A.1.c.2. will be conducted using the same conceptual approach and similar tools to those described in Chapters IV.A.1.d through IV.A.1.h. Each LOE will be evaluated by measuring a set of readily available indicators in accordance with Tables 12 and 13.

1) Station assessment shall be consistent with the following key principles of the assessment approach described in Chapters IV.A.1.d through IV.A.1.i:

a. Results for a single LOE shall not be used as the basis for an assessment.

b. Evidence of both elevated chemical exposure and biological effects must be present to indicate pollutant-associated impacts.

c. The categorization of each LOE shall be based on numeric values or a statistical comparison.

2) Lines of Evidence and Measurement Tools—Sediment chemistry, toxicity, and benthic community condition shall be measured at each station. Table 12 lists the required tools for evaluation of each LOE. Each measurement shall be conducted using standardized methods (e.g., EPA or ASTM guidance) where available.

3) Categorization of LOEs—Determination of the presence of an LOE effect (i.e., biologically significant chemical exposure, toxicity, or benthic community disturbance) shall be based on a comparison to a numeric response value or a statistical comparison to reference stations. The numeric values or

statistical comparisons (e.g., confidence interval) used to classify a LOE as Effected shall be comparable to those specified in Chapters IV.A.1.f through IV.A.1.h to indicate High Chemical Exposure, High Toxicity, or High Disturbance. Reference stations shall be located in an area expected to be uninfluenced by the discharge or pollutants of concern in the assessment area and shall be representative of other habitat characteristics of the assessment area (e.g., salinity, grain size). Comparison to reference shall be accomplished by compiling data for appropriate regional reference sites and determining the reference envelope using statistical methods (e.g., tolerance interval).

Table 12. Tools for Use in Evaluation of LOEs

LOE	Tools	Metrics
Chemistry	Bulk sediment chemistry to include existing list (Appendix A-3) plus other chemicals of concern	CA LRM P_{max} Concentration on a dry weight basis
Sediment Toxicity	10-Day amphipod survival using a species tolerant of the sample salinity and grain size characteristics. e.g., *Hyalella azteca* or *Eohaustorius estuarius*	Percent of control survival
Benthic Community Condition	Invertebrate species identification and abundance	Species richness* Presence of sensitive indicator taxa Dominance by tolerant indicator taxa Presence of diverse functional and feeding groups Total abundance

Table 13. Numeric Values and Comparison Methods for LOE Categorization

Metric	Threshold value or Comparison
CA LRM	Pmax > 0.66
Chemical Concentration	Greater than reference range or interval
Percent of Control Survival	*E. estuarius*: < 59 *H. azteca*: < 62 or SWAMP criterion
Species Richness	Less than reference range or interval
Abundance of Sensitive Indicator Taxa	Less than reference range or interval
Abundance of Tolerant Indicator Taxa	Greater than reference range or interval
Total Abundance	Outside of reference range or interval

4) Station Level Assessment—The station level assessment shall be determined using the decision matrix presented in Table 14. This assessment combines the classifications for each LOE to result in two categories of impact at the station level:

   a. Unimpacted—No conclusive evidence of both high pollutant exposure and high biological effects present at the site. Evidence of chemical exposure and biological effects may be within natural variability or measurement error.

b. Impacted—Confident that sediment contamination present at the site is causing adverse direct impacts to aquatic life.

Table 14. Station Assessment Matrix for Other Bays and Estuaries

Chemistry LOE Category	Toxicity LOE Category	Benthic Condition LOE Category	Station Assessment
No effect	No effect	No effect	Unimpacted
No effect	No effect	Effect	Unimpacted
No effect	Effect	No effect	Unimpacted
No effect	Effect	Effect	Impacted
Effect	No effect	No effect	Unimpacted
Effect	No effect	Effect	Impacted
Effect	Effect	No effect	Impacted
Effect	Effect	Effect	Impacted

5) Relationship to the Aquatic Life – Benthic Community Protection Narrative Objective—The category designated as **Unimpacted** shall be considered as achieving the protective condition at the station.

2. Implementation for Assessing Human Health

a. Approach to Interpret Objective for Contaminants Other than Chlorinated Pesticides and PCBs

The narrative human health objective in Chapter III.A.2.b shall be implemented on a case-by-case basis, based upon a human health risk assessment. In conducting a risk assessment, the Water Boards shall consider any applicable and relevant information, including California Environmental Protection Agency's (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) policies for fish consumption and risk assessment, CalEPA's Department of Toxic Substances Control (DTSC) Risk Assessment, and U.S. EPA Human Health Risk Assessment policies.

b. Approach to Interpret Objective for Chlorinated Pesticides and PCBs

The methods and procedures described below shall be used to interpret the narrative objective described in Chapter III.A.2.b protecting human consumers of locally caught sportfish. These tools and associated assessment framework are intended to address the two components of the sediment quality objective protecting human consumers;

- Assess whether pollutant concentrations in sportfish pose unacceptable chemical exposure to human consumers and
- Assess whether sediment contamination at a site is a significant contributor to the sportfish contamination.

This framework relies on two indicators to address these components; **Chemical exposure indicator** compares sportfish contamination measurements from the site to consumption advisory thresholds. **Site Linkage indicator** compares sportfish contamination measurements to estimated sportfish concentrations that would result from site exposure. Integration of the results