

DEPARTMENT OF TOXIC SUBSTANCES CONTROLRegion 4
245 West Broadway, Suite 425
San Diego, CA 90802-4444

November 2, 1995

Mr. Phillip Dyck
BRAC Environmental Coordinator
Naval Training Center - Environmental Office
33502 Decatur Road, Suite 120
San Diego, California 92133-5000

Dear Mr. Dyck:

**COMMENTS ON DRAFT EXTENDED SITE INSPECTION (ESI) FOR INACTIVE
LANDFILL, NAVAL TRAINING CENTER, SAN DIEGO, CALIFORNIA**

The Department of Toxic Substances Control (DTSC) has completed its review of the subject document dated September 1995, received by this office on September 25, 1995. Review of this document by other state regulatory agencies include, the Regional Water Quality Control Board (RWQCB), the Integrated Waste Management board (IWMB), and the Department of Fish and Game (DFG). All available regulatory comments are attached. RWQCB comments will be forwarded separately.

DTSC's main concern regarding this draft ESI is the inadequacy of the risk assessment and data with respect to human exposure to landfill gas. This is also a concern of other regulatory agencies. In order to properly contain this landfill that is protective of human health and the environment, coordination between the Navy and the regulatory agencies is of utmost importance. Regulatory requirements for landfill containment will include a protective cover that should prevent potential direct exposure of humans or ecological receptors to landfill materials, prevent the release of landfill gas above regulatory limits, and prevent ponding and excess infiltration into the landfill. In addition, ground water will be monitored to detect potential impact to waters of the boat channel and San Diego bay.

The RWCB has already provided regulatory requirements for post-closure maintenance and monitoring of this landfill in their August 23, 1995 letter to the Navy. Additional State requirements from the IWMB for the control of landfill gas emissions and closure of solid waste landfills was provided to you after development of the ESI work plan. We can meet in the near future to discuss regulatory requirements for this landfill.

Please address the following regulatory comments accordingly into the ESI report. I will be on vacation from November 6, 1995 through November 27, 1995.

Mr. Phillip Dyck
November 2, 1995
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If you should have any questions while I am out, please contact Mr. Corey Walsh of the RWQCB at (619)467-2980.

Sincerely,



Alice Gimeno
Remedial Project Manager
Office of Military Facilities - Region 4
Southern California Operations

Enclosures

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COMMENTS ON DRAFT EXTENDED SITE INSPECTION (ESI) FOR INACTIVE LANDFILL, NAVAL TRAINING CENTER, SAN DIEGO, CALIFORNIA, DATED SEPTEMBER 1995.

GENERAL COMMENTS

1. The main concern regarding NTC-Site 1, inactive landfill are the emissions of landfill gases (LFG) from the site and the potential health risks the LFG may have on future on-site workers. The risk assessment completed for the ESI does not adequately address the LFG risk for on-site workers.

High levels of vinyl chloride were detected in the LFG but were not used in the risk assessment. Air monitoring data collected at the boundary of the site was used for the risk assessment. Since future land use at this site will include on-site workers, it is necessary to include an on-site scenario with potential vinyl chloride exposure in the risk assessment. If LFG emissions are shown to be a risk, options for reducing this risk should be evaluated such as additional air sampling prior to on-site activities, and additional and continued landfill cover maintenance and monitoring for this site. Detailed comments from our office of Scientific Affairs are attached in memo form.

For potential future on-site activities, a health and safety plan must be implemented with procedures including, but not limited to, routine air monitoring by an industrial hygienist to ensure a safe breathing environment and to check for potential explosive LFG levels. Routine construction activities such as welding, drilling or hammering may act as ignition sources if explosive LFG levels exist.

2. Background levels for metals should be re-calculated. See attached memo from DTSC's Office of Scientific Affairs.
3. Summary tables providing sampling results from previous studies should be included in the ESI.

SPECIFIC COMMENTS

1. Page 2-8, Section 2.3.4, Air Quality Solid Waste Assessment Test, second paragraph: Vinyl chloride, not methylene chloride, should be noted in the first sentence.

2. Page 2-12 and 2-13, Section 2.4, Regulatory History: The referenced Water SWAT and APCD letters should be included in the appendix.
3. Page 5-2, Section 5.3: It states "... 16 locations were considered sufficient to characterize the cover soil based on field observation." Please expand on "field observation" in the text.
4. Page 5-16, top paragraph: Please state the laboratory used for analysis.
5. Page 6-1, Section 6.1.1, second paragraph: The text states that a large hole was excavated and wastes were dumped in. Is it known what types of wastes were dumped?
6. Page 6-3, Figure 6-1: The map would be easier to read with color.
7. Page 6-11, Figure 6-2: Please provide a little more detail on the "J" laboratory validation qualifier.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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M E M O R A N D U M

TO: Alice Gimeno
Office of Military Facilities
Regional Operations Branch, Region 4,
245 West Broadway, Suite 350
Long Beach, California 90802

FROM: Michael J. Wade, Ph.D., DABT *mjw*
Senior Toxicologist
Brian K. Davis, Ph.D. *Brian K. Davis*
Staff Toxicologist
Office of Scientific Affairs (OSA)
Human and Ecological Risk Section (HERS)

DATE: October 27, 1995

SUBJECT: San Diego Naval Training Center, Draft Extended Site
Inspection, Inactive Landfill, dated September 1995
PCA: 14740 Site: 400273 Work Phase: 45

BACKGROUND INFORMATION

Per your Headquarters Technical Consultation Request Form dated 9/21/95 we have reviewed the Draft Extended Site Inspection, Inactive Landfill, San Diego Naval Training Center, San Diego, California. The document was dated September 1995 and was prepared by Bechtel National Inc., San Diego, California.

San Diego Naval Training Center is scheduled for closure by September of 1999. According to the report, the landfill at the Training Center received approximately five million cubic feet of "dumpster" and light industrial waste between 1950 and 1971. Reportedly the landfill was closed in 1971, covered with fill dirt from an unknown source, and has been used subsequently for recreational activities. The summary section (Page 1), concludes that the landfill is actively generating methane gas. The methane content in the landfill gas is reportedly up to 50%. The summary of the report also indicates (page 1) that landfill emissions of organic vapors exceed Air Pollution Control District Criteria.

Section 2.2 (History) indicates that wastes deposited to the landfill reportedly include dumpster waste (refuse), infectious wastes, paint wastes, "pentachlorophenol sludges", empty pesticide containers, PCBs, methyl isobutyl ketone, xylenes,

methyl ethyl ketone, and metal plating wastes possibly including cyanides.

Figure 2-2 of the report shows that the landfill is adjacent to both the Boat Channel and San Diego Bay. Figure 2-3 indicates that the landfill abuts a number of structures and that three buildings, 567, 568 and 559 are situated directly over the landfill. Figure 3-1 indicates that areas of ephemeral ponding occur over portions of the landfill.

Page 2-7 of the report cites a 1986 study of the landfill by SCS Engineers which concludes that "there was considerable potential for off-site migration of contaminants; and contaminant pathways and receptors are present that may result in potential threats to human health and the environment".

GENERAL COMMENTS

1. In its current form the Extended Site Investigation document is unsatisfactory. The limited air sampling conducted for the landfill is inadequate, especially considering the landfill is actively generating methane gas. Additional soil gas monitoring is required and emissions of volatile chemicals must be mathematically modeled according to U.S. EPA and California Air Resources Board guidance. Information concerning evaluation of landfill gas emissions can be found in the document "The Landfill Testing Program: Data Analysis and Evaluation Guidelines" (CAPCOA, 1990). Modeling of emissions from landfills is also discussed on page 19 of the Superfund Exposure Assessment Manual (US EPA, 1988) and this document should be consulted as well. The soil gas around the perimeter of the landfill should be monitored and monitoring should then be expanded outward to determine if there is lateral migration of landfill gas. Additionally, it may be useful to monitor emissions from a flux chamber situated on the surface of the landfill. Special monitoring using Suma canisters may also be required in nearby buildings to measure intrusion of landfill gas.

2. The primary source of contamination in the area appears to be the landfill itself. This is illustrated by a comparison of the reported contaminants in surface soil, ground water and air. Eleven chemicals were found in surface soil (Table 8-1), eight were found in ground water (Table 8-2), and five were found in air (Section 8.2.3, page 8-3). There is not a single chemical overlap in these three lists. This demonstrates that the source of ground water contamination and the source of air contamination is the landfill material itself, as would be expected, rather than the soil covering. Evidently, significant levels of contaminants are moving from the landfill. The ground water

sampling tells us that chemicals have leached from the landfill in the past, but we have no idea what is currently leaching and what will leach in the future. This issue should be addressed by a geologist from one of the regulatory agencies.

3. We assume any sampling of environmental media, analytical chemistry data, and quality assurance procedures described and summarized in the document reviewed by OSA were adequately reviewed by Office of Military Facilities regional staff. Deficiencies in characterizing the landfill and air contaminants are discussed in our comments # 1 and 2 above.

4. The document was reviewed for scientific content. Minor grammatical or typographical errors that do not affect the interpretation have not been noted. However these should be corrected in the final version of the document.

5. Future changes in the document should be clearly identified. This may be done in several ways: by submitting revised pages with the reason for the changes noted, by the use of strikeout and underline, by the use of shading and italics, or by cover letter stating how each of the comments here has been addressed.

SPECIFIC COMMENTS

1. Page 2-1, fifth paragraph: This paragraph indicates pentachlorophenol sludges were deposited in the landfill. Because technical grade pentachlorophenol was sometimes contaminated with chlorinated dioxins during the period the landfill was receiving wastes (1950 to 1970) representative samples should be analyzed for dioxins in surface soil and groundwater.

2. Page 2-8, last paragraph: This paragraph is unclear. It indicates that in an earlier study conducted by the Radian Corporation of near surface air and soil gas... "The test identified benzene and methylene chloride at significant levels in an area of the Inactive Landfill adjacent to the least tern area. The study concluded that even though these compounds were found at high concentrations, there was little evidence that these compounds were impacting the ambient air or the groundwater." The logic or calculations for the determination that these contaminants were not impacting the air or groundwater should be provided along with a summary of the results of the Radian study. The results could be provided in an appendix.

3. **Page 2-13, last paragraph:** We note that the San Diego Air Pollution Control District (APCD) in a letter dated September 7, 1994 stated that it may issue a written Notification for Remedial Action to the Navy requiring installation of a landfill gas (LFG) collection system.

4. **Page 3-1, second and third paragraphs:** We note the landfill is situated within 300 feet the San Diego boat channel and 700 feet of San Diego Bay. Thus environmental receptors and recreational swimmers could be impacted by landfill leachate migrating into these waters. See also our comment below regarding pages 8-14 to 8-19.

5. **Pages 6-13 to 6-17:** The text lists three sets of samples which were candidate sources of background data for metals (page 6-13). The first question is whether these data are homogeneous and can be pooled. The plots of the metal concentrations against aluminum concentration (Figure 6-3, page 6-15) and the distribution plots (Appendix L) can be used to address this question. The document should directly make that determination. The separation of the data into two tables (Tables 6-1 and 6-4) and the exclusion of some of the Table 6-1 data from the upper tolerance limit calculations suggest that the authors do not feel that the data are homogeneous. This issue must be confronted and explained explicitly.

The use of an upper 95 percent confidence limit of the 95th percentile (upper tolerance limit) to estimate background is unacceptable and contrary to current OSA guidance. There are too few background samples to use the upper tolerance limit. This would be the case even if all 39 samples from Tables 6-1 and 6-4 were included. Small numbers of samples have larger variances which result in higher upper tolerance limits. That is, the estimate of background level is higher, the less reliable the background sampling is. The background value should be revised in conjunction with current OSA guidance which recommends the use of the lower 80 percent confidence limit of the 95th percentile. Appendix A of this memo is a generic explanation of OSA guidance on estimating background concentrations of metals.

6. **Page 6-43, third paragraph:** We note that this paragraph indicates that groundwater on the base is hydraulically connected to the boat channel and bay, thus ecological receptors and recreational users of these waters could be exposed to chemicals emanating from landfill leachate. See also our comment below regarding pages 8-14 to 8-19.

7. **Page 6-43, last paragraph:** Very high levels (820 to 3160 ppb) of vinyl chloride were found in soil gas in the Radian

investigation of the Landfill. If an adult were exposed to these levels of vinyl chloride in his breathing space, the associated cancer risk would range from 6×10^{-2} to 2×10^{-1} . Further investigation of land fill gas emissions is necessary. The limited amount of monitoring performed is insufficient to characterize the potential risk from these emissions.

8. Page 8-3, paragraphs 5 and 6: Collection of upwind and downwind air samples on three consecutive days is inadequate for identification of potential air contaminants from a landfill emitting methane.

9. Page 8-4, table 8-1: The 95 percent upper confidence limit for the 95th percentile estimate of the mean is an inappropriate measure of background and is unacceptable to OSA. See the previous comments for Pages 6-13 to 6-17.

10. Page 8-6, paragraph 3: A screening level risk assessment using soil screening levels such as Region IX FRGs does not always overestimate risk. For example, risks could be seriously underestimated by failing to account for exposure pathways such as food chain or soil gas migration into enclosed structures which were not taken into account in the calculation of Region IX FRGs.

11. Page 8-9, Section 8.4.1.2 (Groundwater COPCs): Volatile contaminants in ground water can contribute to risk by acting as a source for soil gas penetrating into enclosed structures. Soil gas can also move laterally from the landfill eventually intruding into nearby structures. These potential exposure pathways should be evaluated in the document.

12. Page 8-13, Table 8-4: In a screening level risk assessment maximum values are utilized. Instead of averaging values over the three days, the maximum value should be used. In any case, as indicated above, estimation of air emissions from the landfill is inadequate.

14. Page 8-14, top of page: Risk and hazards must be summed over all pathways. This was not done in this document and must be included for the document to be acceptable to OSA.

15. Pages 8-14 to 8-19: The document notes the importance and size of San Diego Bay (page 3-5) as well as the importance of the nearby terrestrial habitats (page 3-5). The significance of both marine and terrestrial habitats makes the limited ecological risk assessment which was done quite inappropriate. The assessment is 5.5 pages long. It doesn't consider the potential for movement of contaminants to any terrestrial organisms or habitats near the

base. It evaluates only one exposure pathway to one organism on the base. Even though that evaluation indicates the potential for harm to the organism, this is dismissed because of successful breeding of the organism. The possibility of harm to other organisms is dismissed because there are "No obvious signs" of it (page 8-15).

The California Department Of Toxic Substances Control has written two guidance documents which should be useful in revising this ecological risk assessment. They are the "Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities (1994), Part A: Overview" and "Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part B: Scoping Assessment". These documents set forth logical and rigorous methods for ecological risk assessment.

16. Page 8-14, Section 8.6.1: The document must provide a description of the July, 1995 survey which was done. What were the qualifications of the survey personnel? How many days were involved? On what hours was the survey done? What organisms might have been missed because of diurnal or seasonal or other factors?

17. Pages 8-15 to 8-17, Section 8.6.2: The only terrestrial receptor which was considered is the least tern. Although attention must be paid to special status species, other species should be considered as well. This includes potential receptors on the base and off the base if contaminants can move to those receptors.

The assessment includes a quantitative evaluation for the least tern, but the only exposure pathway considered is inhalation. The document fails to note that these methods have clearly underestimated total exposure.

Exposure through food ingestion is ignored (page 8-14). This should be justified. Exposure through soil ingestion was said to be insignificant because the least tern eats fish (page 8-16). However, the birds may eat the fish on land. They must bring the fish back to the nests to feed young birds. Hence, soil ingestion seems likely.

Exposure through absorption through the skin and the eggs is omitted "because of problems in estimating dose" (page 8-16). In order to avoid overestimating the exposure, the document deliberately underestimates it. These pathways should be included. The document can then include a discussion of the uncertainty in the exposure estimates.

18. Page 8-17, Section 8.6.3.1. A major concern is the potential movement of contaminants from the landfill into the boat channel and the San Diego Bay. This has not been adequately addressed in this risk assessment. One of the three objectives of the assessment was said to be to evaluate the potential for the known ground water contaminants to harm marine organisms (Section 8.6, page 8-14). All contaminants are dismissed because they were not listed in the California Enclosed Bays and Estuaries Plan. This is insufficient. The federal Ambient Water Quality Criteria should also be checked. For those contaminants which are not found on either list, the scientific literature should be consulted.

19. Page 8-18, Table 8-5: The assessment derives NOAEL values for the five contaminants which were found in air sampling. We have discussed the inadequacies of the air sampling in previous comments. NOAEL values were derived by adjusting NOAEL values from rodent experiments by the cube root of the ratio of body weights for the rodent and the sandpiper. The justification for this is that there are no inhalation data for least terns and the sandpiper was identified as an appropriate surrogate for the least tern (page 8-16).

First, the document should specify that it is the spotted sandpiper which is being used, since there are several sandpiper species. It should also state that the inhalation and body weight data were derived from data given in the U.S. EPA Wildlife Exposure Factors Handbook. Second, spotted sandpipers are smaller than least terns. The result of this is that the adjusted NOAEL is higher for the sandpiper than it would be for the larger least tern. That is, larger animals appear to be more sensitive to the toxicity of a contaminant. However, the lower body weight of the sandpiper leads to a higher estimate of the dose, which partially compensates for the estimated NOAEL.

We checked the calculations based on the equations provided (pages 8-16 and 8-17) and found all adjusted NOAEL values to be ten times higher than those reported in Table 8-5. Therefore, all hazard quotients reported in Table 8-5 are ten times higher than they should be.

20. Page 8-19, Section 8.6.3.2: The fact that the least tern nesting program is successful is useful information which may suggest that there has been little or no harm from the chemical contaminants. This should be strengthened by identifying the "least tern researchers" referred to on page 8-19. It should

also be strengthened as described below. The field observations of other species are too superficial to be of any value.

Rather than ignoring the quantitative analysis as is done in this assessment, it should be used as a guide for what to look for in the field. It should suggest what chemicals may cause toxicity and what the nature of that toxicity may be. A field study can then focus on the potential effects.

21. Page 9-5, second complete paragraph: The statement that ground water contaminants do not exceed the aquatic criteria is misleading. The document dismisses the contaminants because corresponding criteria were not found (See the comment regarding page 8-14, Section 8.6). Leachate from the landfill must be fully analyzed and characterized. A geologist from one of the regulatory agencies involved should comment on the issue of movement of contaminated groundwater towards San Diego Bay.

22. Page 9-5, seventh complete paragraph: We disagree with the notion that it can be concluded that there is no significant adverse effect from LFG emissions. This contention remains to be demonstrated. In addition to benzene and carbon tetrachloride emissions discussed in this paragraph, very high levels of vinyl chloride were detected in soil gas. Further characterization and assessment of the potential emissions of toxic gasses from the landfill needs to be carried out, especially regarding potential emissions of vinyl chloride and other gasses into enclosed spaces.

ERRORS IN NEED OF CORRECTION

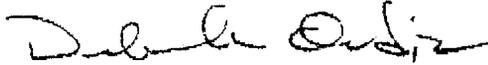
1. Page 3-7, paragraph 1: A reference should be added to replace "(need reference)".
2. Table 8-5, page 8-18: The body weights are in kilograms, not grams.
3. Section 8.7, page 8-19: These conclusions include the ecological assessment as well as the human health assessment.

CONCLUSIONS

As discussed in detail above, the landfill Extended Site Investigation Report is unsatisfactory to OSA in its current format. The possibility of high levels of carcinogens such as vinyl chloride and explosives such as methane requires attention. Additional soil gas monitoring must be done to provide sufficient characterization. This information can then be used to model

Alice Gimeno
October 24, 1995
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potential ambient air contamination. Ground water contamination from landfill leachate must be fully characterized. The potential for human health concern was underestimated by the failure to sum risks and hazards over all pathways. Another concern is the inadequate ecological evaluation. Should you have any questions please do hesitate to call us at (916) 327-2500.

Reviewed by
Deborah Oudiz, Ph.D. 
Senior Toxicologist
Human and Ecological Risk Section

cc: Jim Polisini, Ph.D.
Staff Toxicologist
Human and Ecological Risk Section

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REFERENCES

California Air Pollution Control Officers Association (CAPCOA) Technical Review Group, 1990. The Landfill Testing Program: Data Analysis and Evaluation Guidelines. Approved by the California Air Resources Board, September 1990.

California EPA, Department of Toxic Substances Control, Office of Science Advisor, 1992. Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities.

California EPA, Department of Toxic Substances Control, Office of Science Advisor, 1994a. Preliminary Endangerment Assessment Guidance Manual.

California EPA, Department of Toxic Substances Control, Office of Scientific Affairs, 1994b. Recommended Outline for using U.S. Environmental Protection Agency Region IX Preliminary Remedial Goals in Screening Risk Assessments at Military Facilities. Memorandum from Michael J. Wade, Laura Valoppi and John Christopher dated October 28, 1994.

California EPA, Department of Toxic Substances Control, Office of Science Advisor, 1994c. Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part A: Overview. Part B: Scoping Assessment

US EPA Office of Remedial Response (1988). Superfund Exposure Assessment Manual. EPA540/1-88/001. OSWER Directive 9285.5-1 April 1988.

US EPA Office of Emergency and Remedial Response, EPA/540/1-89/002, 1989. Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part A).

U.S. EPA, Region IX ,1995. Region IX Preliminary Remediation Goals, Second Half 1995. Memorandum from Stanford Smucker, dated September 1, 1995.

APPENDIX A
Determining Ambient Concentrations of Metals

For the Baseline Human Health risk Assessment we recommend the elimination of metals (where indicated) as COFCs early in the risk assessment. This is most easily accomplished by comparing the highest concentration detected to a value which represents the upper range of the ambient concentrations for that metal. For this purpose we recommend a procedure which we have previously recommended at several Navy bases. The crux of the method is the use of plots of the log of concentration vs. cumulative probability. The following steps should be followed:

- a. **Expand the data set.** The largest data set possible is desirable for describing ambient conditions. If the background data set is not sufficiently large, the population size for "background analysis" can be expanded by the use of a technique used successfully at several other sites. Samples of soil collected because of suspected contamination with petroleum products often are found negative for these mixtures upon assay. If these same samples were assayed for metals, the basewide data set can be augmented. This method worked well for Marine Corps Air Ground Combat Center Twentynine Palms. At Naval Station Long Beach, data sets from several investigations were combined to good effect. None of this however should exclude the collection of an appropriate number of "genuine" background samples.
- b. **Display summary statistics for the expanded data set.** Construct a table showing the following for each metal: frequency of detection, range of detected values, range of sample quantitation limits, arithmetic means and standard deviations, and coefficients of variation (CV). Data from contaminated samples might be present if ranges of values for a metal exceed two orders of magnitude or if the coefficient of variation exceeds 1.00.
- c. **Plot logarithm of concentration vs. cumulative probability.** Sort concentration data for a metal from the lowest to the highest value, using one-half the sample quantitation limit for non-detects. Assume that ambient concentrations of metals are lognormally distributed. Our experience at other Navy facilities in California has shown lognormality to be a robust and useful assumption for the distributions of ambient concentrations of metals, even at frequencies of detection much less than 100%. Construct a plot of cumulative probability vs. log of concentration. Equal

distances on the probability axis represent equal numbers of standard deviations. If the sample population numbers 100, then the cumulative probability is 0.05 when the lowest five values have been plotted.

- d. **Define ambient conditions as the population with the lowest concentrations.** If data are drawn from just one population, then the log-probability plot will be a straight line. Inflection points suggest multiple populations, possibly as a result of differing soil types or anthropogenic influences (contamination). For the purpose of identifying COPC for risk assessment, we recommend defining ambient conditions as the range of concentrations associated with the population nearest the origin in the plot. This definition may be performed by inspection or via commercially available computer software. The population with the lowest range is selected to minimize the chance of erroneously eliminating a metal whose concentrations are actually due to contamination. The population with the highest range of concentrations might represent contamination, especially if the summary statistics show that the range of detected values exceeds two orders of magnitude and/or if the CV exceeds 1.00. Professional judgment is sometimes required to conclude that some portion of the data intended to represent ambient conditions actually represents contamination.
- e. **Calculate a value to represent the upper range of ambient conditions.** Using only the data from the population with the lowest concentrations (with one-half sample quantitation limits substituting for non-detects), calculate the 80% lower confidence limit on the 95th quantile. A lower confidence limit on a quantile is used in preference to an upper confidence limit, because it is self-correcting with respect to sample size. By this is meant that small sample sizes will yield restrictive comparators (lower values) and metals will tend to be retained as COPC, while larger sample populations will yield less restrictive comparators and COPC may be eliminated more easily. Statistical tables for calculating lower confidence limits on quantiles may be obtained from OSA. If the sample size of the "background" samples exceeds 50, the 95th quantile may be used rather than a lower limit on the 95th quantile.
- f. **Include or exclude metals as COPC.** If the highest concentration of a metal detected at a site is less than the comparator selected to represent the upper range of ambient conditions, then eliminate the metal as a COPC. If concentrations higher than the comparator are found, then

CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

3800 Cal Center Drive
Sacramento, California 95826



OCT 23 1995

Ms. Alice Gimeno
California Department of Toxic
Substances Control, Region 4
245 West Broadway, Suite 425
Long Beach, CA 92802-4444

Subject: Review of the Draft Extended Site Inspection, Inactive
Landfill Naval Training Center, San Diego, California

Dear Ms. Gimeno:

Thank you for the opportunity to review the Draft Extended Site Inspection (DSI) for the Inactive Landfill Naval Training Center in San Diego, dated September 25, 1995. Upon your request staff of the California Integrated Waste Management Board (CIWMB) has conducted an expedited review of this document and are providing the following general and specific comments.

In general CIWMB staff are concerned that the document does not adequately evaluate the potential health threats posed by the landfill gas that is being generated at the site. In previous comments provided by CIWMB staff, dated March 16, 1995, staff express concerns about the potential health threats posed by the landfill gas and provided specific standards that included threshold criteria for landfill gas (i.e. Title 14, California Code of Regulations, section 17783), however these standards were not addressed in the DSI.

Staff is specifically concerned about the potentially explosive levels of landfill gas (53 percent methane by volume) and the Class A carcinogens (3,160 parts per billion by volume (ppbv) of vinyl chloride and 8,400 ppbv of benzene) that are being generated by the wastes in the NTC Landfill. The DSI did not evaluate the potential threat posed by the landfill gas to the existing and proposed land uses at and around the NTC Disposal Site as required by 14 CCR 17783.

The DSI does contain a risk assessment, but the high concentrations of the Class A carcinogens such as vinyl chloride and benzene detected in the sites landfill gas were not considered as contaminants of concern. This is because ambient air monitoring data collected at the boundary of the site during a previous investigation was used for the risk assessment. CIWMB staff believes that this would be a proper procedure if access to the site was restricted at the site boundary, however this is not the case at the NTC Landfill.

The site is currently being used as an exercise area and endangered species habitat. The site is also surrounded by many structures that could be affected by migrating landfill gas. The cobble, gravel and sand cover material on the site provides a pathway for vertical emissions of landfill gas.

Since violations of the Air Pollution Control Districts 500 ppm surface emissions criteria have been noted and sensitive land use activities are occurring and planned on the site, CIWMB staff believe that the landfill gas characterization data that contains the 3,160 ppbv of vinyl chloride and 8,400 ppbv of benzene should be used for the risk assessment. This would ensure that the standard criteria contained in 14 CCR 17783 of ensuring that landfill trace gasses do not poses a potential threat to the public or the environment is adequately addressed.

An adequate risk assessment at the NTC landfill is essential to ensure that the landfill gas does not pose a potential threat to future land use activities at the site. To ensure that future land use of the site is conducted in a manner that is protective of the public and the environment, new postclosure activities at the site need to be evaluated pursuant to the criteria established in 14 CCR 17796 Postclosure Land Use.

Section 14 CCR 17783, Landfill Gas Monitoring and Control also contains two additional criteria for monitoring of landfill gas, one is for migration at the boundary of the site and the other is for monitoring of on site and adjacent structures. Since DSI did not completely define the boundary of the waste CIWMB staff is concerned that migration of landfill gas at the boundary of the site was not fully evaluated and adjacent structures were not evaluated for the presents of landfill gas.

Enclosed in our March 16, 1995, letter CIWMB staff provided the Title 14 applicable standards for the closure and postclosure maintenance for solid waste disposal sites. After reviewing the DSI it appears that additional guidance would be beneficial to ensure that these standards are addressed in a manner that is protective of public health and safety and the environment. CIWMB staff will be forwarding a copy of the Title 14, Closure and Postclosure Standards to you under a separate cover. Staff is also available for guidance.

Ms. Gimeno
page 3

If I can be of further assistance to you on this matter please
call me at (916) 255-1197.

Sincerely,

A handwritten signature in black ink, appearing to be 'T. Ziellinski', with a stylized flourish extending to the right.

Tamara Ziellinski
Waste Management Engineer
Closure and Remediation Branch

cc: Mr. John Anderson, Regional Water Quality Control Board
Ms. Michelle M. Stress, San Diego County Solid Waste Local
Enforcement Agency

Memorandum

To : Ms. Alice Gimeno
Office of Military Facilities
Department of Toxic Substances Control
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Long Beach, California 90802-4444

Date : October 17, 1995

From : Department of Fish and Game

Subject: Review of the Draft Extended Site Inspection, Volumes I and II, Inactive Landfill, Naval Training Center, San Diego (5920/60130/NTX505 00:14)

This is in response to your Work Request, received on September 21, 1995, to provide an expedited review of the subject documents, especially focused upon the sections addressing Department of Fish and Game's (DFG) natural resource trust interests, including State fish, wildlife, biota, and their habitat. The purpose of this draft report is to present the work scope and findings from an Extended Site Inspection (ESI) performed at the Naval Training Center (NTC) San Diego. The Inactive Landfill is a designated Installation Restoration Program (IRP) site that is being evaluated by the Navy under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. NTC San Diego is scheduled for closure by 1999. The future land uses of the facility are uncertain at this time. The ESI and ecological risk assessment were performed to provide the information necessary for the Navy to determine whether conditions at the site present actual or potential ecological exposure to hazardous pollutants or contaminants derived from the landfill wastes and whether conditions at the site warrant consideration for further response actions.

General Comments

In general, the draft report accurately describes the environmental setting, ecology, and species of special concern. The approach and content of the report relative to estimates of exposure and risk to ecological receptors are technically correct, and appear sound in design and interpretation. In reference to the ecological risk assessment, three metals (arsenic, selenium and zinc) and five hydrocarbons (benzene, carbon tetrachloride, methylene chloride, 1,1,1-trichloroethane, and tetrachloroethene) were further subjected to risk evaluation for an ecological receptor, the California least tern. The risk to the least tern by the metals through soil exposure was not further evaluated because of the bird's feeding habits, although there is some evidence that arsenic and selenium might bioconcentrate through indirect exposure (i.e. food web transfers). A qualitative estimate of the general health of the least tern colony at the Inactive Landfill was performed and concluded, from recent increases in numbers of nests, breeding pairs, and offspring survival rates in 1994, that this site was "as good or better than at other nesting areas." It can be noted that the Hazard Quotients (HQs) and Hazard Index (HI) indicate that tetrachloroethene poses a "potential threat to the least tern by inhalation." The report points out that the least tern colony at the landfill appears to be healthy. The nesting population has been increasing annually, and the survival of young birds has been excellent in the area, presumably due to a restoration program that was initiated in 1993.

The recommendations, based upon the report's conclusions, include:

1) increasing the cover soil thickness and continue maintenance of the soil cover, 2) monitoring groundwater for potential impact to waters of San Diego Bay, and 3) routine monitoring of Landfill Gas (LFG). The purpose of these

measures is to: 1) eliminate potential exposure of human and ecological receptors to the landfill contents, 2) keep landfill vapor emissions within acceptable levels, 3) protect surface waters from groundwater or landfill releases, and 4) provide surface drainage to prevent ponding and infiltration. We agree that these are important actions to continue to protect State fish, wildlife species, biota, and their habitat, potentially affected by soil and groundwater releases from the Inactive Landfill.

Specific Comments

On page 3-7, the report indicates that six nesting pairs of California least terns were observed at NTC San Diego in 1995. On page 8-19, the reports states that there were "ten nests in 1994, and 15 nests to date in 1995." It is not clear from these comparisons that the previous survival rate greater "than 25 to 50 percent" found elsewhere in California is being maintained at NTC San Diego, suggesting some lesser rate of success in 1995, i.e. six nesting pairs in 15 nests. A clearer statement of the ratios and/or success rates would be helpful.

On page 8-14, the report indicates that indirect exposure (e.g., food web transfers) was not considered under this assessment (for trace metal accumulation). Literature documentation or study findings should be used to support this decision.

On page 8-16, risks presented by chemicals of potential concern (COPCs) in soil to the least tern were not estimated because of the bird's feeding habits. Preening and incidental ingestion were not considered as significant exposure pathways based upon some rationale or reasons and should be stated. During a portion of the nesting, brooding, and juvenile periods, the least terns will be closely associated with the soil surface. Did routes of potential exposure include consideration of drinking water sources or exposure?

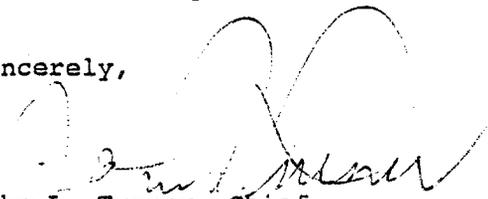
On page 8-16, the report concludes that a predominant exposure route for chemicals is probably from food sources, not associated with San Diego NTC. Providing attractive habitat and managing the habitat for "least tern restoration and maintenance" is of obvious importance to the Navy and United States Fish and Wildlife Service (page 3-7). If population responses of the least tern do not continue to show signs that "least tern survival and health at the nesting area are as good or better than at other nesting areas", an evaluation of this potential contaminant source (from San Diego Bay) would be warranted. Also, the figures and calculations on which the conclusion regarding the population response should be included in the report to justify or support the conclusion.

On page 9-5, further monitoring of the (potential) risk to least terns from tetrachloroethene is not evident in the recommendations. Direct chemical measurements of tetrachloroethene via the release of LFG might be included with "routine monitoring of LFG". The final report should address that issue. Also, the screening risk assessment of groundwater COPCs indicates that the boat channel (San Diego Bay) does not exceed California Enclosed Bays and Estuaries criteria. That finding must be considered in the context that none of the groundwater COPCs are included in the table of water quality objectives for the protection of marine organisms (page 8-17) or least terns (page 8-15) from the California Enclosed Bays and Estuaries Plan.

Ms. Alice Gimeno
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Thank you for the opportunity to comment upon the subject document. If you have any questions regarding these comments or wish to discuss any details, please contact Dr. Michael Martin, Staff Toxicologist, Department of Fish and Game, 20 Lower Ragsdale Drive, Suite 100, Monterey, California 93940, telephone (408) 649-7178.

Sincerely,



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