Appendix H

California Regional Water Quality Control Board Letter to Mr. John Zhao of August 31, 2004

“Santa Maria Class III Landfill; Acceptance of Non-Hazardous Impacted Soil (NHIS) Material From the Guadalupe Restoration Project”

and

City of Santa Maria Utilities Department Letter to Marine Research Specialists of April 14, 2005, RE: NHIS Materials

California Regional Water Quality Control Board
Central Coast Region

Terry Tamminen
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

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August 31, 2004

Mr. John Zhao
Solid Waste/Utilities Engineer
City of Santa Maria
Public Works Department
2065 East Main Street
Santa Maria, CA 93454

Dear Mr. Zhao:

SANTA MARIA CLASS III LANDFILL; ACCEPTANCE OF NON-HAZARDOUS IMPACTED SOIL (NHIS) MATERIAL FROM THE GUADALUPE RESTORATION PROJECT

We have reviewed "City of Santa Maria NHIS Progress Report and Proposed Acceptance of NHIS Material from Guadalupe Restoration Project", dated June 2, 2004 and prepared by City of Santa Maria Public Works Department, Utilities Division. According to the Report, the City proposes to revise the extractable Total Petroleum Hydrocarbon (TPH) acceptance standards in order to accept NHIS material from the Guadalupe Restoration Project (GRP) at the City's Landfill. The City contends the NHIS materials from the GRP are naturally degraded and bio-remediated. The City proposes to add BTEX and oxygenate (MTBE) testing to the screening procedures in order to exclude the refined TPH products associated with BTEX and oxygenates (MTBE), rather than rely on the TPH (DI WET) to indicate the presence of the refined petroleum products. The City believes screening for low, medium, and high carbon chains would suffice to identify refined products and avoid excluding naturally degraded and bioremediated NHIS soils from the NHIS program.

In support of its proposal, the City has provided the following information:

1. Review of Acceptance Criteria for Non-hazardous Hydrocarbon Impacted Soil (NHIS) for Unocal Guadalupe Oil Field (GOF) Project Site, prepared by Shaw Environmental & Infrastructure, Inc. and dated January 23, 2004.
2. Santa Maria Sanitary Landfill Generator Waste Profile.
3. CCR Title 22, Chapter 11 Characterization, dated 7/24/01 for Diluent-affected material stockpiled at TB8.
4. Santa Maria Landfill NHIS Program, Results of Trial Sampling, September 11, 2003 and Reports of Analytical Results.
5. Leachate Testing Conducted at the Former Guadalupe Oil Field by LFR Levine-Fricke dated February 6, 2002.
6. Summary Tables of Historical Analytical Data:
   - **Table 1** – Total Petroleum Hydrocarbons (TPH) in Excavated Soil.
   - **Table 2** – BTEX Compounds in Pre-Excavation Soil Samples
   - **Table 3** – Volatile Organic Compounds (VOCs) in Pre-Excavation Soil Samples.
   - **Table 4** – Semi-Volatile Organic Compounds (SVOCs) in Pre-Excavation Soil Samples.
   - **Table 5** – Metals in Pre-Excavation Soil Samples.
   - **Table 6** – Polychlorinated Biphenyls (PCBs) in Pre-Excavation Soil Samples.
7. Reports of Analytical Results for Summary Data in reference No. 6, above.

Attachment 3: Regional Board letter to the City of Santa Maria dated August 31, 2004.

The Shaw Group performed an evaluation of the current NHIS acceptance criteria, because the City is considering accepting approximately 860,000 cubic yards of material from the GRP. The objective of the evaluation was to verify the applicability of Shaw's December 2002 study and provide recommendations for accepting NHIS materials containing diluent from the GRP. As part of it's evaluation/study, the Shaw Group performed extensive review of existing site characterization and monitoring data, and evaluation studies performed to date.

The Shaw group estimates that 200,000 cubic yards of the GRP NHIS is comprised of sump material with similar characteristics to the petroleum-impacted material modeled in its December 2002 fate and transport study. Thus, it is assumed this material meets the current NHIS acceptance criteria. The remaining 660,000 cubic yards of NHIS from this site is comprised of soil containing "diluent", which was used at the GRP as a thinner to increase production of the viscous crude oil. Since diluent-impacted soils at the GRP are typically characterized against a diluent standard, not in the three TPH ranges specified in the acceptance criteria, some representative sampling and analytical work was done to evaluate the suitability of the diluent-impacted soils and the analytical methodology under the current acceptance criteria. According to the soil profiles from the GRP, the diluent-impacted soils in question meet the NHIS acceptance criteria for all three TPH fractions. However, they do not meet the acceptance criteria for leachable hydrocarbons in the gasoline and diesel ranges. According to DI-WET test results, these diluent-impacted soils contain extractable gasoline-fraction TPH up to 1.3 milligrams per liter (mg/l), extractable diesel-fraction TPH up to 6.4 mg/l, and extractable heavy-oil-fraction TPH up to 3.3 mg/l. The present acceptance criteria for these three extractable fractions are 1 mg/l (gasoline fraction), 5 mg/l (diesel fraction), and 10 mg/l (heavy-oil fraction), respectively.

As part of its evaluation, the Shaw Group estimated the field TPH leachability of the diluent-impacted soils by using the ranges of the TPH found in the GRP NHIS samples and the associated DI-WET results. Based on those estimates, the TPH leachability for gasoline fraction was determined to be 0.15%, and 0.09% for the diesel fraction. The Shaw report concludes these TPH field leachability estimates are conservative because the DI-WET extraction process is more aggressive than the static leaching process in an actual landfill environment.

The Shaw report points out the existing DI-WET acceptance criteria were not based on the fate-and-transport study or site-specific leachability factors, but rather were based on generic soil screening levels for an unlined landfill with groundwater levels between 30 to 50 feet below the waste level. These generic acceptance criteria are relatively conservative so that an adequate factor of safety against unknown waste characteristics and site conditions is provided for groundwater protection. The report also indicates the December 2002 modeling study was based on a worst-case scenario assumption. The hypothetical leachate used in the modeling study contained various surrogate TPH constituents all reaching 100% solubility. Under such conservative assumption, the TPH leachability for the gasoline fraction would be up to 110 mg/L (C9-C10 alkyl benzenes). However, the transport modeling results indicated that the impact to groundwater at such level would be insignificant. The TPH concentrations in the modeling leachate were much higher than the suggested TPH contamination based on the DI-WET test results. Therefore, the current acceptance criteria for extractable TPH appear to be over-conservative and should be relaxed.

Considering the hydrocarbon soil contamination at the GRP site is well characterized by the extensive studies conducted over the past decade, the Shaw Group believes the DI-WET acceptance criteria should be based on actual field leachability derived from the diluent contamination in the soil. Using the TPH acceptance criteria (i.e., 1,000 mg/kg from the gasoline fraction and 15,000 mg/kg from the diesel fraction) as the maximum allowable diluent concentrations in the NHIS, the DI-WET acceptance criterion for the gasoline fraction could be as high as 1.5 mg/L (1,000 mg/kg x 0.0015), and 13.5 mg/L (15,000 mg/kg x .0009) for diesel fraction, while still meeting the TPH acceptance criteria.

Based on Shaw's review and evaluation of the current NHIS acceptance criteria and evaluation of its applicability for accepting the GRP NHIS at the Santa Maria Landfill, it was concluded that although the existing acceptance criteria for soil TPH fractions are applicable as long as the NHIS disposal cell is designed with similar boundary conditions as those discussed in the December 2002 modeling study, the current acceptance criteria for extractable TPH appear to be overly conservative. This conclusion is based on the observed field leachability and the leachability used in the December 2002 modeling study. Based on the TPH and DI-WET test results provided by the Unocal project personnel, the field leachability specific to the Unocal GRP NHIS was estimated to be much lower than that used in the modeling study. As such, the Shaw report recommends the acceptance criteria for extractable TPH be modified and based on estimated TPH field leachability derived from the DI-WET test results from the GRP NHIS.

We have reservations about forgoing the TPH (DI WET) standards from the existing soil acceptance criteria. As stated on numerous occasions, "*Our primary concern has to do with the potential for leaching and mobility of the constituents of concern associated with the NHIS material, particularly the lighter hydrocarbon fractions (i.e., TPH-gas and TPH-diesel), which are much more soluble than the heavier fractions and have a higher potential of mobilizing*". The DI-WET standards have been established to help us assess the leachability and mobility of the NHIS material. Thus, we deny your request do away with the DI-WET criteria entirely.

However, we have given close consideration to the evaluation and research performed by the Shaw Group, as presented in its January 23, 2004 report titled, *Review of Acceptance Criteria of NHIS from the Unocal GOF Project Site*. Based on our review, we find the information presented in the Shaw report including our close review of profiles from the NHIS material at the GRP, and our consideration of site specific conditions at the Landfill provides justification for revising (increasing) the acceptance criteria for the DI-WET criteria for the gasoline and diesel TPH fractions. Based on the conservative assumptions, we agree the study provides adequate assurance the site groundwater will not experience measurable impacts if the existing DI-WET acceptance criteria are slightly relaxed. Therefore, to allow the future acceptance of diluent-affected soils from the GRP, the present TPH DI-WET acceptance criteria are hereby revised to 1.5 mg/L in the gasoline range and 7.5 mg/L in the diesel range. These revised TPH DI-WET standards will reflect actual field leachability conditions as justified by the Shaw report. This revision will allow the City to accept diluent-affected soils from the GRP under the NHIS Program. All other conditions, restrictions and acceptance criteria remain unchanged. This revision is strictly for diluent–affected soils from the Unocal GRP. The existing acceptance criteria remains in effect for all other sources of NHIS material.

For clarification purposes, please note we hold the City of Santa Maria completely responsible and liable for any groundwater impacts associated with the implementation of the NHIS program. Our existing approval to utilize NHIS material as foundation layer material for the active landfill area is based on consideration of site-specific conditions (e.g., proximity to Santa Maria River), and the actual and potential uses of groundwater beneath and adjacent to the Landfill. To prevent/minimize the possibility of groundwater impacts, we require strict adherence to the conditions and restrictions specified by Order No. 01-041.

We believe the acceptance of additional NHIS material from the GRP will expedite final rolling closure activities at the Santa Maria Landfill. The use of this NHIS material as foundation layer material will enable the waste soils to be entombed under a protective final cover and will accelerate closure for the unlined active landfill area. Disposal operations must be carried out such that the majority of the NHIS would be closed annually prior to the arrival of winter precipitation. Final closure activities along with proper storm water management will significantly minimize the impact of precipitation and percolation upon the existing unlined waste mass. In turn, potential leaching from this area will be significantly reduced and underlying groundwater should be improved.

The present approval considers several factors, including the degree of risk posed by the material's specific characteristics (mobility, volatility, leachability), intended use (foundation layer), placement location

(lined/unlined areas, separation from leachate and groundwater), and the overall benefit to the environment. We also considered the importance (from a water quality prospective) of providing the unlined active landfill area with a final cover system at the earliest possible time. These conditions, restrictions and considerations are outlined in previous correspondences and remain applicable.

We look forward to the successful implementation and completion of this project. If you have any question please contact **Hector Hernandez at: (805) 542-4641 or e-mail at:** hhernand@rb3.swrcb.ca.gov, or John Robertson at (805) 542-4630.

Sincerely,

Michael LeBrun

for Roger W. Briggs
Executive Officer

S:\Land Disposal\Land Disposal Facilities\permitted Sites\Santa Maria (SMLF)\letters\061804 NHIS Program Modifications

cc:

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April 14, 2005

Greg Chittick
Senior Engineer
MRS Environmental
3140 Telegraph Road, Suite A
Ventura, CA 93003

Subject: NHIS Materials

Dear Mr. Chittick;

The City of Santa Maria's Regional Landfill accepts Non-Hazardous Impacted Soils (NHIS) that meet the standard approved by the Regional Water Quality Control Board. These soils are not counted towards any jurisdiction's landfill tonnage as the soils are considered construction material and placed on top portions of the landfill as additional closing layer material. Therefore, there are no impacts towards a jurisdiction's AB-939 requirements

If you need any further assistance, please do not hesitate to contact John Zhao, Landfill Engineer, or myself, at (805) 925-0951, Ext. 7232.

Sincerely,

Bradford Whitty
Utilities Analyst

SMSL NHIS PROGRAM ACCEPTANCE CRITERIA (REV. 5 – JANUARY 27, 2004)

A. CHEMICALS ANALYZED BY EPA METHODS 8260 & 8270 [1, 3]

Concentrations must not exceed those set forth as characteristics of hazardous waste for the measured compounds as defined by California Code of Regulations (CCR) Title 22 or be greater than 100 times the MCL for a measured soil concentration, whichever is more restrictive.

B. TPH TESTING (EPA METHOD 8015M) [1]

Contaminant	TPH Acceptance Criteria (ppm)
Gasoline (C4-C12)	1,000
Diesel (C13-C22)	15,000
Heavy Oils (C23 and Greater)	200,000

C. DI-WET TESTING [1]

Contaminant	DI-Wet (mg/l)
Gasoline (C4-C12)	1
Diesel (C13-C22)	5
Heavy Oils (C23 and Greater)	10

D. SOLUBLE THRESHOLD LIMIT AND TOTAL THRESHOLD LIMIT CONCENTRATIONS IN 22 CCR §66261.24 [1]

(a) Inorganic Persistent and Bioaccumulative Toxic

Substance	STLC (mg/l)	TTLC Wet-Weight (mg/kg)
Antimony and/or antimony compounds	15	500
Arsenic and/or arsenic compounds	5	500
Asbestos		1.0 (as percent)
Barium and/or barium compounds	100	10000
Beryllium and/or beryllium compounds	0.75	75
Cadmium and/or cadmium compounds	1	100
Chromium (VI) compounds	5	500
Chromium and/or chromium (III) compounds	5	2500
Cobalt and/or cobalt compounds	80	8000
Copper and/or copper compounds	25	2500
Fluoride salts	180	1800
Lead and/or lead compounds	5	1000
Mercury and/or mercury compounds	0.2	20
Molybdenum and/or molybdenum compounds	350	3500
Nickel and/or nickel compounds	20	2000
Selenium and/or selenium compounds	1	100
Silver and/or silver compounds	5	500
Thallium and/or thallium compounds	7	700
Vanadium and/or vanadium compounds	24	2400
Zinc and/or zinc compounds	250	5000

(b) Organic Persistent and Bioaccumulative Toxic

Substance	STLC (mg/l)	TTLC Wet-Weight (mg/kg)
Aldrin	0.14	1.4
Chlordane	0.25	2.5
DDT, DDE, DDD	0.1	1
2,4-Dichlorophenoxyacetic acid	10	100
Dieldrin	0.8	8
Dioxin (2,3,7,8-TCDD)	0.001	0.01
Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	—	13
Lindane	0.4	4
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
Polychlorinated biphenyls (PCBs) [2]	—	—
Toxaphene	0.5	5
Trichloroethylene	204	2040

E. MISCELLANEOUS [1]

Property	Acceptance Criteria
pH	2 < pH < 12.5
Flash Point	> 140 deg F
Reactive Cyanides	< 250 mg/kg
Reactive Sulfides	< 500 mg/kg

Notes:

1. All chemical up limits, of the characterization of the source, are as calculated using the average method. For those constituents for which the PQL levels are higher than 100 times the constituent's MCL level as the original acceptance criteria, the PQL levels should be used as the acceptance criteria.

2. PCBs shall not exceed 1 ppm.

3. BTEX limits (100x MCL) are: Benzene: 0.1 ppm; Toluene: 15 ppm; Ethylbenzene: 70 ppm; Xylene: 170 ppm