

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER NO. R5-2006-0720
FOR
NESTLÉ USA, INC.
SAN JOAQUIN COUNTY

This Order is issued to Nestlé USA, Inc. (hereafter known as Discharger) based on provisions of California Water Code Section 13304, which authorizes the California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Board) to issue a Cleanup and Abatement Order (Order).

The Regional Board finds, with respect to the Discharger's acts or failure to act, the following:

INTRODUCTION

1. The Discharger is a wholly owned subsidiary of Nestlé Holdings, Inc. The Discharger owned and operated a manufacturing plant at 230 Industrial Avenue in the City of Ripon, located in San Joaquin County. The former plant site is located approximately three quarters of a mile north/northwest of Stanislaus River and is situated within the northwest 1/4 of Section 29, Township 2 South, Range 8 East on the USGS 7.5 Minute Quadrangle Map for Salida, California (Figure 1). The Discharger sold the former plant site ("Facility") to Cal Freight in 2005.
2. The manufacturing plant was built in the 1930s and was initially used for the production and processing of dairy products. Between 1948 and 1986 the plant manufactured caffeinated and decaffeinated instant coffee. In 1986 the manufacture of instant decaffeinated coffee ceased and manufacturing of caffeinated instant coffee continued until the facility was closed in 1994.

BACKGROUND

3. The decaffeination process for instant coffee used a "closed loop" system where solvents were distilled and recycled. The solvents were stored in aboveground tanks located near the former decaffeination building (Figure 2). Beginning in 1957, trichloroethylene (TCE) was used to extract caffeine for the production of decaffeinated instant coffee. In 1970, the Discharger discontinued use of TCE in the decaffeination process. Methylene chloride (MC) replaced TCE in the decaffeination process and was used from 1970 to 1986. Decaffeination using solvents was discontinued after 1986.
4. Wastewaters from the manufacturing process have historically been discharged to the industrial sewer line that connects to the City of Ripon's publicly operated treatment works (POTW). The industrial sewer line is in the center of Industrial Avenue, which is just west of the Facility (Figure 2).

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5. Local Hydrogeology: Local hydrostratigraphic units have been defined by the Discharger as the Upper, Intermediate, and Lower aquifer zones. Each zone is comprised of highly permeable sands and gravels interbedded with silts and clays. The Upper aquifer zone includes the water table aquifer and is generally encountered between 25 and 120 feet below ground surface (bgs). The Intermediate aquifer zone is encountered between 120 and 220 feet bgs. The Intermediate aquifer zone contains two distinct sand layers identified as the C1 and C2. The C1 and C2 sands are encountered at approximately 140 to 160 feet bgs and 180 to 190 feet bgs, respectively. The Lower aquifer zone is generally encountered below 220 feet and is separated from the Intermediate aquifer zone by a locally (and possibly regionally) continuous clay aquitard. The distribution of volatile organic compounds (VOCs) and groundwater potentiometric surface data suggest the Upper and Intermediate aquifer zones are hydraulically connected. VOCs have been detected in Lower aquifer monitoring wells, suggesting there may be areas within the TCE plume where the Intermediate and Lower aquifer zones are also hydraulically connected.
6. The depth to the local water table is approximately 20 to 25 bgs. The horizontal and vertical groundwater gradients vary seasonally in response to pumping of municipal and industrial supply wells located to the west, north, and east/southeast. Currently, pumping of City of Ripon wells 3, 4, 7, 9, 10 and 11 and Fox River Paper wells 6 and 7 is believed to influence groundwater flow in the vicinity of the Facility (Figure 3).

Based on the current distribution of VOCs and historical groundwater elevation data, it appears that the predominant groundwater flow direction may have been southward before the City of Ripon began extracting large volumes of groundwater to supply drinking water to their residents. The period when this potential reversal of groundwater flow direction occurred is uncertain. Recent groundwater elevation data suggests groundwater in the Intermediate and Lower aquifer zones in south Ripon may still be flowing southward and/or parallel to the Stanislaus River.

7. In October 1985 and January 1986, the Discharger sampled on-site supply wells N1 and N2. TCE was detected in these supply wells that were screened in the lower portion of the Upper aquifer zone. The presence of volatile organic compounds in groundwater is attributed to accidental spills from the aboveground storage tanks near the former decaffeination building, accidental leaks/spills of chemicals near or in the water treatment chemical storage building, and unanticipated leaks in the industrial sewer system.
8. In July 1986, the Discharger installed a granular activated carbon (GAC) system for the treatment of their production water from supply well N1. Supply well N2 was not used at that time. This action was performed as an interim remedial measure.
9. In 1995, supply wells N1 and N2 were abandoned and pumping continued from Upper aquifer zone extraction wells EI-1, installed in February 1989, and EW-1, installed in January 1992. From July 1986 through 2002, with the exception of an approved shutdown in 1999/2000 for pilot testing, the Discharger extracted and treated groundwater from Industrial Avenue extraction wells N1, EI-1, or EW-1 at a rate of approximately 40 to 140 gallons per minute (gpm).

In 2003, the Discharger pumped and treated an average of approximately 34 gpm from Industrial Avenue extraction well EW-1, in 2004, approximately 21 gpm, and in 2005, approximately 10 gpm.

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Also, during April and May of 2005, the Discharger pumped and treated an average of approximately 64 gpm from Industrial Avenue extraction well EI-1, but stopped due to high total dissolved solids (TDS) concentrations in the effluent. Apparently, groundwater cannot be pumped from the existing Industrial Avenue extraction wells at rates above approximately 10 gpm without causing a TDS excursion above the City of Ripon's water quality limit for the non-potable water system. The existing extraction wells at the Industrial Avenue Facility are capable of sustaining extraction rates much higher than 10 gpm, but corrective actions have not been implemented to improve pump and treat operations even though the Discharger is permitted to discharge up to 220 gpm to the City of Ripon's industrial sewer. As an interim remedial action, the Discharger needs to immediately increase pumping rates in existing Upper Aquifer extraction wells at the former Facility to design rates or to the maximum discharge rate permitted to the City of Ripon's industrial sewer. Also, the Discharger needs to implement a long-term solution to disposal of treated groundwater that may contain elevated total dissolved solids, nitrates, or other naturally occurring or anthropogenic constituents that cannot be discharged to the industrial sewer system or non-potable water system.

10. Since 1986, the Discharger has installed more than 98 groundwater monitoring wells on- and off-site to delineate the VOC contamination believed to be associated with the Facility ("TCE Plume"). The Discharger has also conducted quarterly groundwater monitoring since 1986. In November/December 2000 the Discharger installed guard wells to provide early detection of VOCs migrating to municipal wells MW-3, MW-7, MW-9, and MW-10 as well as Fox River Paper Company supply wells PW-6, -7, and -8 (Figure 3).
11. The extent of the TCE plume appears to be defined west, north, and east of the Facility in the Upper and Intermediate Aquifer Zones. The plume has migrated southward and beneath the Stanislaus River. It is uncertain how far the plume has migrated west of monitoring well cluster M-32, which is located adjacent to the north side of the river. An additional well cluster located west of monitoring well M-32 is needed to complete delineation of the southern extent of the plume.

Based on recent monitoring data, the plume appears to be migrating vertically from the Intermediate Aquifer Zone into the Lower Aquifer Zone. The Discharger has installed seven (7) Lower Aquifer Zone monitoring wells on the north side of the Stanislaus River, which is now considered inadequate to detect vertical migration from the Intermediate Aquifer and potential migration towards the City of Ripon's supply wells. Recently, significant increasing TCE and cis-1,2-DCE trends and the maximum historical concentrations of these contaminants have been detected in Lower Aquifer monitoring wells M-6D and M-8D, which are located beneath or adjacent to the Discharger's TCE source areas. TCE and/or its degradation products have also been detected in 5 of the 7 Lower Aquifer wells in the past 18 months and Regional Board staff disagree with the Discharger's interpretation that these are isolated detections in the Lower Aquifer Zone. Regional Board staff believes these detections may be part of a continuous plume in the Lower Aquifer Zone and the Discharger needs to delineate the Lower Aquifer plume, install an adequate monitoring network, and implement remedial actions to capture and prevent further migration of the TCE plume in the Lower Aquifer Zone.

The City of Ripon recently installed drinking water supply wells MW-13 and MW-14, but the Discharger's monitoring network is unlikely to provide early detection of plume migration towards

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these new wells. Additional monitoring wells need to be installed in the Lower Aquifer Zone to provide early detection of plume migration towards these supply wells.

12. Based on historical monitoring in the Upper and Intermediate aquifer zones beneath the Facility, TCE, cis-1,2-dichloroethene, vinyl chloride, and chloroform are the primary VOCs detected in groundwater. Other constituents of concern detected in groundwater beneath the Facility include tetrachloroethene, 1,1,1-trichloroethane, trans-1,2-dichloroethene, 1,1-dichloroethene, 1,2-dichloroethane, 1,1-dichloroethane, methylene chloride, carbon tetrachloride, and bromoform. Carbon tetrachloride and tetrachloroethene appear to originate from sources not associated with the Discharger. On 4 April 2006, the Discharger submitted the Draft 2005 Annual Groundwater Monitoring Report. Concentrations of VOCs have generally declined one to two orders of magnitude in most monitoring wells since discovery of the release in 1985. However, the plume has spread laterally and vertically since 1985 and recent vertical profiling of the Upper Aquifer Zone discovered residual concentrations of TCE as high as 7,800 µg/L in the Industrial Avenue source area (Geomatrix 2006). Maximum concentrations of VOCs in the Discharger’s groundwater monitoring wells (Figure 3) in 2005 are presented in the table below:

Constituent	Concentration (µg/L)
Trichloroethene	590
Cis-1,2-dichloroethene	250
Vinyl Chloride	220
Chloroform	12
Tetrachloroethene	2.2
1,1,1-Trichloroethane	0.16
Trans-1,2-dichloroethene	4.1
1,1-Dichloroethene	3.4
1,2-Dichloroethane	<0.5
1,1-Dichloroethane	6.5
Methylene chloride	0.52
Bromoform	2.3

13. The Discharger has monitored local supply wells since 1986. VOCs, principally TCE and cis-1,2-DCE, have been detected in existing municipal supply wells MW-7 and MW-9. Concentrations of these VOCs have exceeded California Primary Maximum Contaminant Levels (MCLs) in MW-9. In 1998, the City of Ripon installed a granular activated carbon (GAC) unit on MW-9 to treat VOCs originating from the Discharger’s former facility. Concentrations of TCE in well MW-7 have exceeded the California Public Health Goal (PHG), but have been below the MCL. TCE and/or cis-1,2-DCE have also been detected in former municipal wells MW-1 and MW-6 and former Simpson Paper Company production wells PW-04 and PW-05, but use of these wells was discontinued for reasons unrelated to the TCE plume.
14. In 1990, the Discharger submitted a *Draft Risk Assessment* that evaluated the degree of risk to human health posed by the groundwater TCE plume. At the time that report was submitted, the Discharger believed that the TCE plume had not migrated far from the Facility and the report concluded that there was no complete pathway to potential receptors including the local municipal supply wells.

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15. In October 1993, the Regional Board issued Cleanup & Abatement Order (CAO) Number 93-712 that provided a list/schedule of interim and final remedial actions, groundwater cleanup standards, and reporting requirements. The Feasibility Study, Record of Decision, and Remedial Design documents required under the 1993 CAO have not been completed. A Feasibility Study was submitted in October 1994, but was not approved by the Regional Board. In response to comments raised by Regional Board staff, the Discharger also submitted addendums to the Feasibility Study in February 1998 and October 1998, and completed an evaluation of in situ oxidation using KMnO_4 in September 2000. The in situ oxidation pilot study demonstrated that KMnO_4 can quickly oxidize TCE and its degradation products, but delivery of this reagent to the affected areas is problematic.
16. In October 1999, the Discharger began extracting and treating groundwater at a second location approximately 1,400 feet southwest of the former Facility. Extraction well E-2, installed in August/September 1999, near the corner of Stockton Avenue and 4th Street (Stockton Avenue property), is screened in the Upper aquifer zone and extracts groundwater at a rate ranging from approximately 40 to 120 gpm; pumped water is treated at a nearby plant on Stockton Avenue and discharged to the City of Ripon's industrial sewer.
17. On 27 June 2000, the Discharger submitted the Draft *Groundwater Flow Model Evaluation for Groundwater Treatment System Design* Report (Draft Flow Model Report) for review by the Regional Board. This Draft Flow Model Report evaluates various pumping scenarios and the relative hydraulic capture provided by each one. The model demonstrated that limiting pumping at municipal wells MW-4 and MW-7 should minimize the TCE plume migration northward beneath the City of Ripon. With the exception of flow to MW-10, the Draft Flow Model Report states VOC concentrations higher than $3.0\mu\text{g/L}$ would be contained horizontally and vertically within all aquifers by expanding the groundwater treatment system and the continuous pumping of municipal well MW-9. Regional Board approved installation of a new Intermediate zone extraction well (E-6) as an interim remedial action.

The Discharger has submitted several refinements to the Draft Flow Model Report since June 2000, but the Report has not been finalized due to issues related to calibration of the model and the discovery of the TCE plume on the south side of the Stanislaus River.
18. In November 2000 the Discharger installed extraction well E-6 at the Stockton Avenue property to extract and treat groundwater in the Intermediate Aquifer Zone. Recent pumping data indicates this extraction well can sustain flows up to 425 gpm with an average flow of 390 gpm. The City of Ripon constructed a non-potable water distribution system to supply water to local industrial facilities and irrigate parks. In July/August 2004, extraction well E-6 became operational and started discharging to the non-potable water distribution system. The Discharger installed an air stripper with a GAC polisher to treat groundwater pumped from both E-2 and E-6.
19. In the 1990s, the Discharger completed several soil vapor investigations and installed 12 soil vapor extraction (SVE) wells to remediate the vadose zone on- and off-site. A total of 170 pounds of VOCs have been removed from the vadose zone by these extraction wells. The SVE systems operated until VOCs were below detection or achieved asymptotic levels, but concurrence on no further action (NFA) was not issued by Regional Board staff. The Discharger is currently assessing

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residual soil vapor concentrations and potential off-gassing from the groundwater plume as part of an investigation of potential vapor intrusion into buildings overlying the TCE plume. Depending on the findings of this investigation, additional SVE work may be conducted or Regional Board staff may concur on NFA and the systems will be decommissioned.

20. In November 2001 and July 2005, the Discharger submitted work plans to conduct a pilot test on In Situ Reactive Zone (“IRZ”) technology. The Discharger proposed to inject a food-grade product such as corn syrup or molasses into the Upper Aquifer zone to create a reactive zone that will biodegrade TCE and its daughter products. The preliminary field work was completed in 2005 and the first half of 2006 and included vertical profiling of the Industrial Avenue source area. The vertical profiling shows there are still residual concentrations of TCE as high as 7,800 µg/L in the shallow portion of the Upper Aquifer Zone. Regional Board staff is currently reviewing the results of that field work and concurrence on the proposed pilot test is anticipated in 2006.
21. Although the degree of TCE plume containment that can be provided by the Discharger’s extraction wells has not yet been fully determined, it appears that municipal well MW-9 captures and treats a portion of the TCE plume east of the Facility. The Discharger and the City of Ripon have entered into a binding settlement agreement that ensures that MW-9 will continue to pump and treat groundwater in the Intermediate Zone. By entering into the settlement agreement, the City of Ripon agreed to limit pumping at municipal wells MW-4 and MW-7 to specified levels and, with certain exceptions, to operate MW-9 at a minimum pumping rate of 600 gpm. Groundwater modeling previously suggested that, left unconstrained, supply wells MW-4 and MW-7 would have adversely affected the Discharger’s ability to contain the TCE plume in the Upper and Intermediate Aquifer zones if the City of Ripon had continued to pump them at historical rates.

Municipal well MW-9 has recently shown increasing levels of nitrate, so the City of Ripon may eventually need to decrease or eliminate pumping at MW-9 to maintain the quality of drinking water supplied to City residents. Because high pumping rates must be maintained to provide adequate capture of the TCE plume east of the Facility, the Regional Board will require the Discharger to implement additional remedial actions if the City of Ripon needs to reduce or stop extracting groundwater from MW-9.

22. On 18 April 2005, the Discharger notified Regional Board staff that the TCE plume had been detected in two private supply wells screened in the Upper and Intermediate Aquifer zones on the south side of the Stanislaus River. Concentrations of TCE, cis-1,2-dichloroethene, and vinyl chloride have been detected at concentrations exceeding California Maximum Contaminant Levels (MCLs) in both private supply wells since the initial detection of the TCE plume. The Discharger installed wellhead treatment on these wells within one week and has since been monitoring these wells twice per month to ensure the wellhead treatment is operating properly.
23. On 25 April 2005, the Regional Board issued an Order, pursuant to California Water Code Section 13267, requiring the Discharger to provide an interim water replacement contingency plan, monitoring plan, and investigation work plan to delineate the full extent of the TCE plume on the south side of the Stanislaus River. The Discharger submitted the Final Water Replacement Contingency Plan for the south side of the Stanislaus River on 6 June 2005 and the Final Investigation Work Plan for the southern portion of the TCE plume on 11 July 2005.

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24. The Discharger’s existing extraction system at the former Facility does not include extraction wells in the shallow portion of the Upper Aquifer Zone where TCE concentrations are highest or extraction wells in the Intermediate or Lower Aquifer Zones where plume migration threatens or has already impacted local supply wells. The existing extraction system at the Stockton Avenue property provides extraction from the lower portion of the Upper Aquifer Zone and the Intermediate Aquifer Zone. The Discharger needs to implement long-term remedial actions to contain and remove the TCE plume in the three impacted aquifer zones.
25. Although the Discharger has not completed groundwater modeling efforts, groundwater potentiometric data presented in quarterly and annual monitoring reports clearly indicates the existing extraction wells only contain/capture a portion of the TCE plume in the Upper and Intermediate Aquifer Zones. Increasing extraction to design rates for these wells is not expected to provide full containment/capture of the TCE plume. The Discharger needs to install additional extraction wells to fully contain/capture the TCE plume.

Groundwater treatment and disposal facilities are not adequate to handle the existing extraction wells operating at their maximum pumping rates. The Discharger needs to improve the existing pump and treat operations as an interim measure and install additional treatment and disposal facilities to handle the increased groundwater extraction that is needed to fully contain/capture the TCE plume.

AUTHORITY – LEGAL REQUIREMENTS

26. Section 13304(a) of the California Water Code provides that:

“Any person who has discharged or discharges waste into waters of the state in violation of any waste discharge requirements or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the Regional Board clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to, overseeing cleanup and abatement efforts. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the Regional Board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.”

27. Section 13305(f) of the California Water Code provides that:

“Replacement water provided pursuant to subdivision (a) shall meet all applicable federal, state and local drinking water standards and shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge”

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28. Section 13267(b)(1) of the California Water Code provides that:

“In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”

29. Section 13304(c)(1) of the California Water Code provides that:

“ . . . the person or persons who discharged the waste, discharges the waste, or threatened to cause or permit the discharge of the waste within the meaning of subdivision (a), are liable to that government agency to the extent of the reasonable costs actually incurred in cleaning up the waste, abating the effects of the waste, supervising cleanup or abatement activities, or taking other remedial actions. . . ”

30. The State Water Resources Control Board (hereafter State Board) has adopted Resolution No. 92-49, the *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. This Policy sets forth the policies and procedures to be used during an investigation or cleanup of a polluted site and requires that cleanup levels be consistent with State Board Resolution 68-16, the *Statement of Policy With Respect to Maintaining High Quality of Waters in California*. Resolution 92-49 and the Basin Plan establish the cleanup levels to be achieved. Resolution 92-49 requires the waste to be cleaned up to background, or if that is not reasonable, to an alternative level that is the most stringent level that is economically and technologically feasible in accordance with Title 23, California Code of Regulations (CCR) Section 2550.4. Any alternative cleanup level to background must (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Board.

31. Chapter IV of the Basin Plan contains the *Policy for Investigation and Cleanup of Contaminated Sites*, which describes the Water Board’s strategy for managing contaminated sites. This strategy is based on Water Code Sections 13000 and 13304, the Title 27, Division 2, Subdivision 1 regulations, and State Water Board Resolution Nos. 68-16 and 92-49. The strategy includes site investigation, source removal or containment, information required to be submitted for consideration in establishing cleanup levels, and the bases for establishment of soil and groundwater cleanup levels.

32. The State Board adopted the *Water Quality Enforcement Policy*, which states in part: *"At a minimum, cleanup levels must be sufficiently stringent to fully support beneficial uses, unless the RWQCB allows a containment zone. In the interim, and if restoration of background water quality*

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cannot be achieved, the CAO should require the discharger(s) to abate the effects of the discharge. Abatement activities may include the provision of alternate water supplies." (Enforcement Policy, p. 19).

33. The Regional Board’s *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, 4th Edition* (hereafter Basin Plan) designates beneficial uses of the waters of the State, establishes water quality objectives (WQOs) to protect these uses, and establishes implementation policies to implement WQOs. The beneficial uses of the groundwater beneath the site are domestic, municipal, industrial, and agricultural supply.
34. The wastes detected in groundwater beneath the Facility (see Finding 12) are not naturally-occurring, and some are known human carcinogens. Pollution of groundwater with these wastes impairs the beneficial uses of the groundwater.
35. WQOs listed in the Basin Plan include numeric WQOs, e.g., state drinking water maximum contaminant levels (MCLs), and narrative WQOs, including the narrative toxicity objective and the narrative tastes and odors objective for surface and groundwater. Chapter IV of the Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that “[w]here compliance with narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.” The numerical limits for the constituents of concern listed in the following table implement the Basin Plan WQOs.

Constituent	WQO	Reference
Tetrachloroethene	0.06	California Public Health Goal in Drinking Water – Office of Environmental Health Hazard Assessment
Trichloroethene	0.8 µg/l	California Public Health Goal in Drinking Water – Office of Environmental Health Hazard Assessment
1,1,1-trichloroethane	200 µg/l	California Department of Health Services Primary MCL
cis-1,2-dichloroethene	6.0 µg/l	California Department of Health Services Primary MCL
trans-1,2-dichloroethene	10	California Department of Health Services Primary MCL
1,1-dichloroethene	6	California Department of Health Services Primary MCL
1,1-dichloroethane	5	California Department of Health Services Primary MCL
1,2-dichloroethane	0.4	California Public Health Goal in Drinking Water – Office of Environmental Health Hazard Assessment
Vinyl chloride	0.05 µg/l	California Public Health Goal in Drinking Water – Office of Environmental Health Hazard Assessment
Methylene chloride	2.5 µg/l	Cal/EPA Cancer Potency Factor as a Drinking Water Level*
Chloroform	1.1 µg/l	Cal/EPA Cancer Potency Factor as a Drinking Water Level*
Bromoform	2	USEPA Health Advisory

µg/l Micrograms per liter

* One-in-a-million Incremental Cancer Risk Estimate for Drinking Water

MCL Maximum Contaminant Level

USEPA United States Environmental Protection Agency

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These numeric limits are not the final groundwater cleanup objectives for remediation of the TCE plume. The final groundwater cleanup objectives will be selected in the Remedial Action Plan/Record of Decision (RAP/ROD).

DISCHARGER LIABILITY

36. The Discharger is subject to an order pursuant to Water Code section 13304 because the Discharger has caused or permitted waste to be discharged or deposited where it has discharged to waters of the state and has created, and continues to threaten to create, a condition of pollution or nuisance. The condition of pollution is a priority violation and issuance or adoption of a cleanup or abatement order pursuant to Water Code Section 13304 is appropriate and consistent with policies of the Water Board.
37. This Order requires investigation and cleanup of the site in compliance with the Water Code, the applicable Basin Plan, Resolution 92-49, and other applicable plans, policies, and regulations. As described in Finding 26, the Discharger is subject to an order pursuant to Water Code section 13267 to submit technical reports because existing data and information about the site indicate that waste has been discharged, is discharging, or is suspected of discharging, at the property, which is or was owned and/or operated by the Discharger named in this Order. The technical reports required by this Order are necessary to assure compliance with Section 13304 of the California Water Code, including to adequately investigate and cleanup the site to protect the beneficial uses of waters of the state, to protect against nuisance, and to protect human health and the environment.
38. If the Discharger fails to comply with this Order, the Executive Officer may request the Attorney General to petition the superior court for the issuance of an injunction.
39. If the Discharger violates this Order, then the Discharger may be liable civilly in a monetary amount provided by the California Water Code.
40. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), pursuant to Title 14 CCR Section 15321(a)(2). The implementation of this Order is also an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), in accordance with Title 14 CCR, Sections 15308 and 15330.
41. Any person affected by this action of the Regional Board may petition the State Board to review the action in accordance with Title 23 CCR Sections 2050-2068. The regulations may be provided upon request and are available at www.swrcb.ca.gov. The State Board must receive the petition within 30 days of the date of this Order.

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REQUIRED ACTIONS

IT IS HEREBY ORDERED that, pursuant to California Water Code Section 13304 and Section 13267, Nestlé USA, Inc., shall:

1. Investigate the discharges of waste, clean up the waste, and abate the effects of the waste, forthwith, resulting from activities at the former Facility, in conformance with State Board Resolution No. 92-49 *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* and with the Regional Board's *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (in particular the Policies and Plans listed within the Control Action Considerations portion of Chapter IV). "Forthwith" means as soon as is reasonably possible. Compliance with this requirement shall include, but not be limited to, completing the tasks listed below.

Water Supply Replacement

2. By **31 August 2006**, submit a *Draft Contingency Plan* to provide an in-kind replacement of water supply for all private and municipal water supply wells threatened or already impacted by pollution originating from the Discharger's former facility. The *Draft Contingency Plan* shall identify options for replacement, specific actions for implementation, and a time schedule. The *Draft Contingency Plan* must also include any agreements between the Discharger and the City of Ripon regarding current and future operation of the municipal supply wells that are already impacted or threatened by the Discharger's plume. The replacement contingencies for municipal wells must comply with the Department of Health Services requirements. Within 30 days of receipt of Regional Board staff comments on the *Draft Contingency Plan*, submit the *Final Contingency Plan*.
3. By **2 November 2006**, the Discharger shall provide in-kind replacement water to Caltrans for their impacted irrigation well along Parallel Avenue.
4. By **30 November 2006**, the Discharger shall provide in-kind replacement water supply wells for impacted private supply wells located at 7501 Kiernan Road and 5725 Hall Road in Modesto, California.

Site Assessment

5. By **15 September 2006**, submit a *Draft Updated Site Conceptual Model Report* for Regional Board staff review that contains a thorough analysis of the hydrogeologic/hydrochemical data collected since discovery of the trichloroethene (TCE) release, including the 2005 investigation on the south side of the Stanislaus River. The Draft Report shall contain updated cross sections spanning the entire plume as well as a detailed summary of the TCE sources and known and suspected TCE migration pathways in the vadose zone and groundwater. The Draft Report shall also identify any data gaps or significant uncertainties in the updated site conceptual model and provide

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recommendations to address them. Within 30 days of receipt of Regional Board staff comments on the Draft Report, submit the *Final Updated Site Conceptual Model Report*.

6. By **15 September 2006**, submit a *Draft Lower Aquifer Zone Investigation Work Plan* for Regional Board staff review. The Draft Work Plan shall provide a detailed sampling program to investigate the recent increasing TCE and cis-1,2-DCE concentrations in Lower Aquifer monitoring wells and delineate the full extent of the TCE plume in the Lower Aquifer. The sampling program shall include collection of groundwater samples from all depths of the Lower Aquifer Zone impacted by the Discharger's plume and installation of new wells to monitor both horizontal and vertical movement of the plume. The new well installations shall include wells to monitor potential vertical migration near source area monitoring wells M-6D and M-8D to deeper portions of the Lower Aquifer Zone. Within **15** days of receipt of Regional Board staff comments on the Draft Work Plan, submit the *Final Lower Aquifer Zone Investigation Work Plan*.
7. Within **150** days of receiving concurrence from Regional Board staff on the *Final Lower Aquifer Zone Investigation Work Plan*, complete all actions specified in the Final Work plan and submit the *Draft Lower Aquifer Zone Investigation Report*. Within **30** days of receipt of Regional Board staff comments on the *Draft Lower Aquifer Zone Investigation Report*, submit the *Final Lower Aquifer Zone Investigation Report*.
8. By **13 November 2006**, the Discharger shall complete assessment of potential vapor intrusion into buildings overlying the TCE plume and submit a Final Report, addressing all Regional Board staff comments on the *Indoor Air Vapor Intrusion Risk Evaluation Report* and the *Soil Gas Survey Work Plan*.
9. By **30 November 2006**, complete installation of a monitoring well cluster west of monitoring well cluster M-32 and at or down gradient of the edge of the TCE plume.
10. By **30 November 2006**, complete installation of guard wells between the Discharger's source areas and City of Ripon supply wells MW-13 and MW-14.

Feasibility Study and Cleanup

11. By **30 July 2006**, begin pumping existing extraction wells at design rates or the maximum disposal rate permitted to the City of Ripon's industrial sewer.
12. By **15 October 2006**, submit the *Draft Revised Groundwater Model Report* detailing the final model calibration and simulations of pumping scenarios that will provide full containment and cleanup of the TCE plume originating from the former Nestlé facility. The simulated pumping scenarios, at a minimum, shall include full capture of the TCE plume (including degradation products) that exceeds MCLs (scenario 1) and full capture of the plume that exceeds a concentration of 0.5 µg/L (scenario 2). Within 60 days of receiving Regional Board staff comments on the Draft Model Report, submit the *Final Revised Groundwater Model Report*.

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13. By **15 December 2006**, the Discharger shall submit a *Draft Evaluation of Long-Term Treated Groundwater Disposal Alternatives Report*. The Draft Report shall assess feasible alternatives for disposing of the treated groundwater generated by the existing extraction wells operating continuously at their maximum pumping rates and any additional extraction wells that the Final Groundwater Model indicates are necessary to provide full containment of the Discharger's plume. In accordance with the Regional Board's Basin Plan, the Draft Report should include an evaluation of available reuse and land discharge options as potential disposal methods. The Draft Report shall select one or more of the disposal alternatives and provide a schedule to implement any necessary construction of new groundwater treatment/disposal facilities or alterations to existing groundwater treatment facilities. Within **30 days** of receiving staff comments on the *Draft Evaluation of Treated Groundwater Disposal Alternatives Report*, the Discharger shall submit the *Final Evaluation of Treated Groundwater Disposal Alternatives Report*.
13. By **30 June 2007**, implement interim remedial actions to contain/capture the TCE plume in the Lower Aquifer Zone that exceeds Maximum Contaminant Levels. The final groundwater remedies proposed in the RAP/ROD shall consider the entire TCE plume.
14. By **30 June 2007**, the Discharger will implement remedial actions to fully contain/capture the TCE plume in the Upper Aquifer Zone originating from the Industrial Avenue and Stockton Avenue source areas and inhibit downward migration of the TCE plume from the Upper Aquifer.
15. By **31 March 2007**, the Discharger shall submit the *Draft Remedial Action Plan/Record of Decision (Draft RAP/ROD)*. Any additional addendums or revisions to the 1994 Feasibility Study Report that are needed to support the selected remedies in the Draft RAP/ROD must be submitted and approved by Board staff at least 30 days before this date.
16. Within **45 days** of receiving comments from Board staff on the *Draft RAP/ROD*, the Discharger shall submit the *Draft Final RAP/ROD* addressing Regional Board staff comments.
17. Concurrent with submittal of the *Draft Final RAP/ROD*, the Discharger shall submit a *Draft Fact Sheet* for review by Regional Board staff.
18. Within **15 days** of receiving comments from Board staff on the *Draft Fact Sheet*, the Discharger shall address all Regional Board staff comments and mail the *Final Fact Sheet* to the Ripon Community.
19. Within **30 days** of mailing the *Final Fact Sheet*, the Discharger shall, in conjunction with Board staff, hold a public meeting to discuss the proposed remedial action plan.
20. Within **60 days** after holding the public meeting, the Discharger shall submit the *Final RAP/ROD* for approval, which includes responses to public comments.
21. Within **60 days** after submission of the Final RAP/ROD the Discharger shall submit the *Draft Groundwater Remedial Design Plan*. Within 60 days of receiving staff comments on the *Draft Groundwater Remedial Design Plan*, the Discharger shall submit the *Final Remedial Design Plan*.

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- 22. Within **120 days** of Board staff approval of the *Final Groundwater Remedial Design Plan*, submit a report describing the status and results of the remedial work (*Cleanup Implementation Report*). The report shall also clearly show whether the installation of any remediation system is complete, and if not, give a schedule and proposed work plan for installation and monitoring of the remaining remedial activities.
- 23. Within **240 days** of receiving concurrence with the *Final Groundwater Remedial Design Plan*, the Discharger shall have completed any necessary pilot testing and construction, and shall be operating all elements of the final remedy in accordance with the Plan.

Groundwater Monitoring

- 24. Conduct monitoring of the existing wells and any additional wells in accordance with MRP No. R5-2005-0829 or any revised MRP approved by the Executive Officer.

Operation of Groundwater Treatment Plants

- 25. The Discharger shall operate and maintain the Stockton Avenue and Industrial Avenue groundwater treatment plants, and any future groundwater treatment plants constructed by the Discharger, in accordance with MRP No. R5-2005-0829 or a revised MRP or new Waste Discharge Requirements Order issued by the Executive Officer. The Discharger shall remove all VOCs from its extracted groundwater prior to discharge to the City of Ripon’s non-potable water system or future percolation ponds constructed by the Discharger. In lieu of a Waste Discharge Requirements Order issued by the Executive Officer, the Discharge shall comply with the following effluent limits:

	Daily Maximum	Monthly Median
Total VOCs	1.0 µg/L	0.5 µg/L

Public Participation

- 26. By **15 August 2006**, submit a Draft Fact Sheet for Regional Board staff review that presents the findings of the plume investigation on the south side of the Stanislaus River. Within 7 days of receipt of Regional Board staff comments, issue a Final Fact Sheet addressing all comments and providing the date/time/location for a public meeting. At least 15 days prior to the proposed meeting the Final Fact Sheet shall be posted in the local post office and town hall and mailed to all local private well owners identified by the Phase 1 and 2 Well Surveys on the south side of the Stanislaus River. Within 30 days of issuing the Final Fact Sheet, hold a public meeting to present the findings of the plume investigation on the south side of the Stanislaus River.
- 27. By **31 October 2006**, submit a *Public Participation Plan*. The *Public Participation Plan* shall solicit the public’s concerns and disseminate information to the public regarding the investigation and proposed cleanup activities at the sites. The *Public Participation Plan* shall be updated as

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necessary to reflect any significant changes in the degree of public interest as the site investigation and cleanup process moves toward completion.

General Requirements

28. Continue to reimburse the Regional Board for reasonable costs associated with oversight of the cleanup of this facility. Failure to do so shall be considered a violation of this Order.
29. Conduct work only after receiving concurrence on work plans from Regional Board staff.
30. Submit all reports with a cover letter from the Discharger or by its authorized representative.
31. Maintain a public repository at the Ripon Public Library. Copies of each of the final documents shall be kept at the repository as part of the administrative record. The Discharger will finance any additional shelving that may be necessary to accommodate existing and future reports submitted to the Ripon Public Library.
32. As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, have all reports prepared by, or under the supervision of, a qualified registered professional engineer or geologist and signed by the registered professional. All technical reports submitted by the Discharger shall include a statement signed by the authorized representative certifying under penalty of law that the representative has examined and is familiar with the report and that to his knowledge, the report is true, complete, and accurate.
33. Upon startup of any remediation system(s), operate the remediation system(s) continuously, except for periodic and required maintenance or unpreventable equipment failure. The Discharger shall notify the Regional Board within 24 hours of any unscheduled shutdown of the remediation system(s) that lasts longer than 48 hours. This notification shall include the cause of the shutdown and the corrective action taken (or proposed to be taken) to restart the system. Any interruptions in the operation of the remediation system(s), other than for maintenance, emergencies, or equipment failure, without prior approval from Regional Board staff or without notifying the Regional Board within the specified time is a violation of this Order.
34. Continually optimize remedial systems and report on the effectiveness of optimization efforts in each Annual Report.
35. Notify Regional Board staff at least three working days prior to any onsite work, testing, or sampling that pertains to environmental remediation and investigation other than the routine activities prescribed under MRP No. R5-2005-0829 or subsequent revisions approved by the Executive Officer.
36. Obtain all local and state permits and access agreements necessary to fulfill the requirements of this Order prior to beginning the work.

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37. Continue any remediation or monitoring activities until such time as the Executive Officer determines that sufficient cleanup has been accomplished and this Order has been rescinded.
38. If, for any reason, the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Executive Officer, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. An extension request shall not be considered granted without the approval of the Executive Officer.
39. If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability.

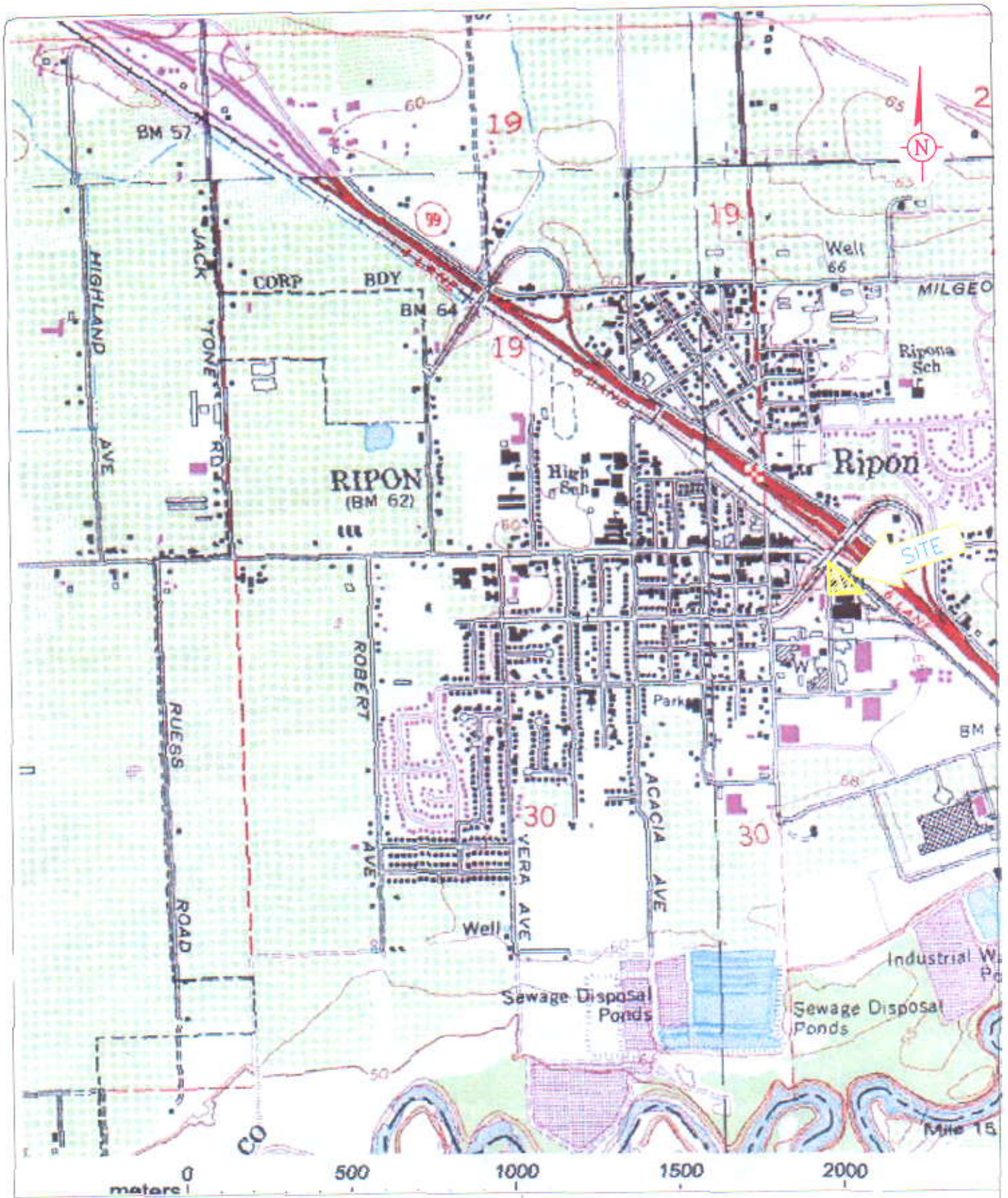
This Order is effective upon the date of signature.

ORIGINAL SIGNED BY:

PAMELA C. CREEDON, Executive Officer

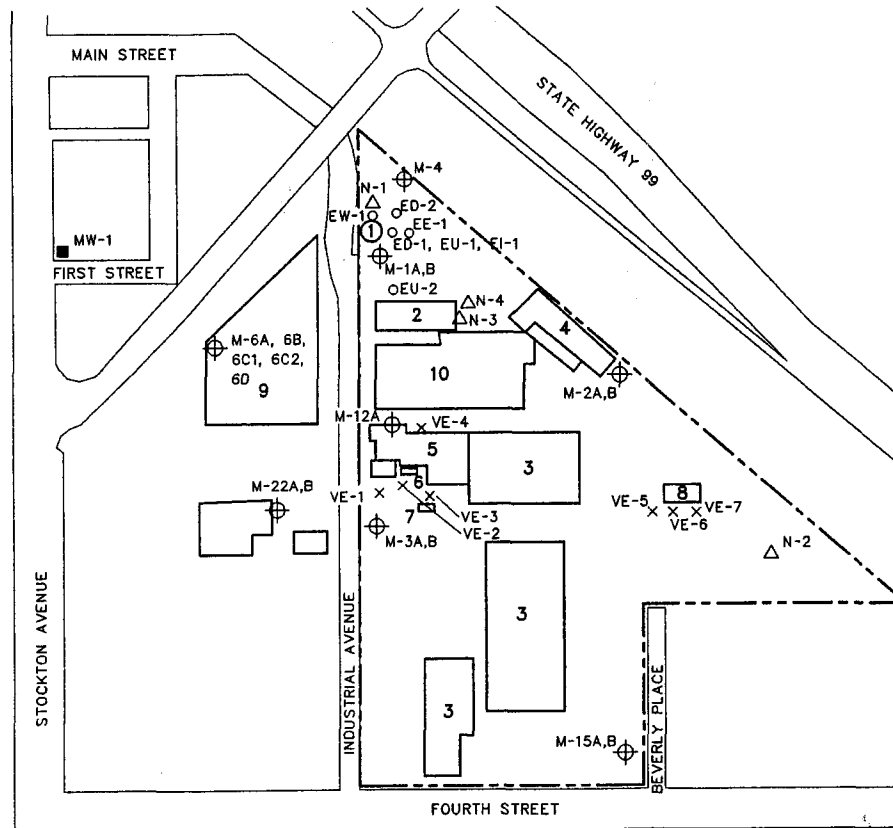
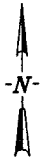
July 24, 2006

(Date)



From Draft 2006 Annual Monitoring Report
(Environmental Cost Management, 2006)

FIGURE 1
SITE LOCATION MAP
Former Nestle USA Site, Ripon, California



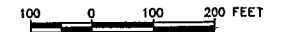
EXPLANATION

- NESTLE FACILITY BOUNDARY
- △ N-1 NESTLE WELL LOCATION
- ⊕ M-1 MONITORING WELL LOCATION
- KEY TO MONITORING WELLS
 - A DEEP GROUND WATER SYSTEM-UPPER AQUIFER ZONE
 - B SHALLOW GROUND WATER SYSTEM-UPPER AQUIFER ZONE
 - C SAND UNIT-CLAY ZONE
 - D SAND UNIT-LOWER AQUIFER ZONE
- MW-1 CITY OF RIPON MUNICIPAL WELL LOCATION
- x VE-5 VAPOR EXTRACTION WELL LOCATION
- ED-1 BIOREMEDIATION PILOT STUDY WELL LOCATION

KEY TO FACILITIES

- 1 WATER TANK
- 2 BOILER/WATER TREATMENT BUILDING
- 3 WAREHOUSE
- 4 MAINTENANCE BUILDING
- 5 DECAFFEINATION BUILDING
- 6 FORMER TCE TANK LOCATIONS
- 7 FORMER MC STORAGE TANKS
- 8 WATER TREATMENT CHEMICAL STORAGE
- 9 EMPLOYEE PARKING AREA
- 10 OFFICE/LAB/PROCESSING BUILDING

MODIFIED FROM: CAMP DRESSER & McKEE, FEBRUARY 1991



From Feasibility Study
(Rust Environment & Infrastructure, 1994)

FIGURE 2
FACILITY MAP
Former Nestle USA Site
Ripon, California

