CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0120

WASTE DISCHARGE REQUIREMENTS
FOR
TIMBER MANAGEMENT SERVICES, INC.
FOR
CLOSURE AND POST CLOSURE MAINTENANCE OF
TWIN BRIDGES CLASS II LANDFILL AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Water Board) finds that:

1. Waste Discharge Requirements (WDR) Order No. 89-198 prescribes requirements for Simpson Paper Company (hereafter Simpson) to construct and operate Twin Bridges Class II Landfill and Class II surface impoundment (hereafter Facility) at 8103 Millville Plains Road, approximately 7 miles west of the town of Anderson, in Section 34, T31N, R03E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order.

2. The Facility is located on a 160-acre parcel [Assessors Parcel Number (APN) 060-020-044], with approximately 25 to 30 acres designated for disposal of paper pulp sludge and leachate. The Facility consists of a waste management unit with 5 containment cells (WMU No. 1), a Class II surface impoundment (WMU No. 2), and a storm water sedimentation pond. The 3.5-acre double-lined WMU No. 1 Phase 1 cell contains waste; the double-lined WMU No. 1 Phase 2 cell is empty, and the WMU No. 1 Phase 3 cell is excavated. WMU No. 1, WMU No. 2, and the storm water sedimentation pond, are shown in Attachment B, which is incorporated herein and made part of this Order.

3. On 11 January 1999, Shasta Acquisition, Inc., purchased the Facility from Simpson and renamed it Shasta Paper Company (hereafter Shasta). On 25 May 1999, the Regional Water Board adopted Order No. 99-023 amending WDR Order No. 89-198 to reflect Shasta's purchase of the Facility. On 31 October 2001, Shasta filed for bankruptcy (Case No. 01-32653-B-7).

4. On 17 September 2003, an *Order Approving Settlement Agreement and Mutual Release of Claims between the Estate and Congress Financial Corporation* for Bankruptcy Case No. 01-32653-B-7 was issued in United States Bankruptcy Court for the Eastern District of California, Sacramento Division. At that time, Congress Financial Corporation, a senior secured creditor of Shasta, controlled and/or owned the land described in Findings 1 and 2 above.

5. On 24 September 2004, Timber Management Services, Inc. (hereafter Discharger) purchased APN 060-020-044, the Facility, and an adjacent parcel (APN 060-010-006),

from Congress Financial Corporation during public auction. The Discharger recorded ownership of the parcels on 4 February 2005.

6. The Discharger is responsible pursuant to California Water Code Section 13304 to cleanup and abate the discharge of waste at the Facility. The information available to the public and prospective purchasers prior to the auction provided notice that waste discharges had occurred and were the subject of Amended Cleanup and Abatement Order (CAO) No. R5-2004-0708. The Discharger had knowledge of the discharges of waste prior to purchase and, as current owner, is responsible for the waste.

7. On 1 December 2004, Regional Water Board staff rescinded Amended CAO No. R5 2004-0708 and issued CAO No. R5-2004-0721 to the Discharger. CAO No. R5-2004-0721 requires the Discharger, in part, to close the waste management unit containing the former Simpson and Shasta wastes (WMU No. 1 Phase 1) in accordance with Chapters 1 through 7, Subdivision 1, Division 2, Title 27, California Code of Regulations (Title 27). The Discharger has completed interim closure of WMU No. 1 Phase 1.

8. Cleanup and Abatement Order No. R5-2004-0721 requires the Discharger to establish financial assurance mechanisms for the Twin Bridges Landfill in accordance with provisions of Title 27, California Code of Regulations by 1 April 2005. Regional Water Board staff approved cost estimates of $72,000 for Corrective Action and $375,000 for Post Closure Maintenance. On 10 August 2006, the Discharger submitted to Integrated Waste Management Board (IWMB) staff, a draft Letter of Credit for $375,000 for review and approval. As of 29 August 2006, Regional Water Board staff has not received documentation that the $72,000 financial mechanism has been submitted to IWMB.

9. Shasta County has issued a permit for the Discharger's parcel describing land use requirements. Condition 39 of Shasta County Use Permit No. 98-20, states, "The discharge of waste, other than primary and secondary sludge from the mill wastewater treatment facility and dregs and grits from the recovery boiler and slaker is prohibited unless specifically authorized by Shasta County Department of Resource Management Environmental Health Division and the Executive Officer of the Regional Water Quality Control Board." The Simpson/Shasta paper mill is closed and mill waste is no longer generated. Cleanup and Abatement Order No. R5-2004-0717 requires Winnemucca Trading Company Limited Inc. (Winnemucca), the current owner of the Simpson/Shasta paper mill, to cleanup sludge from the former wastewater treatment lagoons. Winnemucca is conducting a comprehensive investigation to characterize the volume and quantity of sludge in the lagoons in order to prepare a feasibility study. The investigation results and feasibility study will be submitted to the Regional Water Board by 1 October 2006, and will include options for closing the lagoons. The Discharger has made no arrangements to accept the residual paper sludge waste at the Twin Bridges Class II Landfill.

10. Shasta County Environmental Health Division received a letter on 8 June 2005 from the Discharge that states, "TMS at this time does not intend to import any fill into the Twin Bridges Landfill under the current permit." The Discharger's Solid Waste Facility Permit, issued by Shasta County, has been inactive since June 2005. In a 10 July 2006 letter, Shasta County requested the Discharger submit, pursuant to Title 27, Section 21110 of the California Code of Regulations, documentation that the landfill is likely to receive additional mill waste. The Discharger has responded to Shasta County and requested a two-year permit extension to remain inactive. Shasta County has not granted the Discharger's request due to lack of a documented waste stream consistent with Use Permit 98-20. In addition, Regional Water Board staff has not received documentation from the Discharger that a viable waste stream exists and is intended for disposal at the Facility. Therefore, in accordance with Section 21110 of Title 27, California Code of Regulations, the Facility must be closed.

11. On 17 March 2005, the Regional Water Board adopted Order No. R5-2005-0043 amending WDR Order No. 89-198 to reflect the Discharger's purchase of the Facility. WDR Order No. 89-198 does not adequately describe the Facility.

12. Effective 18 July 1997, the water quality regulations for Class II and Class III disposal facilities formerly contained in Chapter 15, Title 23, CCR, and the solid waste regulations formerly in Title 14, CCR, were consolidated into Title 27. This Order implements Title 27 regulations and prescribes updated requirements for operating the Facility.

SITE DESCRIPTION

13. Surficial soil conditions at the Facility generally consist of gravelly, sandy silt, sandy gravel or clayey sand, and gravel. A double ring infiltrometer test of the surficial deposits showed infiltration rates varying from 1×10^{-5} to 1×10^{-3} cm/sec. Well permeameters installed to depths of 20 feet below ground surface showed permeabilities of the native soils underlying the Facility ranging between 1×10^{-6} and 1×10^{-4} cm/sec.

14. The Quaternary Battle Creek Fault, an east/west-trending normal fault, is located approximately 8 miles south of the Facility. The closest Holocene fault is the Bear Creek Fault approximately 1 mile to the south. The maximum credible earthquake for the Battle Creek Fault is estimated to be a Richter magnitude of 6.0 and a Moment Magnitude of 6.5. The peak horizontal ground acceleration for the site is estimated to be 0.1g to 0.2g.

15. Land uses within 1,000 feet of the Facility are open space and agriculture. The current zoning designation for APN 060-020-044 is planned development. The general plan land use designation, for APN 060-020-044 is Rural Residential B.

16. The Facility receives an average of 38 inches of precipitation per year as measured at the Redding Airport National Weather Service Station. The Redding Fire Station weather station, maintained by the United State Bureau of Reclamation recorded 61 inches of rainfall in 2005. The mean pan evaporation is 60 inches per year according to data obtained from the California Department of Water Resources.

17. The 100-year, 24-hour precipitation event is estimated to be 7.0 inches, based on an isopluvial map published by the National Oceanic and Atmospheric Administration (NOAA), *NOAA Atlas, Volume XI, Isopluvials of 100-year 24-hour Precipitation for Northern Half of California in Tenth of an Inch*.

18. The Facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 0603580715B.

19. There are 20 domestic, industrial, or agricultural groundwater supply wells within one mile of the site, 4 of which are located downgradient of the Facility. No surface springs or other sources of groundwater supply have been observed.

WASTES AND UNIT CLASSIFICATION

20. From 1989 until 2003, Simpson and Shasta discharged nonhazardous solid waste, as defined in 27 CCR Section 20220, to the Class II Landfill. A majority of the waste, composed of primary clarifier solids from the Simpson and Shasta mill paper-making process in Anderson, was discharged to the WMU No.1 Phase 1 monofill. The paper mill waste consisted of approximately 70 percent water by weight, 18 percent fiber and wood residue, 9.3 percent ash (clays and inorganics), and 2.7 percent acid solubles (mostly carbonates). Prior to disposal, the waste was dewatered with a screw press to attain a moisture content of less than 50 percent. The remaining two percent of the waste discharged to WMU No. 1 Phase 1 consisted of dewatered dredgings from Simpson and Shasta paper mill's wastewater treatment lagoons, dregs (unburned carbonaceous particles from the mill's recovery boiler), and grits (unreacted particles of calcium carbonate from the mill's slaker).

21. Included in clarifier sludge are detectable amounts of 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (dioxin) and 2, 3, 7, 8-tetrachlorobibenzo-furan (TCDF). Dioxin and 'dioxin-like' compounds are known to biologically persist in the food chain and have been established as a human carcinogen. Analytical results for dioxin and furan in the sludge have ranged from 0.023 to 0.278 parts per billion (ppb) dioxin and 0.264 to 6.74 ppb TCDF. Dioxins and furans are by-products of the kraft paper making process. The Environmental Protection Agency and California Primary Maximum Contaminant Level action for dioxin is 0.00003 ppb, and the State of California Total Threshold Limit Concentration (TTLC) for dioxin is 10 ppb and the Soluble Threshold

Limit Concentration (STLC) is 1 ppb. Dioxins have limited mobility in soils with the absence of solvents.

22. From 1989 until 8 January 1999, Simpson deposited approximately 89,252 tons of Anderson paper mill waste in WMU No. 1 Phase 1. From January 1999 until March 2003, Shasta deposited approximately 26,173 tons of Anderson paper mill waste in WMU No. 1 Phase 1. Approximately 77% of the waste tonnage in WMU No. 1 Phase 1 was deposited by Simpson and approximately 23% was deposited by Shasta. The Discharger has constructed an interim cover over WMU No. 1 Phase 1 and waste is no longer accepted in WMU No. 1 Phase 1.

23. Waste has not been discharged to the WMU No. 1 Phase 2 cell constructed by Simpson. The integrity of the WMU No. 1 Phase 2 cell is unknown.

24. The Discharger is proposing to construct a gravel mining operation adjacent to the Facility. Regional Water Board staff has notified the Discharger that a Report of Waste Discharge is required for the new gravel mining operation, and that separate waste discharge requirements must be adopted prior to discharging gravel mining waste.

25. In the past, significant quantities of leachate were produced at the Twin Bridges Landfill, partly from precipitation infiltrating the wastes and also because the paper pulp sludge waste has a moisture content of nearly 50 percent. Leachate generated at WMU No. 1 Phase 1 is collected via an underdrain and discharges into WMU No. 2. Since WMU No. 2 is uncovered, it also collects precipitation. Between October 2001 and April 2002, more than 1,480,000 gallons of leachate was collected for off-site treatment and disposal. WMU No. 2 has a total capacity of 1.5 million gallons with two feet of freeboard remaining. Prior to Shasta's bankruptcy and subsequent sale of the Shasta Mill and Ranch parcels, excess leachate was removed from WMU No. 2 and transported back to the Shasta Mill for processing and subsequent discharge to the wastewater treatment lagoons and ranch. Winnemucca has not authorized the Discharger to continue discharging leachate in this manner. Therefore, the Discharger has completed interim closure of WMU No. 1 Phase 1 to minimize the volume of leachate generated and discharged into WMU No. 2.

26. Precipitation entering the empty WMU No. 1 Phase 2 cell is diverted to a lined sedimentation pond where is combines with storm water runoff waste from the Facility. Storm water leaving the sedimentation pond enters an unnamed tributary to Dry Creek at the southern portion of the Facility.

27. The discharge of storm water to waters of the United States requires a federal permit under the National Pollutant Discharge Elimination System (NPDES). The Discharger has applied for a general NPDES permit for industrial storm water (WDID No. 5A450302002) (No. 97-03-DWQ/NPDES CAS000001).

SURFACE WATER AND GROUND WATER CONDITIONS

28. The *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

29. Surface drainage is to Dry Creek, a tributary of Bear Creek, which flows into the Sacramento River in the Enterprise Flat Hydrologic Area (508.10) of the Redding Hydrologic Unit.

30. The existing and potential beneficial uses of Sacramento River, as specified in the Basin Plan, are agricultural supply, industrial service and process supply, water contact and non-contact water recreation, warm fresh water habitat, preservation of rare, threatened and endangered species, and groundwater recharge.

31. The Facility is located in the relatively flat geomorphic area known as the Millville Plains within the Central Valley Geologic Province of California. The hydrologic region is identified as the Millville Sub-basin, which comprises the portion of the Redding Groundwater Basin bounded on the west by Cow Creek, Little Cow Creek, and the Sacramento River, on the north by the Klamath Mountains; on the east by the Cascade Range; and on the south by Battle Creek.

32. The Millville Groundwater Sub-basin is characterized by Quaternary alluvium and Pleistocene sediments overlying Pliocene volcanic deposits. The Pliocene Tuscan formation underlies the entire site and is the main water-bearing formation in the area. The formation consists of interbedded layers of volcanic conglomerate, volcanic sandstone, siltstone, and pumiceous tuff derived from the volcanic mountains to the east in the Lassen Peak Area. The overlying Tehama Formation consists of locally deposited silts, sand, gravel, and clay of fluvial origin from the coastal ranges. The permeability of the Tehama formation may yield 100 to 1,000 gallons per minute.

33. Perched groundwater is encountered at about 15 feet below the native ground surface (510 ft MSL). The first major groundwater unit is encountered about 100 to 150 feet below the native ground surface. Groundwater elevations range from 419 feet MSL to 423 feet MSL. The depth to groundwater fluctuates seasonally as much as 2 to 8 feet.

34. The direction of groundwater flow is toward the south/southwest. The average groundwater gradient is approximately 0.001. Pumping tests have indicated the aquifer transmissivity is in the range of 5,000 to 10,000 gallons per day per foot.

35. Monitoring data indicates background groundwater quality has an electrical conductivity (EC) ranging between 50 and 120 micromhos/cm, with total dissolved solids (TDS) ranging between 70 and 200 mg/l.

36. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal, agricultural, and industrial supply.

GROUNDWATER MONITORING

37. The groundwater monitoring network consists of eight groundwater monitoring wells (MW-1 through MW-8), background suction lysimeter L-1, compliance suction lysimeters (L-3, L-5, and L-6), and five pan lysimeters (L-2, L-4, L-7, LII-1 and LII-2). MW-4 is considered upgradient, and the remaining monitoring wells are designated compliance wells. MW-8 is constructed in the perched groundwater zone, with a total screen depth of 20 feet bgs. MW-1, MW-2, and MW-4 are background wells and MW-3, and MW-5 through MW-8 are compliance wells.

38. The Discharger's detection monitoring program for groundwater at this Facility satisfies the requirements contained in Title 27.

39. Volatile organic compounds (VOCs) are often detected in a release from a landfill. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a Unit.

40. The Regional Water Board may specify a non-statistical data analysis method pursuant to Title 27 Section 20080(a)(1). Section 13360(a)(1) of the California Water Code allows the Regional Water Board to specify requirements to protect underground or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.

41. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a Unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

GROUNDWATER DEGRADATION

42. Regional Water Board staff received facility monitoring reports from Simpson and Shasta regularly until February 2004. Monitoring ceased in 2003 as a result of bankruptcy proceedings for Shasta and resumed in November 2005 under the operation of the Discharger. Groundwater monitoring data from monitoring wells MW-1 through MW-7 does not show evidence of groundwater degradation resulting from landfill operations, however data from monitoring well MW-8, constructed in the shallower perched groundwater zone, indicates that the EC, TDS, and chloride concentrations in perched groundwater may exceed background concentrations. Insufficient groundwater data is available to perform statistical analysis required by Title 27, California Code of Regulations. Vadose zone analytical data from suction lysimeters L-1, L-3, L-5, and L-6 and pan lysimeters L-2, L-4, L-7, LII-1 and LII-2 has not been obtained since March 2002 due to inadequate sample volume. Based on observations during site visits and information in the current groundwater monitoring reports, the lysimeters may not be operational.

WASTE MANAGEMENT UNIT CONSTRUCTION

43. WMU No. 1 is constructed to Class II standards as described in Title 27. The liner is comprised (from bottom to top) of 12 inches of compacted soil with bentonite added to achieve a permeability of less than 1×10^{-6} cm/sec, a 60-mil HDPE flexible membrane liner (FML), a blanket type leachate collection and recovery system (LCRS) consisting of 12 inches of pea gravel overlain by a geotextile filter fabric, a primary 60-mil HDRP FML, and a blanket type LCRS. Leachate that is collected in the LCRS is transported to the Class II surface impoundment (WMU No. 2).

44. The Discharger has constructed an interim cover over WMU No. 1 Phase 1 to reduce the amount of leachate generated by precipitation that percolates through the waste. The cap consists of a clean fill foundation layer 18 inches thick, a 60-mil HDPE geomembrane, and 18 inches of vegetative cover. The interim cap was completed in Summer 2005, and was designed with an overall slope of 3 percent on the top, and 4:1 along the southern slope. A passive gas venting well and two permanent benchmarks were established on WMU No. 1 Phase 1.

45. On 13 December 2005, the Discharger submitted the *Interim Closure Report, Phase 1 Waste Management Unit No. 1, Twin Bridges Landfill, Shasta County*. Regional Water Board staff reviewed the Interim Closure Report and determined that construction of the interim cover meets construction quality assurance specifications and requirements for final closure and post closure maintenance of WMU No. 1, Phase 1, outlined in Section 21769, Title 27 of the California Code of Regulations.

46. WMU No. 2 Phase 2 is constructed to Class II standards as described in Title 27. The dual composite liner consists (from bottom to top) of 24 inches of compacted soil with

bentonite added to achieve a permeability less than 1 x 10^{-6} cm/sec, a 100 mil HDPE FML, a geonet drainage layer, and a primary 100 mil HDPE FML. WMU No. 2 Phase 2 is empty.

47. On 12 November 2004, WMU No. 1 Phase 2 cell was inspected by a certified Professional Engineer to evaluate the condition of the existing liner components. The report indicates that areas of the composite liner system have been exposed as a result of storm water drainage through the cell and showed minor damage. Although the consulting engineer recommended use of the cell for the containment of leachate from the adjacent active cell area, the Discharger has not used the WMU No.1 Phase 2 cell for leachate containment. Leachate is contained in WMU No 2.

CEQA AND OTHER CONSIDERATIONS

48. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section 21000, et seq., and the CEQA guidelines, in accordance with Title 14 CCR, Section 15301.

49. This Order implements:

    (a) The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;

    (b) The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;

    (c) The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and

    (d) State Water Resources Control Board (State Board) Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993.

50. Section 13267(b) of 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 discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state 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 reports and the benefits to be obtained from the reports." The monitoring and reporting program required by this Order and the attached "Monitoring and Reporting Program

No. R5-2006-0120" are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

51. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this Facility for the discharges of waste to land stated herein.

52. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

53. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

54. Any person affected by this action of the Regional Water Board may petition the State Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.waterboards.ca.gov/water_laws/index.html and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 89-198 is rescinded, and that Timber Management Services, Inc., its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of additional waste to WMU No. 1 is prohibited.

2. The discharge shall not cause the release of waste constituents to the vadose zone or to groundwater.

3. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

B. FACILITY SPECIFICATIONS

1. The Discharger shall immediately notify the Regional Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other

change in site conditions, which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

2. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control and construction.

3. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

4. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

5. The Discharger shall maintain 2 feet of freeboard in the Class II Surface Impoundment (WMU No. 2).

6. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

7. The Discharger shall not compromise the integrity of the landfill containment features while performing any additional industrial operations on-site, including but not limited to gravel mining and reclamation.

C. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program No. R5-2006-0120.

2. The Discharger shall provide Regional Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices, and a minimum 48 hour notification prior to the collection of samples associated with a detection monitoring program, evaluation monitoring program, or corrective action program.

3. If monitoring reveals substantial or progressive increases of leachate generation by WMU No. 1 Phase 1, such that the depth of fluid on any portion of the LCRS exceeds 30 cm, the Discharger shall immediately notify the Regional Water Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.

4. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2006-0120, and the Standard Provisions and Reporting Requirements, dated April 2000.

5. The Water Quality Protection Standard for organic compounds, which are not naturally occurring and not detected in background groundwater samples, shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.

6. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2006-0120.

7. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2006-0120 and Title 27 CCR Section 20415(e).

D. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the Facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.

2. The Discharger shall comply with all applicable provisions of Title 27 that are not specifically referred to in this Order.

3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2006-0120, which is incorporated into and made part of this Order.

4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27, dated April 2000, which are hereby incorporated into this Order.

5. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

6. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and

postclosure maintenance period of the Unit(s) and during subsequent use of the land for other purposes.

7. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.

8. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Water Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Water Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.5. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Water Board.

9. The Discharger is required to maintain financial assurance mechanisms and appropriate cost estimates for corrective action, and closure and post-closure maintenance costs as specified in Chapter 6 of Title 27. The Discharger is required to submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board, which determines if the mechanism meets the requirements of Chapter 6, Title 27, and if the amount of coverage is adequate.

10. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Task	Compliance Date
Final Closure and Post Closure Maintenance Plan Includes plans to close WMU No. 1 Phase 2 and maintain WMU No. 1 Phase 1, WMU No. 2, and the storm water pond	31 December 2006
Submit Proof of Financial Assurances for Closure and Corrective Action	31 December 2006

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 27 October 2006.

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PAMELA C. CREEDON, Executive Officer

31 October 2006
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2006-0120
FOR
TIMBER MANAGEMENT SERVICES INC
FOR
CLOSURE AND POST CLOSURE MAINTENANCE OF
TWIN BRIDGES CLASS II LANDFILL AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

Compliance with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated September 2003, is ordered by Waste Discharge Requirements Order No. R5-2006-0120.

A. REQUIRED MONITORING REPORTS

	REPORT	DUE
1	Groundwater Monitoring *(Section D.1)*	See Table I
2	Annual Monitoring Summary Report *(Section B.6)*	Annually
3	Unsaturated Zone Monitoring *(Section D.2)*	See Table II
4	Leachate Monitoring *(Section D.3)*	See Table III
5	Class II Surface Impoundment Monitoring *(Section E.4)*	See Table IV
6	Facility Monitoring *(Section F.5)*	As necessary
7	Response to a Release *(Standard Provisions and Reporting Requirements)*	As necessary

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2006-0120 and the Standard Provisions and Reporting Requirements. Reports, which do not comply with the required format, will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer. The Discharger shall also comply with the following requirements:

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Regional Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

2. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the postclosure period.

   Such legible records shall show the following for each sample:

   a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;

   b. Date, time, and manner of sampling;

   c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

   d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;

   e. Calculation of results; and

   f. Results of analyses, and the MDL and PQL for each analysis.

3. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.

4. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:

a. For each monitoring point and background monitoring point addressed by the report, a description of:

    1) The time of water level measurement;

    2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

    3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;

    4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and

    5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.

b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

c. Tabulated monitoring data listing at least the previous five years worth of sample results from each respective monitoring point.

d. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.

e. Laboratory statements of results of all analyses evaluating compliance with requirements.

f. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.

g. Tabulated volumes of leachate applied for dust control, date of application, and Unit to which leachate was applied.

h. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard The Standard Observations shall include:

    1) For the Unit and perimeter of Unit:

2) Date of inspection and name of the person conducting the inspection;

3) Evidence of ponded water at any point on the facility (show affected area on map);

4) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

5) Evidence of erosion and/or of day-lighted refuse.

6) Evidence of liquids in a previously dry leak detection system.

i. The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.

5. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Regional Board **within seven days**, containing at least the following information:

a. A map showing the location(s) of seepage;

b. An estimate of the flow rate;

c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);

d. Verification that samples have been submitted for analyses of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Board; and

e. Corrective measures underway or proposed, and corresponding time schedule.

6. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the reporting period of the previous monitoring year. This report shall contain:

a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month reporting periods, shall be submitted in tabular form as well as in a digital file format acceptable to the Executive Officer. The Regional Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27 CCR Section 20420(h)], in that this facilitates periodic review by the Regional Water Board.

c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.

d. A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.

e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.

f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

7. All required monitoring reports shall be submitted according to the following schedule:

Report Type	**Reference Table or Requirement Associated with Necessary Monitoring**	**Frequency of Submittal**	**Report Due Date**
Shallow and Deep Groundwater Monitoring	Table I	Semiannual	31 July and 31 January
Unsaturated Zone Monitoring	Table II	Semiannual	31 July and 31 January
Class II Surface Impoundment (LCRS) Leak Detection System Monitoring	Table III	Upon detection of liquid in a previously dry leak detection system	30 days after samples were taken (include data in the appropriate Semiannual Monitoring Report)
Leachate Monitoring	Table III and Section D.3	Semiannual	31 July and 31 January

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

The discharger shall maintain a Water Quality Protection Standard (WQPS) report that complies with Sections 20390 through 20410 of Title 27 and address the following information:

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The report shall:

a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.

c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables I through III groundwater, the unsaturated zone, and leachate, respectively. Table IV is a list of specific volatile organic compounds referred to by analytical method but not listed in Tables I through III. Table IV also contains inorganic “surrogates for metallic constituents, required by Subtitle D if the metallic constituents are not already included in the detection monitoring program.

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

3. **Concentration Limits**

For constituents of concern, the concentration limit for each constituent of concern shall be determined as follows:

a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or

b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

For non-naturally occurring constituents of concern that do not have background values, the concentration limit for each constituent shall be taken as the PQL of the analytical method used (e.g., US-EPA Methods 8260 and 8270) in accordance with Detection Monitoring Specification E.5 of Order No. R5-2006-0120. Concentration limits shall be updated by the Discharger every two years and reported in the Annual Monitoring Summary Report for the respective reporting period.

4. **Point of Compliance**

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

5. **Compliance Period**

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

D. DETECTION MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specification E.2 and E.4 of Waste Discharge

Requirements, Order No. R5-2006-0120. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, surface water and detention pond monitoring points, leachate monitoring points, and Unit leak detection systems shall be sampled and analyzed as indicated and listed in Tables I through III and this Monitoring and Reporting Program.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those, which cannot be quantified and/or specifically identified.

The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. **Groundwater**

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard.

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The monitoring points for the detection monitoring of the groundwater are groundwater monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8. The monitoring points shall be sampled and analyzed for Field Parameters, Monitoring Parameters, and Constituents of Concern as indicated and listed in Table I. All monitoring parameters shall be graphed and tabled so as to show historical trends at each monitoring point.

Monitoring well MW-8 may be removed from the Detection Monitoring Program upon formal closure of the Class II leachate pond (WMU No. 2).

Well ID	Service Type	Top of Casing Elevation (ft MSL)	Screen Interval (ft below TOC)	Mean Groundwater Elevation (ft MSL)
MW-1	Upgradient	518.94	108-148	421
MW-2	Upgradient	577.11	172-212	422
MW-3	Compliance	512.64	98-138	419
MW-4	Upgradient	578.03	158-178	422
MW-5	Compliance	552.03	128-148	419
MW-6	Compliance	552.98	154-174	420
MW-7	Compliance	531.77	118-138	419
MW-8	Compliance	525.00	Total depth = 20 ft	510

2. **Unsaturated Zone Monitoring**

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. A description of the unsaturated zone monitoring points required for the detection monitoring program follows:

Lysimeter ID	Type	Service Type
L-1	Suction	Background
L-2	Pan	Compliance
L-3	Suction	Compliance
L-4	Pan	Compliance
L-5	Suction	Compliance
L-6	Suction	Compliance
L-7	Pan	Compliance

3. **Leachate Monitoring**

All Unit leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons).
Leachate, which seeps to the surface from the Unit shall be sampled and analyzed for the constituents listed in Table III upon detection. The quantity of

leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day).

E. CLASS II SURFACE IMPOUNDMENT MONITORING

The Class II surface impoundment LCRS shall be monitored monthly for the presence of fluid between the primary and secondary liners. Upon detection of fluid in the Class II surface impoundment LCRS, the Discharger shall comply with Facility Specifications C.2 of Order No. R5-2006-0120. The Discharger shall monitor the remaining portions of the Class II surface impoundment monthly and report the results semiannually according to the schedule in Section B of Monitoring and Reporting Program No. R5-2006-0120. Monitoring parameters shall include freeboard, monthly volume of leachate entering pond, and remaining capacity.

F. FACILITY MONITORING

Annually, prior to the anticipated rainy season, but no later than **15 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations. Any necessary construction, maintenance, or repairs shall be completed by **15 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 3 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. Major storm events are defined as 1.5 inches of precipitation within a 24-hour period. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by: _____
PAMELA C. CREEDON, Executive officer

_____
(Date)

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Semiannual
Temperature	^{o}C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annual
Chloride	mg/L	Annual
Carbonate	mg/L	Annual
Bicarbonate	mg/L	Annual
Nitrate - Nitrogen	mg/L	Annual
Sulfate	mg/L	Annual
Calcium	mg/L	Annual
Magnesium	mg/L	Annual
Potassium	mg/L	Annual
Sodium	mg/L	Annual
Constituents of Concern (see Table V)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years
2,3,7,8-TCDD (Dioxin) (USEPA Method 1613B or 8280A)	picograms/L	5 years
2,3,7,8-TCDF (USEPA Method 1613B or 8280A)	picograms/L	5 years

Note: Annual groundwater samples shall be collected in February and semiannual samples shall be collected in February and August

TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

LYSIMETERS (or other vadose zone monitoring device)

Parameter	Units	Frequency
Field Parameters		
Electrical Conductivity	µmhos/cm	Annual
pH	pH units	Annual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annual
Chloride	mg/L	Annual
Carbonate	mg/L	Annual
Bicarbonate	mg/L	Annual
Nitrate - Nitrogen	mg/L	Annual
Sulfate	mg/L	Annual
Calcium	mg/L	Annual
Magnesium	mg/L	Annual
Potassium	mg/L	Annual
Sodium	mg/L	Annual
Constituents of Concern (see Table V)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years
2,3,7,8-TCDD (Dioxin) (USEPA Method 1613B or 8280A)	picograms/L	5 years
2,3,7,8-TCDF (USEPA Method 1613B or 8280A)	picograms/L	5 years

Note: Annual unsaturated zone samples shall be collected in February

TABLE III

LEACHATE DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Total Flow	Gallons	Monthly
Flow Rate	Gallons/Day	Monthly
Electrical Conductivity	µmhos/cm	Monthly
pH	pH units	Monthly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Constituents of Concern (see Table V)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years
2,3,7,8-TCDD (Dioxin) (USEPA Method 1613B or 8280A)	picograms/L	5 years
2,3,7,8-TCDF (USEPA Method 1613B or 8280A)	picograms/L	5 years

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC:

USEPA Method 8260B
Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- l ,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Hexachloroethane
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1.2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloethane (Methylchloroforrn)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Inorganics (dissolved):	**USEPA Method**
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010B
Sulfide	9030B

Volatile Organic Compounds:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, l-Dichloroethene; Vinylidene chloride)
cis- l ,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- l ,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- l ,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
Hexachloroethane
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Toluene
1,2,4-Trichlorobenzene
1,1,1 -Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables
Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methyethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimehtylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosospyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8l51A
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141A
Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Ethion
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

INFORMATION SHEET

ORDER NO. R5-2006-0120
TIMBER MANAGEMENT SERVICES INC.
TWIN BRIDGES CLASS II LANDFILL AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

In 1989, Simpson Paper Company constructed the Twin Bridges Class II landfill and Class II surface impoundment to dispose of wastes generated during the papermaking process at the Shasta Pulp and Paper Mill in Anderson. The landfill is situated on a 160-acre parcel, with approximately 25 to 30 acres used for disposal activities and leachate collection/storage. A total of five disposal cells approximately four to five acres in size were proposed for the site, but only one cell (WMU No. 1 Phase 1) received wastes. Simpson constructed a second Unit (WMU No. 1.Phase 2) directly south of WMU No. 1 Phase 1, but no wastes have been disposed in this cell. A lined sedimentation basin was constructed directly south of the Class II leachate pond (WMU No. 2). Storm water is routed to the sedimentation basin, to allow suspended matter to settle out of storm water, then is discharged over a weir to Dry Creek, a tributary to Bear Creek, which flows to the Sacramento River.

The WMU No. 1 Phase 1 waste is mostly comprised of primary clarifier solids, which consist of approximately 70 percent water by weight, 18 percent fiber and wood residue, 9.3 percent ash, and 2.7 acid solubles. Wastes were dewatered with a screw press in order to attain a moisture content of less than 50 percent prior to discharge at the landfill. Although the waste was classified as “nonhazardous solid waste”, the landfill is constructed to Class II standards. Chemical analysis of the waste sludge identified concentrations of 2,3,7,8-Tetrachloro-dibenzo-p-dioxin (dioxin) ranging from 23 to 278 parts per trillion (ppt) and 2,3,7,8-Tetrachloro-dibenzo-furan (TCDF) ranging from 264 to 6,740 ppt. While dioxins were not detected in leachate from the paper waste sludge at a detection limit of 2.5 parts per quadrillion, furans were identified in leachate at concentrations ranging from 22 to 160 parts per quadrillion. Dioxins and furans are formed during the bleaching process of the wood pulp. In the early 1990’s, Simpson Paper Company began using chlorine dioxide during the bleaching process in an effort to reduce the concentration of dioxins in the waste stream.

WMU No. 1 Phase 1 is constructed with a double composite liner consisting of (top to bottom) 6 inches of soil, a geotextile filter fabric, a pea gravel blanket type leachate collection and recovery system (LCRS) 12 inches thick, a 60-mil HDPE geomembrane, 12 inches of compacted soil/bentonite with a maximum permeability of $1x10^{-6}$ cm/sec, and native soil. The Class II surface impoundment is constructed with a double composite liner consisting of (top to bottom) a 100-mil HDPE geomembrane, a geonet drainage layer, a secondary 100-mil HDPE geomembrane, 24 inches of soil/bentonite with a maximum permeability of $1x10^{-6}$ cm/sec, and native soil.

Leachate flows by gravity from the LCRS to the Class II surface impoundment. Originally leachate was pumped into tanker trucks from the surface impoundment and transported back to the Simpson Paper Mill for treatment and discharge to the wastewater treatment lagoons. In May 2004, the Shasta Pulp and Paper Mill was sold at public auction due to bankruptcy proceedings involving Shasta Paper Company. Since the Twin Bridges Landfill is now

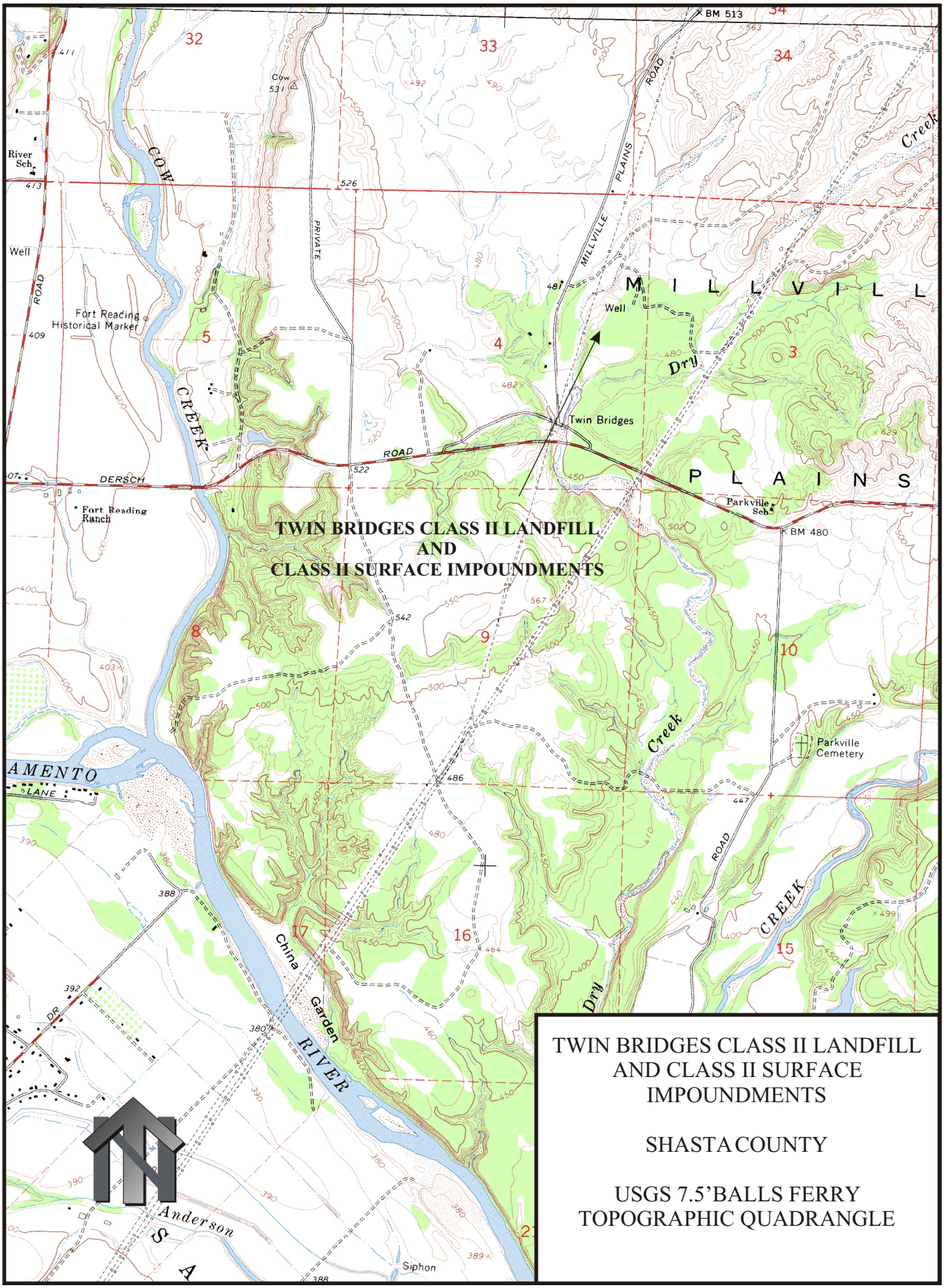
disassociated with the Shasta Pulp and Paper Mill, discharge of leachate to the wastewater treatment lagoons is no longer an option.

Timber Management Services Inc. has constructed an interim cover over WMU No. 1 Phase 1 to reduce the amount of leachate generated by precipitation that percolates through the waste. The cap consists of a clean fill foundation layer 18 inches thick, a 60-mil HDPE geomembrane, and 18 inches of vegetative cover. The interim cap was completed in Summer 2005, and was designed with an overall slope of 3 percent on the top, and 4:1 along the southern slope. Landfill gas generated from WMU No. 1 Phase 1 is released through a single passive gas vent located in the center of the unit. Two permanent benchmarks were established on WMU No. 1.

Shasta County has issued a permit for the Discharger's parcel describing land use requirements. Condition 39 of Shasta County Use Permit No. 98-20, states, "The discharge of waste, other than primary and secondary sludge from the mill wastewater treatment facility and dregs and grits from the recovery boiler and slaker is prohibited unless specifically authorized by Shasta County Department of Resource Management – Environmental Health Division and the Executive Officer of the Regional Water Quality Control Board." The Simpson/Shasta paper mill is closed and mill waste is no longer generated. Regional Water Board staff has not received documentation from the Discharger that a viable waste stream exists and is intended to be disposed at the Facility.

The average annual precipitation is approximately 38 inches, most of which occurs between October and April. The average annual evaporation is 60 inches.

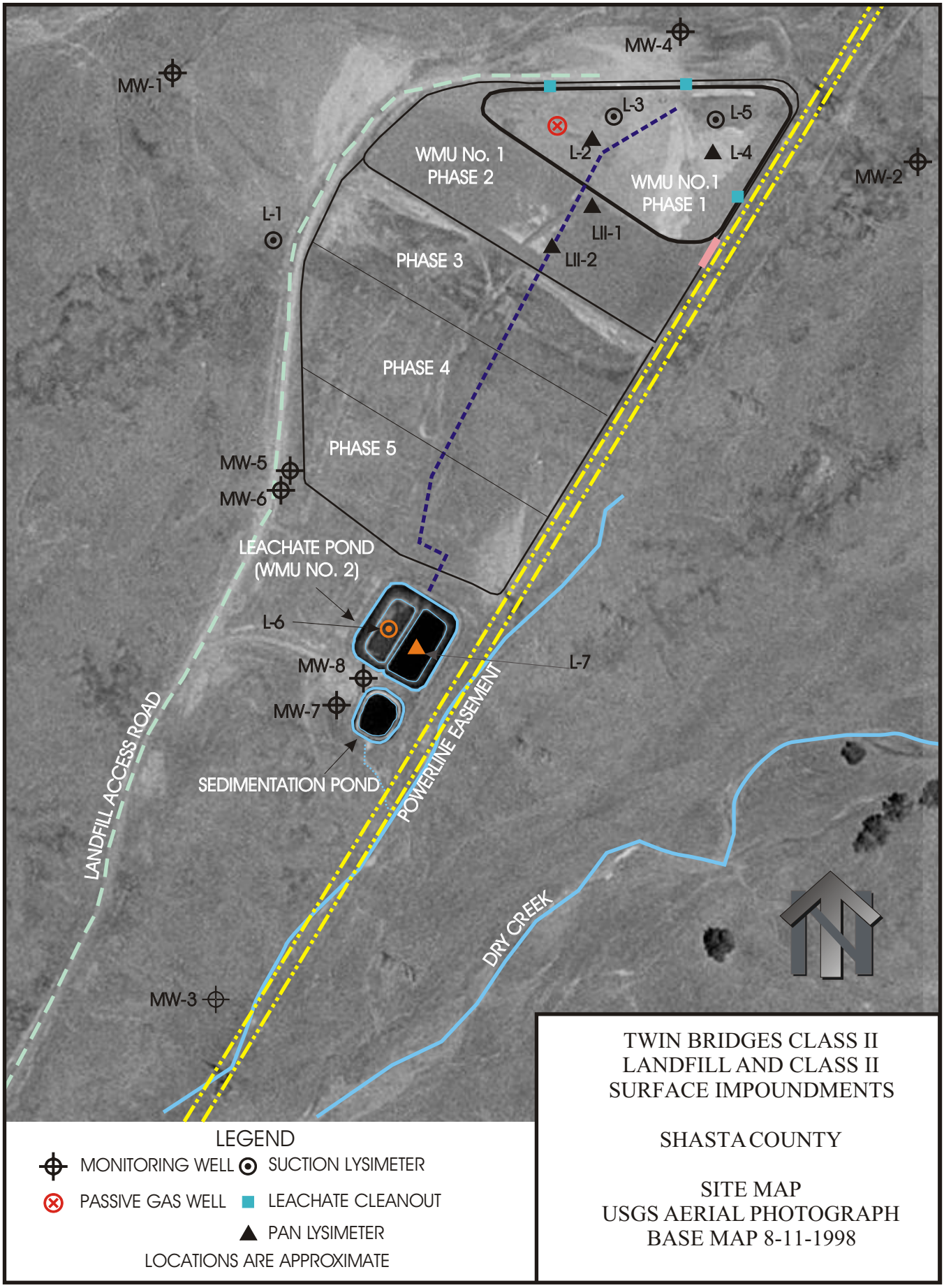
KB: sae
10/31/06



TWIN BRIDGES CLASS II LANDFILL AND CLASS II SURFACE IMPOUNDMENTS

SHASTA COUNTY

USGS 7.5'BALLS FERRY TOPOGRAPHIC QUADRANGLE


MW-1
MW-4
MW-2
MW-3
MW-5
MW-6
MW-7
MW-8
L-1
L-2
L-3
L-4
L-5
LII-1
LII-2
WMU No. 1
PHASE 2
WMU NO.1
PHASE 1
PHASE 3
PHASE 4
PHASE 5
LEACHATE POND
(WMU NO. 2)
L-6
L-7
SEDIMENTATION POND
LANDFILL ACCESS ROAD
POWERLINE EASEMENT
DRY CREEK
N
LEGEND
MONITORING WELL
SUCTION LYSIMETER
PASSIVE GAS WELL
LEACHATE CLEANOUT
PAN LYSIMETER
LOCATIONS ARE APPROXIMATE
TWIN BRIDGES CLASS II
LANDFILL AND CLASS II
SURFACE IMPOUNDMENTS
SHASTA COUNTY
SITE MAP
USGS AERIAL PHOTOGRAPH
BASE MAP 8-11-1998