CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER 98-081
AMENDMENT OF WASTE DISCHARGE REQUIREMENTS
ORDER NO. 91-052

KELLER CANYON LANDFILL COMPANY
CLASS II SOLID WASTE DISPOSAL SITE
PITTSBURG, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds:

1. The Keller Canyon Landfill Company, a wholly owned subsidiary of Browning Ferris Industries of California, Inc. (hereafter called the discharger), owns and operates a 2,628 acre site containing a Class II solid waste management unit, with a permitted waste disposal area of 244 acres. The site is located immediately south of the City of Pittsburg, to the east of Bailey Road in the foothills of the Mt. Diablo Range.

2. The purpose of this Order is to amend the discharger's current Waste Discharge Requirements, so as to allow for an alternative design for the proposed lateral liner expansion referred to as Phase 3A.

3. The current Waste Discharge Requirements for the discharger are contained in Board Order No. 91-052, issued by the Board on April 15, 1991. Following a petition, this Order was amended by Order No. WQ 92-06 of the State Water Resources Control Board, on June 3, 1992. The Regional Board amended the waste discharge requirements again on September 15, 1993, in Order 93-113. This was a general amendment of waste discharge requirements intended to bring all of this Region's landfills into compliance with federal RCRA Subtitle D requirements for monitoring and waste containment. Finally, the waste discharge requirements were amended again on May 21, 1997, in Order 97-060, which allowed for an alternative liner design for a lined area of the landfill's toe berm.

4. The Discharger discharges municipal solid wastes, non-hazardous wastes, construction and demolition wastes, and dewatered sewage sludges to the permitted landfilled area. These wastes are classified as "designated," "non-hazardous solid waste," or "inert wastes," using criteria set forth in Sections 20210, 20220, and 20230 of Division 2, Title 27 of the California Code of Regulations (formerly referred to as Chapter 15, Title 23). Title 27 contains the regulations promulgated by the State Water Resources Control Board for the water quality aspects of discharges of solid waste to land for disposal. These

regulations establish waste and site classifications and waste management requirements for solid waste disposal in landfills.

5. Title 27, Section 20310, requires that Class II waste management units shall be designed and constructed to prevent migration of wastes from the Units to adjacent geologic materials, groundwater, or surface water, during disposal operations, closure and the post-closure maintenance period.

6. The discharger has designed the landfill to isolate wastes from Waters of the State by installing a single composite liner system consisting of at least two feet of clay, compacted to a permeability of not more than 1 x 10-7 cm/sec, overlain by a synthetic flexible membrane liner consisting of 80 mil High Density Polyethylene (HDPE), with a leachate collection and removal system (LCRS) above the liner and a blanket underdrain system beneath the liner, to intercept rising groundwater, if any. These requirements are consistent with those required by Title 27, Section 20250(b).

7. The discharger's excavation and grading plan reduced the separation between wastes and Waters of the State to less than the 5 feet required by Title 27, Section 20240(c). It is not feasible for the discharger to maintain the requisite separation without incurring unreasonable expense to import fill material and reconfigure the design of the landfill. The discharger has instead installed a blanket underdrain as an engineered alternative to the prescribed separation, because it will prevent infiltration of the waste management unit by rising groundwater at least as effectively as the prescribed separation. Title 27, Section 20080(b) allows for an engineered alternative under these conditions.

8. The discharger's Report of Waste Discharge (ROWD) stated that all lined and fill slopes would not have a grade exceeding 3:1 (horizontal/vertical).

9. Keller Canyon is an area of rapid geologic change. The landfill site includes several landslides and slopes that are known, or have shown, the potential for instability. In order to proceed with the development of any future developments, the discharger must , as required by Title 27, Section 21750(f)(5)(A), provide slope stability analyses, ensuring the integrity of the waste management unit under both static and dynamic conditions throughout the Unit's life. Section 21750(f)(5)(C) further requires that the discharger show a factor of safety for the unit's critical slope of at least 1.5 under dynamic conditions. Section 21750(f)(5)(D) allows for an exception where the discharger can estimate the magnitude of movement with the maximum credible earthquake (MCE), and demonstrate that this amount of movement can be accommodated without jeopardizing the integrity of the Unit.

10. Order 97-060 amended the discharger's Waste Discharge Requirements, allowing an alternative liner design for a small portion of the landfill's toe berm. The

principal design change is the substitution of the standard 2-foot thick natural clay liner with a manufactured blanket known as a geosynthetic clay liner (GCL). The use of a GCL on steep landfill slopes is an increasingly common alternative to a clay liner as it offers low permeability with a cost savings due to its ease of installation. Order 97-060 also allowed for the substitution of a 1-foot thick gravel layer with a manufactured drainage layer, and the deletion of the underdrain. These revisions were warranted as the lined area did not contain shallow groundwater, and hence the required 5 foot separation from the groundwater was achieved.

11. Keller Canyon Landfill is a "canyon fill" landfill built by constructing a toe berm at the downstream mouth of the canyon. The landfill has been built and filled in several phases. Phase 1A is a 15 acre lined cell, which was completed in May 1992. Phase 1B consists of 26 acres, completed in two parts. The western portion was completed in November 1992, and the eastern portion was completed in June 1993. Phase 1C consists of a 4.4 acre area, which was completed in June 1996. Lastly, Phase 1D consists of 3.1 acres, which was completed in July 1997.

12. The discharger is allowed to accept up to 2,750 tons per day of waste, and was expected initially to receive the majority of the waste from Contra Costa County. Subsequent court decisions allowed for waste diversion to out-of-county landfills, resulting in the discharger receiving an average of 1,000 tons of waste per day, or a fill volume of about 2,200 cubic yards per day. About 3/4 of this consists of municipal solid waste, with the remainder being special wastes, construction & demolition wastes, and soil cover

13. Phases 1A and 1B contained approximately 3 million cubic yards of waste storage, of which over 2.4 million cubic yards have already been consumed. Phases 1C and 1D contained 1.2 million and 650,000 cubic yards of storage respectively, both of which have been completely consumed. The discharger estimated that at their current disposal rate, that they would exhaust their disposal capacity by July, 1998.

14. The discharger submitted a draft design for the proposed Phase 3A liner expansion, on September 22, 1997. Phase 3A consisted of 16 acres of liner, located to the immediate south of the existing Phase 1 portions of the landfill. The discharger submitted the final design report on January 22, 1998. The draft design was revised following the LS-5 landslide, which developed following heavy rains on January 18, 1998. LS-5 measured about 2,100 feet in length and about 620 feet in width near its toe. The slide mass moved over 100 feet to the northwest, leaving a head scarp up to 85 feet high. This slide buried the floor of the proposed Phase 3A liner, forcing a complete redesign of the liner, as well as the design of a means to stabilize or remove LS-5.

15. The discharger submitted a revised design of the Phase 3A area on April 20, 1998, along with a number of calculations as to the static and seismic stability of all proposed designs. The proposal calls for the partial removal and stabilization of LS-5. The slide would be entirely removed above an elevation of 750 feet, and partially replaced with engineered fill, and drains placed as needed. The lower portion of the slide would be partly removed, with the remainder being stabilized by construction of a buttress of engineered fill. An excess of 2.1 million cubic yards of soil would be placed in a stockpile, to be built at the southern portion of the Keller Canyon drainage. The new Phase 3A liner would be reconfigured and reduced in size from 16 acres to 9.1 acres. The floor of the liner would lie at the south of the existing Phase 1 liner, and to the north of the LS-5 toe. The new toe buttress will also be used to support the Phase 3A liner's south slope. The liner designs for the canyon floor and the east slope were unchanged from the original proposal. The floor would have a high density polyethylene liner, underlain by a compacted clay liner and a granular underdrain. The east slope would have a geosynthetic clay liner (GCL) in lieu of the clay liner, and would use a geonet in place of the underdrain. Finally, the south slope would use a GCL, with no underdrain, as the buttress it rests upon would have its own underdrain system.

16. Based on the above, the discharger has requested that the Waste Discharge Requirements contained in Board Order No. 91-052 be amended to allow for an alternative design for the liner in the proposed Phase 3A area. The Board requested that the discharger provide for two third party reviewers for the slope and liner stability calculations contained in their proposal. The Board received the comments from the Geomatrix and the GeoSyntec Consultants in documents dated June 5, 1998, as well as an addendum to the discharger's design on the same date. Based on materials provided by the third party reviews, the Board finds that this proposed design meets the Title 27 requirements for an engineered alternative.

17. This amendment is exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15301, Title 14 of the California Code of Regulations.

18. The Board has notified the discharger and interested agencies and persons of its intent to amend the Waste Discharge Requirements, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

19. The Board, in a public meeting, heard and considered all comments pertaining to this amendment of Waste Discharge Requirements.

IT IS HEREBY ORDERED that the Keller Canyon Landfill Company, their agents, successors and assigns shall meet the applicable provisions contained in 27CCR, Division 2, Subdivision 1 of the California Code of Regulations and Division 7 of the California Water Code, and shall comply with the following:

1. Specification B.13 of the Waste Discharge Requirements contained in Board Order No. 91-052 currently reads as follows:

   "The landfill unit shall have a blanket-type LCRS immediately above the liner, which is designed and operated to prevent the development of hydraulic head on the liner. Minimum criteria for the liner shall include but not be limited to one foot of granular underdrain, two feet of low permeability clay, 80-'mil' HDPE liner and a dendritic LCRS."

   " An alternative design is acceptable in the approximately 3.1 acre Phase 2A area above the engineered fill of the toe berm. Such an alternative design includes from the bottom to top a geosynthetic clay liner, an 80-mil textured high density polyethylene liner, a leachate collection and removal system that will consist of a geosynthetic drainage net and geotextile filter fabric and a minimum 1-foot thick protective soil cover layer."

2. Specification B.13 of the Waste Discharge Requirements contained in Board Order No. 91-052 is amended to include the following new paragraphs:

   "An alternative design is acceptable in the approximately 9.1 acre Phase 3A area to the south of existing Phase 1B waste cell. The canyon floor will have an area of 2.8 acres, with a liner system (from bottom to top) consisting of a minimum one-foot thick granular drain blanket, a 2-foot thick low permeability clay liner, an 80-mil thick double-sided textured high density polyethylene liner (HDPE), a cushion geotextile, a 1-foot thick granular leachate collection and recovery system (LCRS), a filter geotextile, and a minimum 1-foot thick soil operations layer."

   "The 2:1 grade eastern slope will have an area of 3.5 acres, with a liner system (from bottom to top) consisting of a geonet bonded on both sides to a geotextile, serving as an underdrain, a 40-mil thick double-sided textured HDPE liner, a geo-textile based geosynthetic clay liner (GCL), an 80-mil thick bottom-side textured and smooth top-side HDPE liner, a LCRS consisting of a geonet with a geotextile fabric bonded to its top, and a minimum 18-inch thick soil operations layer."

   "The 150 foot high southern slope will have an area of 2.8 acres, with a liner system (from bottom to top) consisting of a 40-mil thick double-sided textured HDPE liner, a geo-textile based GCL, an 80-mil thick bottom-side textured and smooth top-side HDPE liner, a LCRS consisting of a geonet with a geotextile fabric bonded to its top, and a minimum 18-inch thick soil operations layer."

3. A new Specification B.22 is added to the Waste Discharge Requirements contained in Board Order No. 91-052, to read as follows:

"No waste shall placed in the proposed Phase 3A liner until the following has been accomplished to the satisfaction of the Executive Officer:

a. The discharger has demonstrated that acceptable long-term factors of safety have been achieved for the soil buttress and stockpile.

b. Detailed design plans and a Construction Quality Assurance Plan for the construction of the liner, buttress and stockpile, acceptable to the Executive Officer, have been received along with written certification by a California registered civil engineer or certified engineering geologist that the structures have been constructed in accordance with those plans.

c. An acceptable means of monitoring the movement of the LS-5 landslide, to verify that it has been sufficiently stabilized for the construction of the Phase 3A liner, and the placement of waste within it, has been proposed and implemented.

d. An acceptable means of monitoring the movement of the LS-4 landslide, to verify that it has been sufficiently stabilized for the construction of the Phase 3A liner, and the placement of waste within it, has been proposed and implemented.

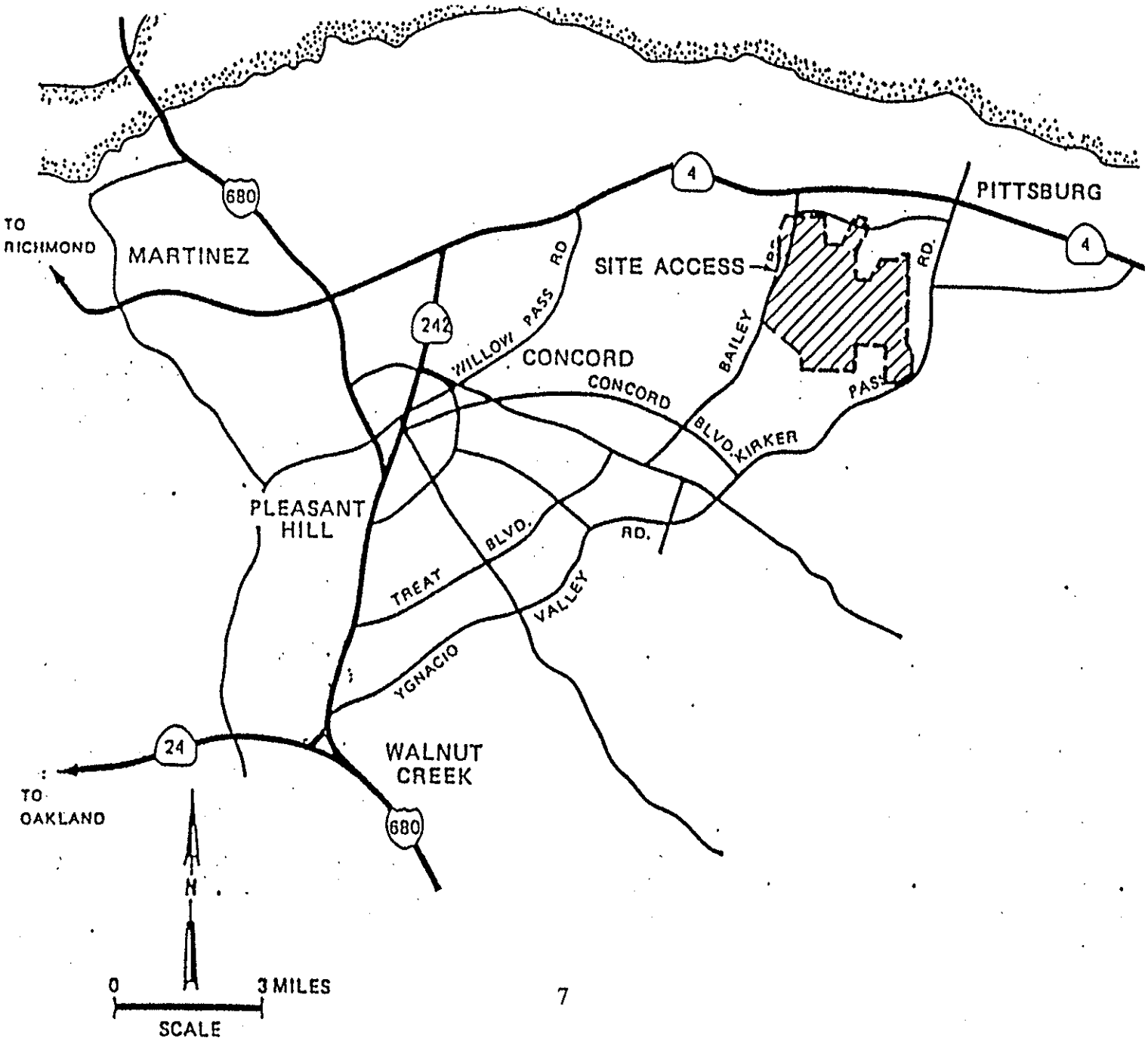
e. All new fill and cut slopes associated with the Phase 3A liner, stockpile and buttress have adequate erosion protection prior to the advent of the next winter's rains.

f. The existing network of background and detection wells have been reviewed and determined to suffice for the detection of any release of constituents of concern from the wastes placed in the new Phase 3A lined area."

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on 8.19.98

Loretta K. Barsamian
Executive Officer

Attachment: Figure 1, Site Location Map

FIGURE 1

SITE LOCATION MAP
KELLER CANYON LANDFILL
PITTSBURG, CONTRA COSTA COUNTY