Addendum to the Eastshore State Park Remediation and Risk Management Plan Berkeley North Basin Strip-II

Berkeley, California

3 December 2003

Prepared by:

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EKI A20056.00

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3 December 2003

Ms. Betty Graham
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San Francisco Bay Region
1515 Clay St., Suite 1400
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Subject: Addendum to the Eastshore State Park Remediation and Risk Management Plan
Berkeley North Basin Strip – II
Berkeley, California
(EKI A20056.00)

Dear Ms. Graham:

On behalf of Magna Entertainment Corporation ("Magna"), Erler & Kalinowski, Inc. ("EKI") is pleased to submit this report entitled *Addendum to the Eastshore State Park Remediation and Risk Management Plan Berkeley North Basin Strip-II* ("RRMP Addendum") for the North Basin Strip-II property located in Berkeley, California, prepared in accordance with EKI's Agreement with Magna, dated 12 November 2002 as amended.

This RRMP Addendum is a site-specific addendum to the *Remediation and Risk Management Plan East Shore Properties, Berkeley / Albany / Richmond California*, prepared by ERM-West and EKI, dated 18 May 1998, and has been prepared for the incorporation of the Berkeley North Basin Strip – II property into the adjacent Eastshore State Park. This RRMP Addendum was prepared in accordance with the recommendations in the *Berkeley North Basin Strip-II Phase II Field Investigation Report*, prepared by EKI and dated 7 May 2003, as approved by the Regional Water Quality Control Board, San Francisco Bay Region, in its letter dated 6 June 2003.

Attachments to the RRMP Addendum include two separate reports summarizing, respectively, the site characterization activities performed by EKI during 2003, and the subsequently completed remediation activities performed by Magna's contractor that were observed by EKI in November and early December 2003.

As you are aware, Magna has entered into an agreement to transfer the subject property to the East Bay Regional Park District this month. As such, we would appreciate your prompt review and response to these documents.

We appreciate your assistance on this project. Please do not hesitate to call if you have any questions.

Very truly yours,

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ADDENDUM TO THE EASTSHORE STATE PARK REMEDIATION AND RISK MANAGEMENT PLAN, BERKELEY NORTH BASIN STRIP-II

Berkeley, California

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1 INTRODUCTION

1.1 BACKGROUND

Erler & Kalinowski, Inc. ("EKI") has prepared this Addendum to the Eastshore State Park Remediation and Risk Management Plan on behalf of Magna Entertainment Corporation ("Magna"). This Addendum is intended to supplement information and protocols presented in the *Remediation and Risk Management Plan, Eastshore Properties, Berkeley/Albany/ Richmond, California*, dated 18 May 1998, including the associated errata and addenda prepared by ERM West, Inc, and Erler & Kalinowski, Inc. ("the RRMP"). This Addendum applies solely to the Berkeley North Basin Strip–II property, located on Gilman Street in Berkeley, California ("the Site") (Figure 1).

This Addendum has been prepared with the understanding that the East Bay Regional Park District ("EBRPD") will acquire the Site from Magna and incorporate the Site into the existing, adjacent Eastshore State Park ("Eastshore State Park") located in Emeryville, Berkeley, Albany, and Richmond, California. The future land uses on the Site by the EBRPD are similar to other areas of Eastshore State Park, i.e., open space used for recreational and other park purposes. Thus, the soil and groundwater remediation goals ("Action Levels") and the remediation and risk management measures that were developed for the Eastshore State Park in the RRMP (ERM-West/EKI, 1998) as adopted in Order No. 98-072 ("the Order") on 15 July 1998, by the California Regional Water Quality Control Board, San Francisco Bay Region ("RWQCB") are considered applicable to the Site. The RWQCB approved the use of the Eastshore State Park Action Levels and the RRMP for the Site in its letter dated 6 June 2003. (RWQCB, June 2003).

The Addendum includes the following:

- a brief description of the property and site use history;
- a review of the Eastshore State Park Action Levels and the current applicability of those levels to the Site;
- a summary of the site characterization activities performed at the Site in accordance with the RRMP protocols are documented in the separate EKI report entitled *Berkeley North Basin Strip-II Site Characterization Report*, which is included as Appendix A (EKI, December 2003a);
- a summary of the remediation activities completed at the Site in accordance with the RRMP are documented in the separate EKI report entitled *Berkeley North Basin Strip-II Soil Excavation Completion Report*, which is included as Appendix B (EKI, December 2003b); and

- a soil remediation / risk management plan (RRMP) that defines the applicable remediation and/or risk management requirements and protocols from the RRMP to the areas of concern identified at the Site, as well as for general future application during redevelopment and use of the Site as a park, consistent with the RRMP in effect for adjacent areas of the Eastshore State Park.

1.2 REMEDIATION AND RISK MANAGEMENT PLAN FRAMEWORK

The decision framework for development of remediation and risk management measures at the Site is described in Section 1 of the RRMP. In accordance with the framework presented in the RRMP, the Site is an upland (non-buffer zone) area. Thus, the Upland Soil and Groundwater Action Levels developed in the RRMP and adopted in the Order are applicable to the Site. Because these Action Levels were developed in 1998, RWQCB staff requested that Magna review the assumptions and basis used for the development of the human health action levels for Eastshore State Park, with a focus on the identification of changes in key exposure factors and toxicity information since the Action Levels were developed. This review is presented in Section 4. EKI used the Action Levels from the RRMP to identify the areas of concern (Section 7 and Appendix A). Remediation and risk management measures appropriate for the anticipated park use are described in Sections 7 and 8.

1.3 OBJECTIVES OF THE RRMP ADDENDUM

The objectives of this Addendum are as follows:

- to present the final remediation areas at the Site and document that these areas have been remediated; and

- to identify areas of the Site requiring on-going risk management as presented in the RRMP.

As with other excavation areas described previously in the RRMP, the soil data presented in Appendix A of this Addendum provided an adequate basis for definition of soil excavation areas at the Site without the need for additional confirmation soil sampling following remediation, e.g., the lateral limits of the excavated areas were extended to the nearest sample location found to meet the Action Levels for the chemicals of concern.

2 PROPERTY DESCRIPTION AND SITE USE HISTORY

The Berkeley North Basin was historically subdivided into the North Basin Strip-I ("NBS-I") property on the South and the North Basin Strip–II ("NBS-II") property on the North, the latter of which is addressed by this Addendum. The NBS-I property, which includes approximately 201 acres of submerged land and 22 acres of uplands, was one of the properties incorporated into Eastshore State Park in the 1998 property transfer and is now owned and operated by EBRPD. The NBS-II property, the Site shown on Figure 1, encompasses the northern 16 acres of the Berkeley North Basin uplands; there are no submerged properties associated with the Site.

The Site is located within the flatlands of the East Bay Alluvial Plain. The sediments of the East Bay Alluvial Plain generally slope westward from the Oakland-Berkeley Hills to San Francisco Bay.

From approximately 1930 to the early 1950s, the City of Berkeley placed construction debris and municipal waste along the shoreline of San Francisco Bay, creating the Berkeley North Basin (ERM-West/EKI, 1998).[1] Much of the municipal waste was reportedly incinerated at the Site (Harding Lawson Associates ("HLA"), 1984).

The northern portion of the Site is paved and utilized currently as an overflow parking lot for visitors to the Golden Gate Fields racetrack. The southern portion of the Site is sparsely vegetated, disturbed land with some evidence of recent disturbance (e.g., dirt mounds and tire tracks). A strip of land along the western edge of the Site, including shoreline and riprap, was included in the 1998 Eastshore State Park land transfer and, thus, is not part of the Site (i.e., the Site has no Bay frontage).

[1] According to Harding Lawson Associates (1984) filling of the North Basin Strip occurred mostly prior to 1946 and was completed by 1953.

3 REGULATORY STATUS

There are no pending Regional Board orders at this property. In several prior reviews of the environmental condition of this property by representatives of the Regional Board and the California Integrated Waste Management Board ("CIWMB"), no remedial action has been required.

4 REVIEW OF EASTSHORE STATE PARK ACTION LEVELS

The Eastshore State Park Action Levels for Upland Soil and Groundwater are presented in Table 1 of this Addendum. RWQCB staff requested that Magna review the assumptions and basis used for the development of the human health Action Levels for Eastshore State Park with a focus on (1) the assumptions for the upland human health-based action levels, as opposed to ecologically risk-based goals, and (2) possible changes in typical exposure factors and toxicity information since the Action Levels were developed. For metals in soil, upland Action Levels for antimony, arsenic, beryllium, cobalt, lead, silver, and thallium are driven by human health risk (i.e., human health goals are close to or more restrictive than the ecological-based goals). Beryllium, silver, and thallium were not detected at the Site and are, therefore, not considered in this review of Action Levels. Upland Action Levels for pertinent organic compounds (i.e., those compounds detected in shallow soil at the Site for which Eastshore State Action Levels exist, which includes polycyclic aromatic hydrocarbons ("PAHs")) are all driven by human health risk.[2] Thus, the review below focuses only on antimony, arsenic, cobalt, lead, and PAHs.

4.1 EXPOSURE ASSUMPTIONS

Exposure assumptions that were originally used to develop the Eastshore State Park Action Levels are presented in Tables J-3 and J-4 in Appendix J of the RRMP. With the exception of the exposure frequencies for assumed park users and workers, the human exposure assumptions used to develop the Action Levels were obtained from the 1996 U.S. Environmental Protection Agency ("U.S. EPA") Region IX Preliminary Remediation Goals ("PRGs").

A site-specific exposure frequency for assumed park users was developed for Eastshore State Park based on the anticipated recreational use (Table J-3 of Appendix J). The exposure frequency developed in the RRMP in Appendix J is believed to be appropriate for future uses that are anticipated for the Site.

EKI reviewed U.S. EPA's currently published PRGs (revised March 2003) to identify changes to the other key exposure assumptions and parameters (US EPA, 2003). The only identified changes to the exposure assumptions used to develop the Eastshore State Park Action Levels are for dermal contact. These more recent changes or updated exposure assumptions are described below, and their potential impacts on the calculated Action Levels pertinent to the Site are considered to be insignificant.

U.S. EPA's assumed exposed skin surface areas have increased from 5,000 cm^2/day to 5,700 cm^2/day for adults and from 2,000 cm^2/day to 2,800 cm^2/day for children (U.S.

[2] Petroleum hydrocarbons have been detected at the Site at levels that exceed the Eastshore State Park Action Level of 1,000 mg/kg. This Action Level was obtained from Order for the nearby Emeryville Crescent site (RWQCB Order 97-069) and is based on best professional judgment.

EPA, 2003). However, the soil-to-skin adherence factor for adults decreased by 60% (from 0.2 mg/cm^2 to 0.07 mg/cm^2) and stayed the same for children (0.2 mg/cm^2). Generally, dermal exposure accounts for up to approximately 30% of the overall risk and calculated action level, depending on the chemical-specific dermal absorption value. The net result is that for carcinogens (which are based on a combined child and adult exposure), calculated Action Levels would not likely decrease, i.e., become more stringent, because the net dermal exposure for adults has decreased by 60%, while the dermal exposure during childhood has increased by only 40%. However, for non-carcinogens, the Action Levels, which were based on childhood exposure only, would decrease (become more stringent) by approximately 10 to 15%. Dermal exposure accounts for up to 30% of the calculated Action Level, and the child skin surface area increased by 40%, resulting in a net increase in calculated risk of approximately 12%. Action Levels that would potentially be most impacted by this exposure assumption change include those calculated for antimony, cobalt and non-carcinogenic PAHs (e.g., fluoranthene, pyrene). For example, the Action Level for fluoranthene is 27,000 mg/kg. Using the updated dermal exposure assumptions, the fluoranthene Action Level would decrease to 24,500 mg/kg, a 9% decrease. However, none of these chemicals would be identified as chemicals of concern at the Site based on the available data even assuming such changes.

4.2 TOXICITY FACTORS

Since the Eastshore State Park Action Levels were developed, the State of California has developed its own inhalation non-cancer reference exposure levels ("RELs") for chronic human exposures to many chemicals. For metals, some of these RELs are generally lower (more stringent) than the values previously used in the U.S. EPA PRG table. However, determination of Eastshore State Park Action Levels for the metals of interest (antimony, arsenic, cobalt, and lead as identified above) is either driven by cancer risk or the non-cancer toxicity values do not cause the action levels to change significantly, except as noted below for cobalt.[3]

In the current U.S. EPA PRGs, cobalt is now considered a carcinogen. The Eastshore State Park Action Level for cobalt is 51,000 mg/kg as it was considered only as a non-carcinogen; however, the current residential PRG is 900 mg/kg (US EPA, 2003). If the Eastshore State Park Action Level for cobalt were updated using the current slope factor, the cobalt value would decrease significantly, but it would still be greater than the residential PRG of 900 mg/kg. The maximum detected cobalt concentration in soil at the Site was 24.3 mg/kg, which is significantly less than the current residential PRG.

Based on our review of the 1998 risk calculations, there are no other changes to toxicity values pertinent to the Site that would appear to result in significant changes to the Eastshore State Park Action Levels as they apply to the Site.

[3] The antimony and arsenic toxicity factors have not changed. The Eastshore State Park Action Level for lead was developed considering a Federal value that is acceptable in potting soil. This value for lead as published in the Code of Federal Regulations has not changed.

4.3 SUMMARY

Although some calculated, individual risk-based goals would have changed based on new exposure parameter and toxicity information since 1998, there would be no significant changes to the identified chemicals of concern and planned remediation at the Site. Therefore, Action Levels have not been recalculated based on the changes described above because there would be no material changes to the chemicals of concern or remediation at the Site.

5 SUBSURFACE CHARACTERISTICS

Based on field observations by EKI at the recent borehole locations, the Site appears to be underlain by approximately 10 to 15 feet of fill overlying Bay Mud. Throughout most of the Site, the fill is composed of a fine-grained layer, approximately 3 to 8 feet in thickness, above a coarse-grained layer that generally extends to the total depth of the deeper boreholes (i.e., 8 to 17 feet below ground surface ("bgs")). Debris, including wood chips, metal fragments, brick fragments, glass fragments, and occasional small pieces of plastic were present in both fill layers (i.e., the shallow fine-grained fill and the deeper coarser-grained fill). The debris present in the fill layers did not generally exceed 5% of the total volume of the sampled material at any of the boreholes or shallow soil sampling locations. However, a portion of Area B (one of the excavation areas identified in Section 7.1) and a few of the shallow soil samples contained approximately 25 to 50 % debris. Section 5.2 of Appendix A contains a more detailed description of the subsurface characteristics at the Site.

Groundwater is encountered at approximately 3 to 7 feet bgs at the Site (Appendix A). In general, groundwater was encountered at shallower depths at the northern portion of the Site than at the southern portion, although, based on groundwater elevations noted in temporary well casings, the groundwater flow direction on the Site generally appears to be toward the Bay (EKI, December 2003a). Gradients can be locally complex within fill material. Groundwater elevations in the near shore areas are possibly tidally influenced (ERM-West/EKI, 1998).

6 HISTORICAL INVESTIGATIONS

Two known soil and groundwater investigations were conducted at the Site prior to the 2003 field investigation performed by EKI. These prior investigations and their findings are summarized below:

- Caltrans conducted limited soil and groundwater sampling in an easement along the eastern edge of the Site (Geo/Resources, 1992). The location of the Caltrans easement is shown on Figure 2. Soil samples were reportedly collected from four locations on the Site within the Caltrans easement (BGG-7, BGG-8, BGG-9, and BGG-10), but the specific locations of these sample points are not available to EKI.

- HLA reportedly collected one or two soil gas and composite groundwater samples at the Site as part of the preparation of a landfill closure plan for the Site in the 1980s (HLA, 1984), but the specific locations of these prior sample points are not available to EKI.

As described in more detail in Appendix A, these sampling results indicate the presence of petroleum hydrocarbons and selected metals (arsenic, chromium, and lead) in some of the soil samples at concentrations above the Eastshore State Park Action Levels. Groundwater samples collected during both of these prior investigations were apparently not filtered; therefore, the data are not likely representative of the dissolved concentrations of metals in shallow groundwater. Lastly, methane was detected at 100% of the lower explosive limit ("LEL") in one out of six samples collected in the early 1980s at the Berkeley North Basin. These results are consistent with the findings in EKI's 2003 investigation as presented in Appendix A; however, these data were not used to identify potential areas of concern because the specific locations of these prior sample points are not known.

In 2003, EKI performed several rounds of soil, groundwater, and soil gas sampling at the Site. Approximately 184 soil samples were collected and analyzed from 178 locations. A total of 8 grab groundwater samples and 6 soil gas samples were also collected from the Site. Table 2 summarizes the analyses performed on the soil, groundwater, and soil gas samples. Figures 2 and 3 show the sampling locations. Analytical results for soil and groundwater samples and soil gas sampling are presented in the tables and on the figures included in Appendix A.

The areas of concern identified from these investigations are described in Section 7 and include the following:

- four areas with metals in soil,
- a generalized area with measurable concentrations of petroleum hydrocarbons randomly detected in shallow soil, and

- the potential site-wide presence of methane gas, particularly below paving in the northern portion of the Site.

There are no areas of concern in groundwater identified for remedial measures. The rationale for no further action at certain sampling locations with chemicals detected in soil or groundwater above Action Levels is discussed in the report entitled *Berkeley North Basin Strip–II Site Characterization Report, Berkeley, California*, prepared by EKI and dated 3 December 2003. This characterization report, which also includes the details of EKI's 2003 investigations, is attached in Appendix A.

7 IDENTIFICATION OF AREAS OF CONCERN AND APPLICATION OF REMEDIATION AND RISK MANAGEMENT MEASURES

Remediation and risk management approaches are considered for areas in which detected chemical concentrations exceed Action Levels in the upper 2 feet bgs, and these chemicals have been retained as chemicals of concern. This section identifies those areas at the Site and summarizes the applicable remediation and risk management measures for each area. The chemicals of concern and remediation and risk management measures for each of the areas are presented in Table 3 and shown on Figure 4. Section 8 describes additional remediation and/or risk management measures recommended for the Site that were not specifically included in the RRMP.

7.1 SOILS

As indicated in Table 3 four areas of concern were identified with certain metals in soil above Action Levels (Areas A through D on Figure 4). In addition, petroleum hydrocarbons have been detected above Action Levels randomly in shallow soil over a large part of the paved area in the northern portion of the Site.

7.1.1 Area A

Area A was identified as shallow soil (i.e., up to 2 feet bgs) near borehole NBS-SB1 that was found to be impacted by metals, primarily lead, above Action Levels. The majority of the samples within the boundaries of Area A (i.e., the area surrounding borehole NBS-SB1) contained lead above the Eastshore State Park Action Level of 840 mg/kg (Figure 2). Locations within Area A also were found to have arsenic, cadmium, copper, mercury, and zinc present at concentrations in shallow soil above Action Levels. Figure 5 depicts the chemical concentrations for those samples that defined the lateral extent of metals above Action Levels in Area A. See EKI's *Site Characterization Report*, dated 3 December 2003 (Appendix A) for more details regarding sampling to investigate metal concentrations in shallow soil at Area A.

In accordance with the RRMP, soil in Area A was excavated to a total depth of 2 feet bgs (below the bottom of the pavement) and was backfilled with 2 feet of imported soil that did not contain chemicals above the Action Levels (see Appendix B). The asphalt pavement was replaced after the excavation was backfilled. The excavation extended laterally to the nearest sample location with no identified chemicals present above the applicable Action Levels (see Figure 5). In the RRMP protocols, isolated areas of concern were excavated to the midpoint between the sample with chemicals above Action Levels and the nearest sample location with no identified chemicals above Action Levels. For the Site, this RRMP protocol was modified (i.e., excavations extended to the nearest available sample with no identified chemicals above Action Levels) for Areas A and B due to their large size and to utilize these available perimeter soil samples to define the excavation limits without need for side-wall confirmation sampling in order to allow rapid excavation.

Excavation of Area A was completed in November 2003. The excavation activities for Area A are described in more detail in Appendix B. All on-going risk management measures, as described in the RRMP, are applicable to Area A.

7.1.2 Area B

Area B was identified as shallow soil (i.e., up to 2 feet bgs) near sampling location NBS-SS5 that was found to be impacted by metals, primarily lead, above Action Levels. Like Area A, the majority of the samples within the boundaries of Area B (i.e., the area surrounding location NBS-SS5) contained lead above the Action Level. Locations within Area B also were found to have arsenic and copper at concentrations in shallow soil above Action Levels. Molybdenum was present above its Action Level at location NBS-SS5 only. Figure 5 depicts the chemical concentrations for those samples that defined the lateral extent of metals above Action Levels in Area B. See Appendix A for more details regarding sampling to investigate metal concentrations in shallow soil at Area B.

In accordance with the RRMP, soil in Area B was excavated to a total depth of 2 feet bgs (below the bottom of the pavement) and was backfilled with 2 feet of imported soil that did not contain chemicals above the Action Levels (See Appendix B). The asphalt pavement was replaced after the excavation was backfilled. Like Area A, the excavation extended laterally to the nearest sample location with no identified chemicals present above the pertinent Action Levels (see Figure 5).

Excavation of Area B was completed in November 2003. The excavation activities for Area B are described in more detail in Appendix B. All on-going risk management measures, as described in the RRMP, are applicable to Area B.

7.1.3 Area C

Area C was identified as shallow soil (i.e., up to 2 feet bgs) near sampling location NBS-SB5 that was impacted by mercury above its Action Level of 0.9 mg/kg. Mercury concentrations in each of the four step-out soil samples were less than its Action Level. See Appendix A for more details regarding sampling to investigate mercury concentrations in shallow soil at Area C.

In accordance with the RRMP, soil in Area C was excavated to a total depth of approximately 2 feet bgs and was backfilled with 2 feet of imported soil that did not contain chemicals above the Action Levels (see Appendix B). The Area C excavation extended laterally to the midpoints between location NBS-SB5 and each of the step-out sample locations, which did not contain mercury above its Action Level (see Figure 4).

Excavation of Area C was completed in November 2003. The excavation activities for Area C are described in more detail in Appendix B. All on-going risk management measures, as described in the RRMP, are applicable to Area C.

7.1.4 Area D

Like Area C, Area D was identified as shallow soil (i.e., up to 2 feet bgs) that was impacted by mercury above its Action Level. Area D is located at sampling location NBS-SS14. The mercury concentration in one of the step-out soil samples was greater than its Action Level. See Appendix A for more details regarding mercury in shallow soil at Area D.

In accordance with the RRMP, soil in Area D was excavated to a total depth of approximately 2 feet bgs and was backfilled with 2 feet of imported soil that did not contain chemicals above the Action Levels. The Area D excavation extended laterally to the mid-points between sampling locations with mercury above its Action Level and the step-out sample locations with no mercury above its Action Level (see Figure 4) as discussed in Appendix A.

Excavation of Area D was completed in November 2003. The excavation activities for Area D are described in more detail in Appendix B. All on-going risk management measures, as described in the RRMP, are applicable to Area D.

7.1.5 Area of Petroleum Impacts

Total petroleum hydrocarbons ("TPH") quantified as diesel-range hydrocarbons were detected above the TPH Action Level in three of the initial shallow soil samples (NBS-SS2-0.5-1.5, NBS-SS5-1-2, and NBS-SS7-1-2) and one soil borehole sample (NBS-SB2-0.5-1.5), all of which were collected from beneath the paved area on the northern portion of the Site (Figure 2). Several shallow step-out soil samples were collected from shallow boreholes surrounding locations NBS-SB2, NBS-SS2, NBS-SS5, and NBS-SS7 and were analyzed for TPH as diesel to assess whether these locations represent a larger, possibly contiguous area with shallow TPH occurrence (e.g., due to historic use of oil for dust control in this vehicle parking area before the area was paved). The results of the step-out sampling suggest that petroleum hydrocarbons are randomly located in the shallow soil under the paved portion of the Site. As such, a generalized area of the Site with presumed occurrence of TPH as diesel above the TPH Action Level has been identified below the paving in the northern portion of the Site. This area can be managed as a large, contiguous area with more or less random TPH occurrence in shallow soil.

Consistent with the RRMP, this area will be managed in-place through the maintenance of appropriate cover materials as long as TPH remains in soil at concentrations greater than Action Levels. As described in the RRMP, appropriate cover materials include 2 feet of clean fill, asphalt, concrete, buildings (e.g., restrooms or other structures), or other suitable cover material. As defined in this RRMP Addendum, other suitable cover material includes artificial turf and associated sub-base that may be placed as part of the construction of playing fields at the Site. Such materials should provide a barrier and prevent contact by park users. All on-going risk management measures, as described in the RRMP, are applicable to the generalized petroleum-impacted area shown on Figure 4.

7.2 SOIL GAS

High levels of methane gas (up to 74% by volume) were detected in the soil gas samples collected at location NBS-SG1 and its vicinity, i.e., step-out samples NBS-SG1-E and NBS-SG1-W (Figure 2). These samples were located below paving in the northern parking lot area of the Site; the asphalt paving may be limiting the upward migration and dissipation of the methane gas in the subsurface. Using direct reading field instruments, EKI also measured methane or combustible gas levels in selected open boreholes drilled as part of the step-out soil sampling events in Areas A and B and during soil excavation. The field data show that combustible gases are present above the lower explosive limit ("LEL") in the subsurface at Areas A and B. However, as described in the Excavation Completion Report (Appendix B), although methane gas was measurable in the field, high levels greater than the LEL were not observed during the excavation of Areas A and B.

Based on elevated methane gas concentrations detected in soil gas at borehole NBS-SG1 and its respective step-out samples, and the field measurements of methane and combustible gas concentrations greater than the LEL in and near Areas A and B, additional risk management measures are recommended to address the possible occurrence of methane at the Site (e.g., in subsurface structures or encountered during subsurface work). These risk management measures are described in Section 8.

8 RRMP ADDENDUM

The on-going risk management measures (e.g., maintenance of soil cover and general worker health and safety requirements for subsurface activities) described in the RRMP are applicable to each of the areas of concern at the Site, as depicted on Figure 4.

As described in Section 1 of the RRMP, appropriate cover materials for remediated areas include 2 feet of clean fill or covering with asphalt, concrete, buildings (e.g., restrooms or other structures), or *other suitable cover material* to minimize the likelihood of contact with contaminated soils in the identified Areas of Concern. The EBRPD may use the Site for playing fields and associated parking. EBRPD staff have indicated that the playing field surfaces could include grass or artificial turf. As defined in this RRMP Addendum, other suitable cover material could include artificial turf and any associated sub-base that may be placed as part of the construction of playing fields at the Site. Such turf cover areas would need to be managed, inspected and maintained in a manner consistent with the RRMP requirements, with which the EBRPD is familiar.

As described in Section 7.2, methane gas has been measured above the LEL on the Site. Appendices B and D of the RRMP include worker health and safety protocols. These protocols require preparation of worker health and safety plans when subsurface work is planned and undertaken. Such health and safety plans will also address the potential for methane hazards at this site, and include appropriate methane monitoring and mitigation measures. Finally, if restrooms or other recreational support uses (e.g., snack bars, equipment storage rooms) are constructed at the Site, residual methane levels should be taken into account in selecting appropriate building structures and ventilation designs.

9 REFERENCES

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Table 1

Non-Buffer Zone Upland Action Levels for the Eastshore State Park [1]

North Basin Strip - II
Berkeley, California
(EKI A20056.00)

Analytes	Upland Soil (Non-Buffer)		Upland Groundwater (Non-Buffer) (mg/l)
	Human (mg/kg)	Ecological (mg/kg)	
Antimony	340		5
Arsenic	14	20	0.36
Barium	59,000	1,170	
Beryllium	1.7		NR [2]
Cadmium	430	33	0.093
Chromium	2,700	91.4	0.5
Cobalt	51,000		
Copper	32,000	415	0.029
Lead	840	8,050	0.056
Mercury	260	0.9	0.00025
Molybdenum	4,300	16.4	
Nickel	17,000	345	0.071
Selenium	4,300	5.7	0.71
Silver	4,300		0.023
Thallium	68	42.5	2.13
Vanadium	6,000	237	
Zinc	256,000	1,140	0.58
Acetone	23,000		
Benzene	2.3		5.1
2-Butanone	34,000		
Chlorobenzene	720		1.29
Chloroform	NR		64
1,4-Dichlorobenzene	NR		1.29
Trichloroethene	NR		2
Tetrachloroethene	15		4.5
Ethylbenzene	230		0.43
Toluene	880		50
Xylenes	320		
Anthracene	5.7		0.3
Benzo(a)pyrene	0.39		NR
Bis(2-ethylhexyl)-phthalate	640		0.059
Di-n-octyl-phthalate			2.94
2-Methyl napthalene	11,000		
4-Methyl phenol	3,600		
Naphthalene	242		2.35
N-Nitroso-diphenylamine	600		3300
Phenanthrene	8,100		0.3
TPHg	1,000		3 to 30
TPHd	1,000		3 to 30
PCB-1254		11.8	NR
PCB-1260		0.63	NR
Total PCBs	1.5		NR

Table 1
Non-Buffer Zone Upland Action Levels for the Eastshore State Park [1]

North Basin Strip - II
Berkeley, California
(EKI A20056.00)

Analytes	Upland Soil (Non-Buffer)		Upland Groundwater (Non-Buffer) (mg/l)
	Human (mg/kg)	Ecological (mg/kg)	
Total PAHs			0.15
Benzo(a)anthracene	3.9		NR
Benzo(b)fluoranthene	3.9		NR
Fluoranthene	27,000		NR
Benzo(g,h,i,)perylene	20,000		NR
Indeno(1,2,3-cd)pyrene	3.9		NR
Chrysene	7.2		NR
Pyrene	100		NR

Notes and Abbreviations:

A blank cell indicates no available criteria for this constituent

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

(1) Action levels were developed in the *Remediation and Risk Management Plan East Shore Properties, Berkeley / Albany / Richmond, California* (ERM-West and EKI, 1998) and adopted in San Francisco Regional Water Quality Control Board ("SFRWQCB")Order No. 98-072, Site Cleanup Requirements, Catellus Development Corp. - East Shore Properties; Table 1. Only "Upland Soil All" and "Groundwater Non-buffer" criteria are applicable as no samples were collected within the Buffer Zone.

(2) NR = not reported in shallow soil or groundwater where noted.

Table 2
Sample Identification Key and Laboratory Analyses Performed
North Basin Strip - II
Berkeley, California
(EKI A20056.00)

	Soil Sample ID	Sample Depth (ft bgs)	Sample Collection Date	Metals by EPA Method 3050/6020								VOCs by EPA Method 8260	PCBs by EPA Method 8082	Chlorinated Pesticides by EPA Method 8081	PAHs by EPA Method 8270C	Total Petroleum Hydrocarbons		Soil Gas Analyses[a]		
				Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
SOIL																				
	NBS-SS1-1-2	1 to 2	25-Feb-03	•									•		•	•	•			
	NBS-SS2-0.5-1.5	0.5 to 1.5	25-Feb-03	•									•		•	•	•			
	NBS-SS2-NE1	1 to 1.5	11-Jun-03														•			
	NBS-SS2-NE2	1 to 1.5	11-Jun-03														•			
	NBS-SS2-SE1	1 to 1.5	11-Jun-03														•			
	NBS-SS2-SW1	1 to 1.5	11-Jun-03														•			
	NBS-SS2-NW1	1 to 1.5	11-Jun-03														•			
	NBS-SS5-N2	1.5 to 2	11-Jun-03														•			
	NBS-SS3-0.5-1.5	0.5 to 1.5	25-Feb-03	•								•	•	•	•	•	•			
Area B	NBS-SS4-1-2	1 to 2	24-Feb-03	•									•		•	•	•			
Area B	NBS-SS5-1-2	1 to 2	25-Feb-03	•								•	•	•	•	•	•			
Area B	NBS-SS5-N1	1.5 to 2	11-Jun-03		•		•	•		•							•			
Area B	NBS-SS5-E1	1.5 to 2	11-Jun-03		•		•	•		•							•			
Area B	NBS-SS5-E2	1.5 to 2	11-Jun-03		•		•	•												
Area B	NBS-SS5-E3	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E4	1.5 to 2	27-Jun-03				•													
Area B	NBS-SS5-E5	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E6	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E7	1.5 to 2	27-Jun-03				•													
Area B	NBS-SS5-E8	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E10	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E11	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E12	1.5 to 2	27-Jun-03		•		•													
Area B	NBS-SS5-E13	1.5 to 2	27-Jun-03		•		•	•												
Area B	NBS-SS5-E14	1.5 to 2	27-Jun-03		•		•													
Area B	NBS-SS5-S1	1.5 to 2	11-Jun-03		•		•	•		•							•			
Area B	NBS-SS5-S2	1.5 to 2	11-Jun-03		•		•	•		•							•			
Area B	NBS-SS5-W1	1.5 to 2	11-Jun-03		•		•	•		•							•			
Area B	NBS-SS5-W2	1.5 to 2	11-Jun-03		•			•									•			
Area B	NBS-SS5-101	1.5 to 2	14-Aug-03					•												

Table 2
Sample Identification Key and Laboratory Analyses Performed
North Basin Strip - II
Berkeley, California
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	Soil Sample ID	Sample Depth (ft bgs)	Sample Collection Date	Metals by EPA Method 3050/6020								VOCs by EPA Method 8260	PCBs by EPA Method 8082	Chlorinated Pesticides by EPA Method 8081	PAHs by EPA Method 8270C	Total Petroleum Hydrocarbons		Soil Gas Analyses[a]		
				Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
Area B	NBS-SS5-102	1.5 to 2	14-Aug-03					●												
	NBS-SS5-103	1.5 to 2	14-Aug-03					●												
	NBS-SS5-104	1.5 to 2	14-Aug-03					●												
	NBS-SS5-105	1.5 to 2	14-Aug-03					●												
	NBS-SS5-106	1.5 to 2	14-Aug-03					●												
	NBS-SS5-107	1.5 to 2	14-Aug-03					●												
	NBS-SS5-108	1.5 to 2	14-Aug-03					●												
	NBS-SS5-109	1.5 to 2	14-Aug-03					●												
	NBS-SS5-110	1.5 to 2	14-Aug-03					●												
	NBS-SS5-111	1.5 to 2	14-Aug-03					●												
	NBS-SS5-112	1.5 to 2	14-Aug-03					●												
	NBS-SS5-113	1.5 to 2	14-Aug-03					●												
	NBS-SS5-118	1.5 to 2	16-Sep-03					●												
	NBS-SS5-119	1.5 to 2	16-Sep-03					●												
	NBS-SS5-120	1.5 to 2	16-Sep-03					●												
	NBS-SS5-121	1.5 to 2	16-Sep-03					●												
	NBS-SS5-122	1.5 to 2	16-Sep-03					●												
	NBS-SS5-123	1.5 to 2	16-Sep-03					●												
	NBS-SS5-124	1.5 to 2	16-Sep-03					●												
	NBS-SS5-125	1.5 to 2	16-Sep-03					●												
	NBS-SS5-126	1.5 to 2	16-Sep-03					●												
	NBS-SS5-127	1.5 to 2	16-Sep-03					●												
	NBS-SS5-128	1.5 to 2	16-Sep-03					●												
	NBS-SS5-129	1.5 to 2	16-Sep-03					●												
	NBS-SS5-132	1.5 to 2	16-Sep-03					●												
	NBS-SS5-133	1.5 to 2	16-Sep-03					●												
	NBS-SS5-144	1.5 to 2	16-Sep-03					●												
	NBS-SS5-145	1.5 to 2	16-Sep-03					●												
	NBS-SS5-146	1.5 to 2	16-Sep-03					●												
	NBS-SS5-147	1.5 to 2	16-Sep-03					●												
	NBS-SS5-148	1.5 to 2	16-Sep-03					●												
	NBS-SS5-149	1.5 to 2	14-Oct-03					●												

Table 2
Sample Identification Key and Laboratory Analyses Performed
North Basin Strip - II
Berkeley, California
(EKI A20056.00)

	Soil Sample ID	Sample Depth (ft bgs)	Sample Collection Date	Metals by EPA Method 3050/6020								VOCs by EPA Method 8260	PCBs by EPA Method 8082	Chlorinated Pesticides by EPA Method 8081	PAHs by EPA Method 8270C	Total Petroleum Hydrocarbons		Soil Gas Analyses[a]		
				Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
Area B	NBS-SS5-150	1.5 to 2	14-Oct-03					•												
	NBS-SS5-152	1.5 to 2	14-Oct-03					•												
	NBS-SS5-153	1.5 to 2	14-Oct-03					•												
	NBS-SS5-154	1.5 to 2	14-Oct-03					•												
	NBS-SS5-155	1.5 to 2	14-Oct-03					•												
	NBS-SS5-156	1.5 to 2	14-Oct-03					•												
	NBS-SS5-157	1.5 to 2	14-Oct-03					•												
	NBS-SS5-158	1.5 to 2	14-Oct-03					•												
	NBS-SS5-159	1.5 to 2	14-Oct-03					•												
	NBS-SS5-160	1.5 to 2	14-Oct-03					•												
	NBS-SS5-170	1.5 to 2	14-Oct-03					•												
	NBS-SS5-171	1.5 to 2	14-Oct-03					•												
	NBS-SS5-172	1.5 to 2	14-Oct-03					•												
	NBS-SS5-176	1.5 to 2	14-Oct-03					•												
	NBS-SS5-177	1.5 to 2	14-Oct-03					•												
	NBS-SB1-241	1.5 to 2	13-Aug-03					•												
	NBS-SB1-246	1.5 to 2	13-Aug-03					•												
	NBS-SB3-0.5-1.5	0.5 to 1.5	25-Feb-03	•									•		•	•	•			
	NBS-SS7-1-2	1 to 2	24-Feb-03	•								•	•	•	•	•	•			
	NBS-SS7-N1	1.5 to 2	11-Jun-03					•									•			
	NBS-SS7-W1	1.5 to 2	11-Jun-03					•									•			
	NBS-SS7-E1	1.5 to 2	11-Jun-03														•			
	NBS-SS7-S1	1.5 to 2	11-Jun-03														•			
	NBS-SS7-S2	1.5 to 2	11-Jun-03														•			
	NBS-SS6-0.5-1	0.5 to 1	24-Feb-03	•									•		•	•	•			
	NBS-SS8-0.5-1.5	0.5 to 1.5	24-Feb-03	•								•	•	•	•	•	•			
	NBS-SS9-1-2	1 to 2	24-Feb-03	•								•	•	•	•	•	•			
	NBS-SS10-1-2	1 to 2	24-Feb-03	•								•	•	•	•	•	•			
	NBS-SS11-1-2	1 to 2	24-Feb-03	•									•		•	•	•			
	NBS-SS12-1-1.5	1 to 1.5	24-Feb-03	•									•		•	•	•			
	NBS-SS13-0.5-1.5	0.5 to 1.5	24-Feb-03	•								•	•	•	•	•	•			

Table 2
Sample Identification Key and Laboratory Analyses Performed
North Basin Strip - II
Berkeley, California
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	Soil Sample ID	Sample Depth (ft bgs)	Sample Collection Date	Metals by EPA Method 3050/6020								VOCs by EPA Method 8260	PCBs by EPA Method 8082	Chlorinated Pesticides by EPA Method 8081	PAHs by EPA Method 8270C	Total Petroleum Hydrocarbons		Soil Gas Analyses[a]		
				Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
Area D	NBS-SS14-0.5-1.5	0.5 to 1.5	24-Feb-03	•								•	•	•	•	•	•			
	NBS-SS14-N1	1.5 to 2	11-Jun-03						•											
	NBS-SS14-N2	1.5 to 2	11-Jun-03						•											
	NBS-SS14-E1	1.5 to 2	11-Jun-03						•											
	NBS-SS14-S1	1.5 to 2	11-Jun-03						•											
	NBS-SS14-W1	1.5 to 2	11-Jun-03						•											
	NBS-SS15-1-2	1 to 2	24-Feb-03	•									•		•	•	•			
Area A	NBS-SB1-1-2	1 to 2	25-Feb-03	•									•		•	•	•			
	NBS-SB1-N1	1.5 to 2	11-Jun-03		•	•	•	•	•		•									
	NBS-SB1-N2	1.5 to 2	11-Jun-03		•			•												
	NBS-SB1-E1	1.5 to 2	11-Jun-03		•	•	•	•	•		•									
	NBS-SB1-E2	1.5 to 2	11-Jun-03		•			•			•									
	NBS-SB1-E4	1.5 to 2	27-Jun-03		•			•			•									
	NBS-SB1-E6	1.5 to 2	27-Jun-03		•			•			•									
	NBS-SB1-E7	1.5 to 2	27-Jun-03		•			•			•									
	NBS-SB1-E8	1.5 to 2	27-Jun-03		•			•			•									
	NBS-SB1-S1	1.5 to 2	11-Jun-03		•	•	•	•	•		•									
	NBS-SB1-S2	1.5 to 2	11-Jun-03		•			•	•											
	NBS-SB1-S3	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S4	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S5	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S6	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S7	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S8	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S9	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S10	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-S11	1.5 to 2	27-Jun-03		•			•												
	NBS-SB1-S12	1.5 to 2	27-Jun-03		•			•	•											
	NBS-SB1-W1	1.5 to 2	11-Jun-03		•	•	•	•	•		•									
	NBS-SB1-203	1.5 to 2	13-Aug-03					•												
	NBS-SB1-209	1.5 to 2	13-Aug-03					•												

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Sample Identification Key and Laboratory Analyses Performed

North Basin Strip - II
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	Soil Sample ID	Sample Depth (ft bgs)	Sample Collection Date	Metals by EPA Method 3050/6020								VOCs by EPA Method 8260	PCBs by EPA Method 8082	Chlorinated Pesticides by EPA Method 8081	PAHs by EPA Method 8270C	Total Petroleum Hydrocarbons		Soil Gas Analyses[a]		
				Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
Area A	NBS-SB1-210	1.5 to 2	13-Aug-03					●			●									
	NBS-SB1-211	1.5 to 2	13-Aug-03					●												
	NBS-SB1-216	1.5 to 2	13-Aug-03					●												
	NBS-SB1-218	1.5 to 2	13-Aug-03					●			●									
	NBS-SB1-221	1.5 to 2	13-Aug-03					●			●									
	NBS-SB1-222	1.5 to 2	13-Aug-03					●			●									
	NBS-SB1-223	1.5 to 2	13-Aug-03					●												
	NBS-SB1-224	1.5 to 2	13-Aug-03					●												
	NBS-SB1-225	1.5 to 2	13-Aug-03					●												
	NBS-SB1-226	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-227	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-228	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-229	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-230	1.5 to 2	13-Aug-03					●												
	NBS-SB1-234	1.5 to 2	13-Aug-03					●												
	NBS-SB1-237	1.5 to 2	13-Aug-03					●												
	NBS-SB1-238	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-239	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-240	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-242	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-243	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-244	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-245	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-247	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-248	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-249	1.5 to 2	13-Aug-03		●			●												
	NBS-SB1-250	1.5 to 2	13-Aug-03					●												
	NBS-SB1-251	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-252	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-253	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-255	1.5 to 2	13-Aug-03		●			●	●											
	NBS-SB1-256	1.5 to 2	13-Aug-03		●			●	●											

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Sample Identification Key and Laboratory Analyses Performed
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				Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
	NBS-SB1-257	1.5 to 2	13-Aug-03		•			•	•											
	NBS-SB1-261	1.5 to 2	14-Aug-03						•											
	NBS-SB1-262	1.5 to 2	14-Aug-03						•											
	NBS-SB1-263	1.5 to 2	14-Aug-03		•			•	•											
	NBS-SB1-264	1.5 to 2	14-Aug-03		•			•	•											
	NBS-SB1-269	1.5 to 2	14-Aug-03						•											
	NBS-SB1-270	1.5 to 2	14-Aug-03						•											
	NBS-SB1-271	1.5 to 2	14-Aug-03						•											
	NBS-SB1-272	1.5 to 2	14-Aug-03		•			•	•											
	NBS-SB1-3-4	3 to 4	25-Feb-03	•								•	•	•	•	•	•			
	NBS-SB2-0.5-1.5	0.5 to 1.5	25-Feb-03	•									•		•	•	•			
	NBS-SB2-N1	1.5 to 2	11-Jun-03														•			
	NBS-SB2-E1	1.5 to 2	11-Jun-03														•			
	NBS-SB2-E2	1.5 to 2	11-Jun-03														•			
	NBS-SB2-S1	1.5 to 2	11-Jun-03														•			
	NBS-SB2-W1	1.5 to 2	11-Jun-03														•			
	NBS-SB2-3-4	3 to 4	25-Feb-03	•								•	•	•	•	•	•			
	NBS-SB3-3-4	3 to 4	25-Feb-03	•								•	•	•	•	•	•			
	NBS-SB4-1-2	1 to 2	24-Feb-03	•									•		•	•	•			
	NBS-SB4-5-6	5 to 6	24-Feb-03	•								•	•	•	•	•	•			
Area C	NBS-SB5-1-2	1 to 2	24-Feb-03	•									•		•	•	•			
Area C	NBS-SB5-N1	1.5 to 2	11-Jun-03						•											
Area C	NBS-SB5-E1	1.5 to 2	11-Jun-03						•											
Area C	NBS-SB5-S1	1.5 to 2	11-Jun-03						•											
Area C	NBS-SB5-W1	1.5 to 2	11-Jun-03						•											
Area C	NBS-SB5-7-8	7 to 8	24-Feb-03	•								•	•	•	•	•	•			
	NBS-SB6-1-2	1 to 2	24-Feb-03	•									•		•	•	•			
	NBS-SB6-8-9	8 to 9	24-Feb-03	•								•	•	•	•	•	•			

Table 2
Sample Identification Key and Laboratory Analyses Performed

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Berkeley, California
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			Title 22 Metals	Arsenic	Cadmium	Copper	Lead	Total Mercury	Molybdenum	Zinc					TPHg and BTEX by EPA Method 8015B/8021B	TPHd by EPA Method 8015B	Gases by ASTM D-1945	Methane Only by EPA Method 18	H_2S by ASTM D-5504
GROUNDWATER																			
NBS-SB1-W	10	25-Feb-03	•								•	•	•	•	•	•			
NBS-SB2-W	8	25-Feb-03	•								•	•		•	•	•			
NBS-SB3-W	10	25-Feb-03	•								•	•		•	•	•			
NBS-SB4-W	13	24-Feb-03	•								•	•	•	•	•	•			
NBS-SB4-WDUP	13	24-Feb-03	•								•	•	•	•	•	•			
NBS-SB4-W1	13	11-Jun-03		•															
NBS-SB4-W1 DUP	13	11-Jun-03		•															
NBS-SB4-W2	13	11-Jun-03		•															
NBS-SB5-W	17	24-Feb-03	•								•	•		•	•	•			
NBS-SB6-W	16	24-Feb-03	•								•	•	•	•	•	•			
SOIL GAS																			
NBS-SG1-3	3	25-Feb-03															•		•
NBS-SG1-W	3	12-Jun-03																•	
NBS-SG1-W DUP	3	12-Jun-03																•	
NBS-SG1-E	3	12-Jun-03																•	
NBS-SG2-3	3	25-Feb-03															•		•
NBS-SG2-3D	3	25-Feb-03															•		•
NBS-SG3-3	3	25-Feb-03															•		•
NBS-SG4-5	5	25-Feb-03															•		•

Table 2
Sample Identification Key and Laboratory Analyses Performed
North Basin Strip - II
Berkeley, California
(EKI A20056.00)

Notes
(a) See Table 11 for field methane and combustible gas measurements.

Abbreviations
ft bgs = feet below ground surface
VOCs = volatile organic compounds
PCBs = polychlorinated biphenyls
PAHs = polycyclic aromatic hydrocarbonds
TPHg - total petroleum hydrocarbons as gasoline
BTEX = benzene, toluene, ethylbenzene, and xylenes
TPHd = total petroleum hydrocarbons as diesel

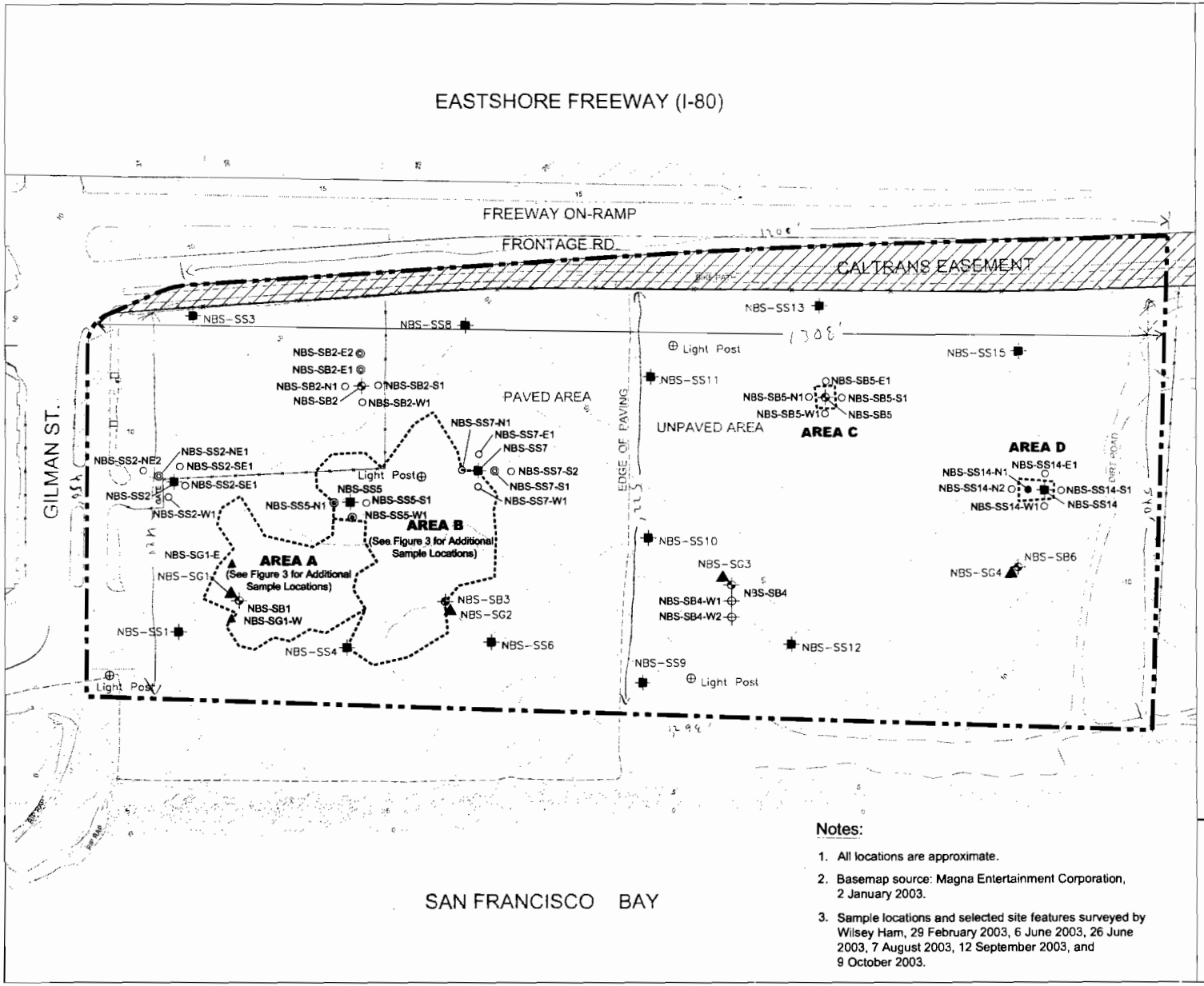
Table 3
Summary of Locations Exceeding Eastshore State Park Action Levels and Associated Risk Management and/or Remedial Actions--Completed or On-going

North Basin Strip - II
Berkeley, California
(EKI A20056.00)

Area of Concern	Identified Chemicals Exceeding Eastshore Action Levels	Risk Management and/or Remedial Action [a]
SOIL		
NBS-SB1 (Area A)	Arsenic, Cadmium, Copper, Lead, Mercury, Zinc	• Excavated to a depth of 2 ft bgs and laterally to the nearest sampling location not exceeding Action Levels, backfilled with 2 feet of clean soil cover. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
NBS-SB2	TPHd	• Considered contiguous with other TPHd areas; manage in place with existing asphalt cap or capping the area with asphalt, concrete, buildings, certain playing field surfaces, or two feet of imported clean fill soil, placed as part of the re-use by the EBRPD. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
NBS-SB5 (Area C)	Mercury	• Excavated a 20-foot by 20-foot area to 2 ft bgs, backfilled with 2 feet of clean soil cover. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
NBS-SS2	TPHd	• Considered contiguous with other TPHd areas; manage in place with existing asphalt cap or capping the area with asphalt, concrete, buildings, certain playing field surfaces, or two feet of imported clean fill soil, placed as part of the re-use by the EBRPD. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
NBS-SS5 (Area B)	Arsenic, Chromium, Copper, Lead, Molybdenum, Nickel, TPHd	• Excavated to a depth of 2 ft bgs and laterally to the nearest sampling location not exceeding Action Levels, backfilled with 2 feet of clean soil cover, in accordance with Eastshore Park RRMP protocols. TPHd considered contiguous with other TPHd areas; manage in place with existing asphalt cap or capping the area with asphalt, concrete, buildings, certain playing field surfaces, or two feet of imported clean fill soil, placed as part of the re-use by the EBRPD. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
NBS-SS7	TPHd	• Considered contiguous with other TPHd areas; manage in place with existing asphalt cap or capping the area with asphalt, concrete, buildings, certain playing field surfaces, or two feet of imported clean fill soil, placed as part of the re-use by the EBRPD. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
NBS-SS9	Chromium	• No action. See Appendix A.
NBS-SS14 (Area D)	Mercury	• Excavated a 20-foot by 40-foot area to 2 ft bgs, backfilled with 2 feet of clean soil cover. Inspect and maintain in accordance with Eastshore Park RRMP protocols.
GROUNDWATER		
NBS-SB2	Lead	• No action. See Appendix A.
NBS-SB4	Arsenic	• No action. See Appendix A.
SOIL GAS		
NBS-SG1	Methane	• Site-wide risk management measures such as health and safety measures and monitoring for workers performing subgrade activities.

Notes:
(a) Risk management measures and/or remedial actions are described in more detail in the East Shore Park RRMP and the RRMP Addendum text.

Abbreviations:
ft bgs = feet below ground surface
RRMP = Remediation and Risk Management Plan
TPHd = total petroleum hydrocarbons in diesel range



N

0 120 240

(Approximate Scale in Feet)

Legend:

- Surface Soil Sample
- Soil Borehole with Grab Groundwater Sample
- Soil Gas Sample
- Utilities
- Step-Out Shallow Soil Sampling Location; Identified Chemicals of Concern Not Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; One or More Metals Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; TPHd Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; TPHd and One or More Metals Detected Above East Shore Park Action Levels
- Step-Out Grab Groundwater Sampling Location; Arsenic Not Detected Above East Shore Park Action Levels
- Parcel Boundary
- Edge of Pavement
- Fence
- Bike Path
- Caltrans Easement
- Excavation Areas with 2-Feet Imported Fill Soil
- TPHd — Total Petroleum Hydrocarbons Quantified as Diesel

Notes:

1. All locations are approximate.
2. Basemap source: Magna Entertainment Corporation, 2 January 2003.
3. Sample locations and selected site features surveyed by Wilsey Ham, 29 February 2003, 6 June 2003, 26 June 2003, 7 August 2003, 12 September 2003, and 9 October 2003.

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North Basin Strip - II
Field Investigation Sampling Locations and Sample Identification Key

Berkeley, CA
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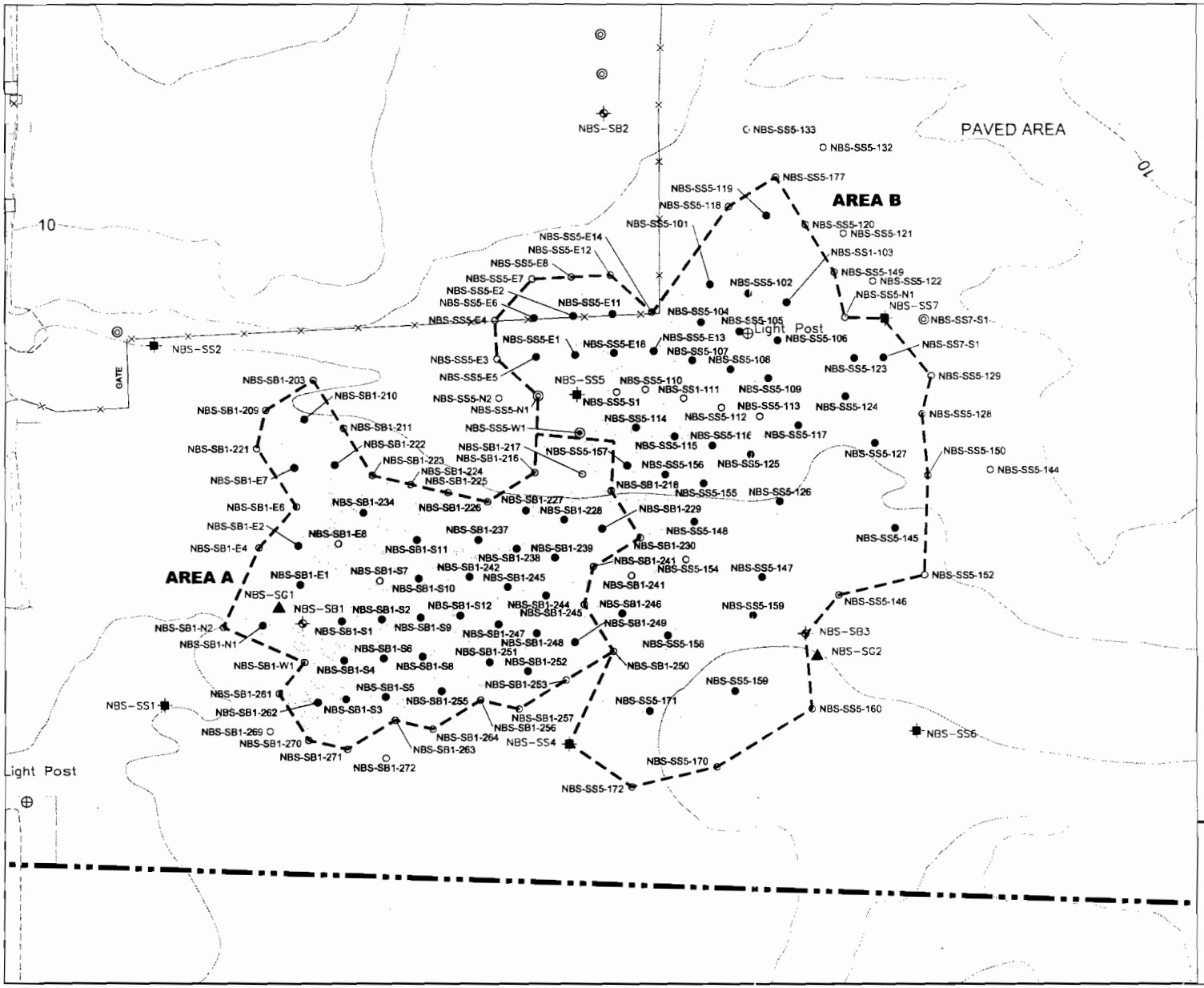
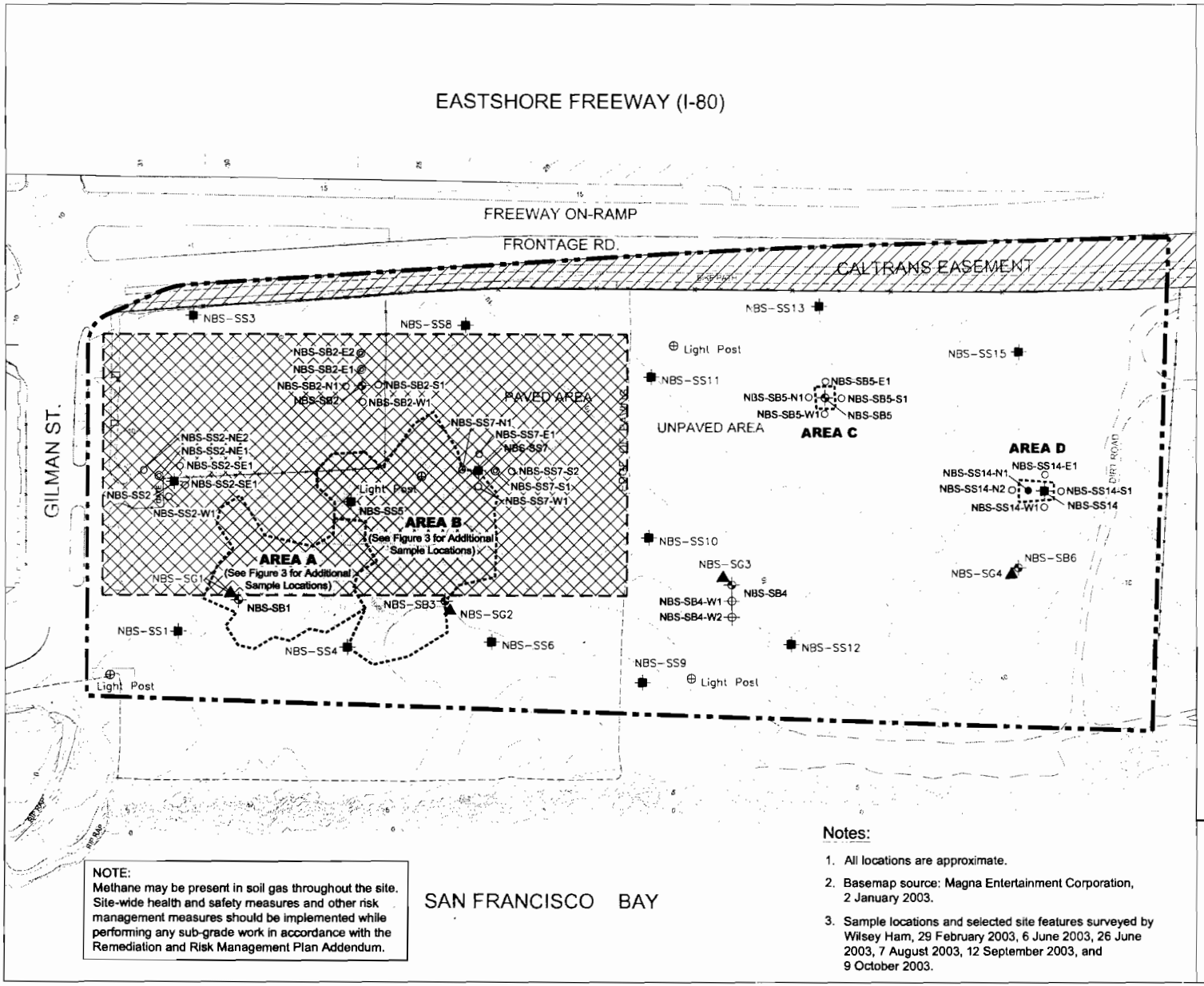
EKI A20056.00
Figure 2

G:\A20056.00\Nov03\Report3\Figure 02 - Field Investigation.dwg



G:\A20066.00\Nov03\Report3\Figure 03 - Field Investigation Sampling Analysis.dwg



NOTE:
Methane may be present in soil gas throughout the site. Site-wide health and safety measures and other risk management measures should be implemented while performing any sub-grade work in accordance with the Remediation and Risk Management Plan Addendum.

Notes:

1. All locations are approximate.
2. Basemap source: Magna Entertainment Corporation, 2 January 2003.
3. Sample locations and selected site features surveyed by Wilsey Ham, 29 February 2003, 6 June 2003, 26 June 2003, 7 August 2003, 12 September 2003, and 9 October 2003.

N

0 120 240

(Approximate Scale in Feet)

Legend:

- Surface Soil Sample
- Soil Borehole with Grab Groundwater Sample
- Soil Gas Sample
- Utilities
- Step-Out Shallow Soil Sampling Location; Identified Chemicals of Concern Not Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; One or More Metals Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; TPHd Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; TPHd and One or More Metals Detected Above East Shore Park Action Levels
- Grab Groundwater Sampling Location; Arsenic Not Detected Above East Shore Park Action Levels
- Parcel Boundary
- Edge of Pavement
- Fence
- Bike Path
- Excavation Areas with 2-Feet Imported Fill Soil
- Approximate Area with Potential of TPHd in Soil to be Managed In-Place with Asphalt, Buildings, Paving, Two Feet of Imported Fill, or Other Approved Surface Cover. Post Remediation Shaded Areas Contain 2-Feet Imported Fill Soil.

TPHd — Total Petroleum Hydrocarbons Quantified as Diesel

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North Basin Strip - II
Remediation and Risk Management Areas

Berkeley, CA
December 2003
EKI A20056.00
Figure 4

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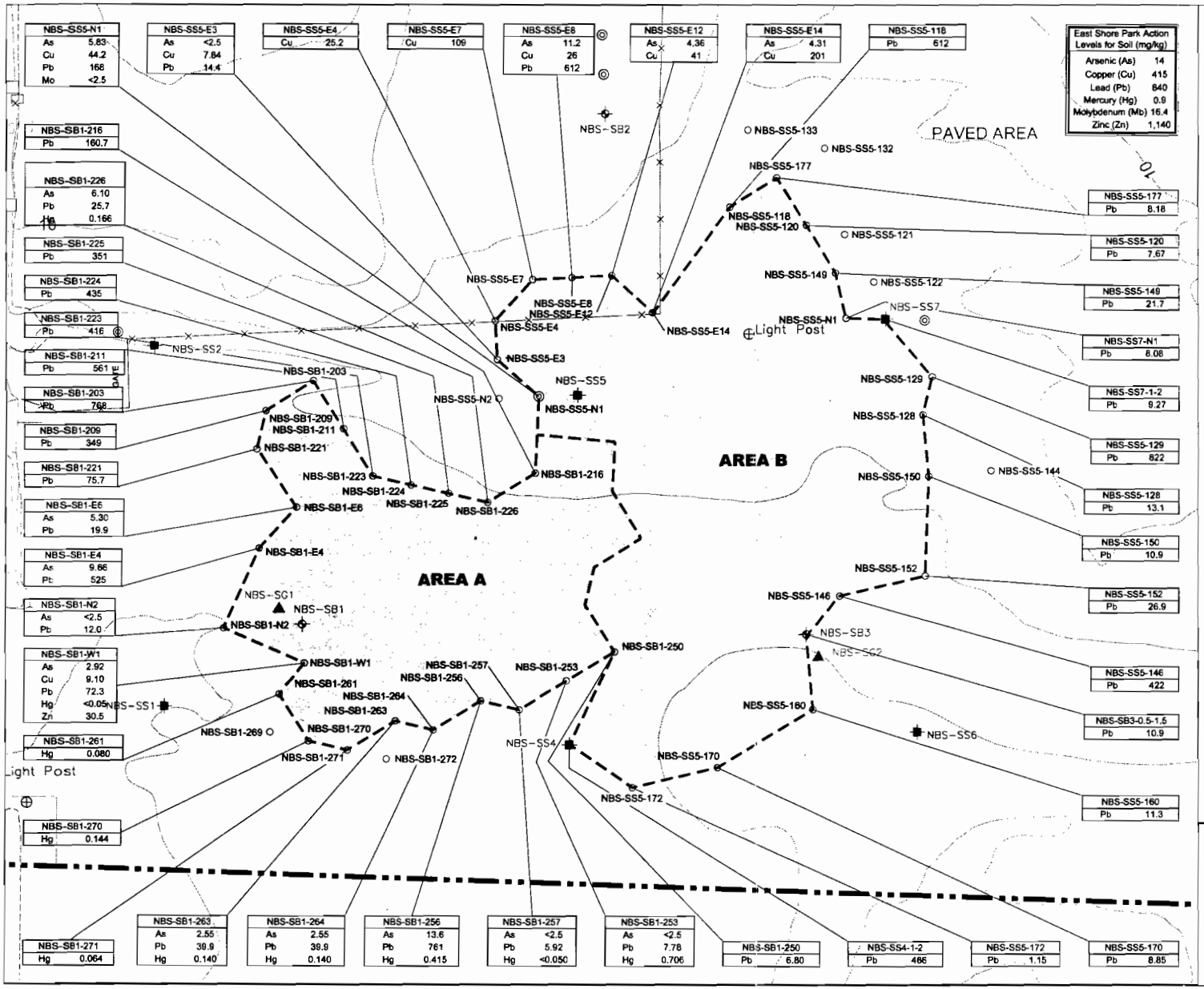

Legend:

- Shallow Soil Sample
- Soil Borehole with Grab Groundwater Sample
- Soil Gas Sample
- Utilities
- Step-Out Shallow Soil Sampling Location; Identified Chemicals of Concern Not Detected Above East Shore Park Action Levels
- Step-Out Shallow Soil Sampling Location; only Total Petroleum Hydrocarbons as Diesel Detected Above East Shore Park Action Levels
- Parcel Boundary
- Edge of Pavement
- Fence
- Excavation Areas with 2-Feet Imported Fill Soil

Notes:

1. All locations are approximate. See Figure 2 for location at property.
2. Basemap source: Magna Entertainment Corporation, 2 January 2003.
3. Sample locations and selected site features surveyed by Wilsey Ham, 29 February 2003, 6 June 2003, 26 June 2003, 7 August 2003, 12 September 2003, and 9 october 2003.
4. Data boxes show metals concentrations that are less than East Shore Park Action Levels and that define the excavation boundary. All concentrations in mg/kg.

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North Basin Strip - II
Shallow Soil Data for Samples Defining Excavation Boundary (Areas A and B)
Berkeley, CA
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EKI A20056.00
Figure 5

G:\A20055.00\Nov03\Report3\Figure 05 - Shallow Soil Data Samples.dwg