Appendix O

Revised Hazardous Materials Report For Humboldt Road Burn Dump Area, State Route 32 Widening Project

Revised

HAZARDOUS MATERIALS REPORT
For Humboldt Road Burn Dump Area
STATE ROUTE 32 WIDENING PROJECT
STATE ROUTE 99 TO YOSEMITE DRIVE
CHICO, CALIFORNIA

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Revised

HAZARDOUS MATERIALS REPORT
For Humboldt Road Burn Dump Area
STATE ROUTE 32 WIDENING PROJECT
STATE ROUTE 99 TO YOSEMITE DRIVE
CHICO, CALIFORNIA

1.0 Introduction

This report has been prepared to assess issues related to the occurrence of hazardous materials along the alignment of a proposed highway widening project. The proposed project is located on State Route (SR) 32 between SR 99 to the west and Yosemite Drive to the east, within the City of Chico, Butte County, California (Figure 1). The purpose of the proposed project is to accommodate additional capacity needed as a result of approved and planned development on and near the SR 32 corridor between SR 99 and Yosemite Drive. The proposed project would widen and improve approximately 2.3 miles of SR 32, beginning at Fir Street at the west end of the project corridor and extending east past Yosemite Drive where the roadway width would transition from four lanes to two lanes. As part of the project, the bridge over Dead Horse Slough to the east of Forest Avenue would be widened and the box culvert east of Bruce Road would be extended. The Area of Potential Effect (APE) at Bruce Road includes an area southeast of the intersection with SR 32, extending approximately 150 feet east of Bruce Road and 125 feet south of SR 32, that would allow the construction of a traffic roundabout.

The focus of this report is the area referred to as the Humboldt Road Burn Dump (HRBD). The HRBD is located east of Bruce Road and south of SR 32. The HRBD impacts are also potentially associated with the south branch of Dead Horse Slough where it passes under SR 32 in the box culvert east of Bruce Road. The revisions to this report are based on the scope of work presented in the *Draft Work Plan Sediment Sampling South Branch of Dead Horse Slough State Route 32 Widening Project Chico, California* prepared by EMKO Environmental, Inc. for Mark Thomas & Company in October 2005. This report is included as an attachment to the project-wide Hazardous Materials Report prepared by Taber Consultants.

2.0 Objective and Scope

The specific objective of this report is the identification of issues related to toxic substances or hazardous materials from the HRBD that may affect the preferred alignment, cost, or schedule of the proposed widening of SR 32 between Fir Street and Yosemite Drive.

The scope of work conducted to prepare this report included review of available public information regarding the potential presence of toxic substances or hazardous materials along or adjacent to the proposed alignment. To facilitate this review, an Environmental Data Resources, Inc. (EDR) DataMap Corridor Study and historical aerial photographs were obtained. The EDR Study and aerial photographs are included in the Hazardous Materials Report prepared by Taber Consultants. Based on the EDR Study and the photographs, additional documents available from the City of Chico and the California Regional Water Quality Control Board were reviewed for selected sites.

This report describes known or suspected areas of toxic substances or hazardous materials related to the HRBD that could affect selection of the alignment, construction costs, or construction schedule. The location, extent, and general distribution of waste materials at the HRBD are shown on Figure 2-1. This report, however, is not a Phase 1 Site Assessment suitable for real-estate transaction due diligence purposes.

3.0 Project Setting

A detailed description of the project setting is provided in the Project Study Report prepared by Mark Thomas and Company, and the project-wide Hazardous Materials Report prepared by Taber Consultants. Presented in this section is a description of the general geologic and hydrogeologic conditions relevant to conditions related to the HRBD. The discussion of the geologic and hydrogeologic conditions is provided as a basis to understand the potential for toxic substances or hazardous materials to be present within both the soil horizon and groundwater.

The information presented in this section is derived primarily from the *Remedial Investigation Report, Geology and Groundwater, Humboldt Road Burn Dump, Chico, California* (EMKO Environmental, Inc., June 2001).

East of Bruce Road, the surface geology consists of a bedrock unit referred to as a “fanglomerate”, which is a volcanic mudslide containing rocks and boulders within a fine-grained matrix of volcanic ash. Locally, this unit is sometimes referred to as the “lavacap”, although it does not contain any material that would be classified geologically as lava. The fanglomerate unit is very hard and dense, and contains few fractures. It has a very low permeability and does not provide a significant pathway for percolation of groundwater. Any groundwater that is present within the fanglomerate occurs in isolated lenses and these lenses do not contain appreciable quantities of groundwater. In two monitoring wells installed at the HRBD near Dead Horse Slough, groundwater is present at depths ranging from 12 feet below ground surface (ft bgs) to 40 ft bgs.

West of Bruce Road, the surface geology consists of unconsolidated valley fill sediments underlain by the Tuscan Formation. The Tuscan Formation consists

of layers of sandstone and volcanic material. At an irrigation well at Hank Marsh Junior High School, the depth to groundwater is approximately 120 ft bgs. At another well located approximately 750 feet due south of the intersection of SR 32 and Bruce Road, the depth to groundwater is approximately 125 ft bgs to 130 ft bgs. At both of these locations, groundwater is not present within the shallower valley fill sediments, but occurs within the underlying Tuscan Formation. To the west of Forest Avenue, however, groundwater is present within the unconsolidated valley fill sediments at depths of 13 ft bgs to 20 ft bgs.

The anticipated maximum depth of construction activity varies from approximately 3 to 4 feet or less for the road construction activity, to approximately 8 to 10 feet for any utility relocation, landscaping and traffic signal and lighting work. These activities will not occur at depths that are likely to encounter groundwater. The ground disturbance associated with the proposed new bridge at Dead Horse Slough east of Forest Avenue would require the construction of footings and possibly pile foundations. The depth of construction activity for this work is estimated at 20 to 30 feet deep. As discussed above, between Forest Avenue and Bruce Road, the depth to groundwater has been measured at over 100 ft bgs. Based on this information, it is not expected that construction activities for the proposed project will encounter groundwater. Therefore, the analysis presented below focuses on the potential occurrence of toxic substances and hazardous materials in soil within the project area.

4.0 Data Review

An initial data review was conducted based on the EDR DataMap Corridor Study. Based on the information obtained from the EDR study, additional publicly-available sources of information were also reviewed. The discussion below pertains only to conditions at and related to the HRBD.

The HRBD is found on the Cortese list as a solid waste disposal facility from which there is known migration, the Integrated Waste Management Board's Solid Waste Facility/Landfill Sites database, and the Waste Management Unit Database System of the State Water Resources Control Board. The HRBD contains a substantial volume of waste material. Although this site has been undergoing remedial action over the past three years, residual waste may still be present in locations that could affect the proposed widening of SR 32.

Aerial photographs were obtained from EDR for five different years that encompass past activities along the SR 32 corridor from SR 99 to Yosemite Drive. The selected years are 1957, 1962, 1972, 1984, and 1998. Copies of the aerial photographs are included in Attachment C. More recent aerial photographs were not obtained for this study because EMKO Environmental, Inc. has been involved in numerous studies of the Humboldt Road Burn Dump and surrounding areas for the City of Chico since 1999. These studies have included review of more recent aerial photographs and sampling along the SR 32 corridor

from SR 99 to east of Yosemite Drive. The relevant findings of these more recent studies are summarized below.

As discussed above, the City of Chico has conducted extensive investigations of the HRBD. The information presented below summarizes information relevant to the proposed SR 32 widening project.

As part of the Remedial Investigation of the HRBD, soil samples were collected in the area north of the historic disposal areas and south of SR 32 (*Remedial Investigation Report, Soil, Waste, and Sediment, Humboldt Road Burn Dump, Chico, California*, EMKO Environmental, Inc., May 2001). Contaminants were not detected in these areas with two exceptions. Visible waste material, with elevated concentrations of lead, was found in sediments in Dead Horse Slough less than 100 feet south of SR 32. In addition, waste material with elevated concentrations of lead was also identified immediately adjacent to the east side of Bruce Road approximately 400 feet south of SR 32. The lead concentration within the Dead Horse Slough sediments was 264 milligrams per kilogram (mg/kg, equivalent to parts per million, or ppm). The lead concentration in the waste material adjacent to Bruce Road exceeded 2,000 mg/kg in some samples. The cleanup goal for lead established for the Humboldt Road Burn Dump is 224 mg/kg.

Sampling was conducted on July 13, 2000 to determine the background concentration of lead and other metals, pesticides, polychlorinated biphenyls (PCBs), and dioxins/furans (*Remedial Investigation Report, Soil, Waste, and Sediment, Humboldt Road Burn Dump, Chico, California*, EMKO Environmental, Inc., May 2001). Two of these samples were located along SR 32. Sample BKGD-3 was collected along the south side of SR 32 approximately 1.5 miles east of Bruce Road. Sample BKGD-4 was collected adjacent to the park-and-ride parking lot within the median of SR 32 to the east of SR 99. Pesticides and PCBs were not detected in the background samples. Reported dioxin/furan levels were within naturally-occurring background levels. The concentrations of chromium, lead, vanadium, and zinc in the two background samples collected along SR 32 were slightly higher than the concentrations in other background samples collected in the area. It is likely that these slightly elevated concentrations are the result of fallout from vehicular traffic (e.g. leaded gas exhaust, brake-pad wear, etc.). The concentrations of metals detected in the two background samples collected along SR 32, however, are well below concentrations that would be of concern for human health and are not indicative of the presence of toxic substances or hazardous materials that could affect the proposed project.

Throughout most of the year, surface water is not present within Dead Horse Slough at the two locations where the slough crosses SR 32. During the rainy season, however, appreciable flows can occur within the slough. Flows coming from the south branch of Dead Horse Slough pass through the HRBD. As part of

the Remedial Investigation of the HRBD, surface-water samples were collected from several locations along Dead Horse Slough (*Remedial Investigation Report, Geology and Groundwater, Humboldt Road Burn Dump, Chico, California*, EMKO Environmental, Inc., June 2001). Toxic substances and hazardous materials were not detected in these surface-water samples.

Remediation activities were conducted at the Humboldt Road Burn Dump by private parties in 2004 and 2005, and by the Chico Redevelopment Agency in 2005. The remediation activities consisted primarily of the excavation of waste materials and contaminated soils and sediments, and placement of these materials into two permitted consolidation cells located along Humboldt Road to the east of Bruce Road. Oversight of the remediation activities was conducted by the California Regional Water Quality Control Board – Central Valley Region (RWQCB).

There are two reports related to the remediation of the Humboldt Road Burn Dump currently available for public review on the RWQCB web site (http://www.waterboards.ca.gov/centralvalley/public_notices/index.html#SiteCleanup). One of these reports, *Confirmation Sampling Results, Humboldt Road Private Properties Operational Unit, APN 011-030-016, APN 011-030-136, APN 011-030-138, APN 002-180-084, APN 002-180-086* (Vestra Resources, Inc., September 2005), describes the cleanup activities conducted by private parties. This report documents that waste material and contaminated sediments within Dead Horse Slough located within at least 100 feet of SR 32 were not removed and are still present within the creek bed. Waste material was also identified extending underneath the pavement on the east side of Bruce Road within 400 feet south of SR 32. This waste material was not removed due to the disruption it would cause to traffic on Bruce Road. Since the waste material is contained under the pavement, it does not pose a current risk to human health or the environment. If future roadwork occurs in this area, measures will need to be taken to protect public health, prevent releases to the environment, and to properly dispose of the residual waste material, in accordance with applicable regulations and permit requirements.

The report *Humboldt Road Burn Dump, Confirmation Sampling Report, Chico Redevelopment Agency Parcel Located West of Bruce Road, Assessor's Parcel Numbers 002-180-087, 002-180-088, 002-180-089, 002-180-095* (Vector Engineering, Inc., October 2005) describes the cleanup activities conducted by the Chico Redevelopment Agency on the west side of Bruce Road. This report documents that all waste material and contaminated soils were removed from the parcels west of Bruce Road. In addition, this report confirms that residual waste material is not present along the west side of Bruce Road within the right-of-way or extending under the pavement.

5.0 Sediment Sampling Results

Based on the results presented in *Confirmation Sampling Results, Humboldt Road Private Properties Operational Unit, APN 011-030-016, APN 011-030-136, APN 011-030-138, APN 002-180-084, APN 002-180-086* (Vestra Resources, Inc., September 2005), additional sediment sampling along the south branch of Dead Horse Slough within the public right-of-way was recommended in the October 2005 *Draft Work Plan Sediment Sampling South Branch of Dead Horse Slough State Route 32 Widening Project Chico, California* prepared by EMKO Environmental, Inc (the "Draft Work Plan"). The Draft Work Plan included the collection of a sufficient number of samples to be representative of the potential variability within the sediment. The Draft Work Plan was approved by CalTrans in January 2006.

On January 31, 206, a total of five sediment samples were collected. Two samples were collected within the right-of-way upstream of the box culvert, two samples were collected within the right-of-way downstream of the box culvert, and one replicate sample was collected for quality assurance/quality control (QA/QC) purposes. During the Remedial Investigation of the HRBD, three constituents of concern were identified in the sediment within Dead Horse Slough. These three constituents of concern are antimony, arsenic, and lead. Therefore, the sediment samples collected on January 31, 2006 were analyzed for antimony, arsenic, and lead as described in the Draft Work Plan.

All five samples were collected from areas of sediment accumulated within the bed of the south branch of Dead Horse Slough. The sediment typically consisted of clay, sand, and small gravel with abundant small pieces of brick, ceramic, and other anthropogenic material. Sample DHS-1 was collected at the southern edge of the public right-of-way on the west side of the stream channel, and just upstream from a storm drain outlet from Bruce Road. Sample DHS-2 was collected at the southern entrance to the box culvert under SR 32 on the west side of the stream channel. Sample DHS-3 is a duplicate sample of DHS-2. Sample DHS-4 was collected from the western side of the stream channel at the northern edge of a concrete buttress extending from the north side of the box culvert under SR 32. Sample DHS-5 was collected from a gravel point bar in the center of the stream channel approximately 75 feet north of the northern end of the box culvert under SR 32.

The laboratory analytical results from the sediment samples are shown in Table 1. Applicable cleanup goals for protection of human health and the environment for HRBD were developed in the *Feasibility Study Report, Humboldt Road Burn Dump, Chico, California,* prepared by EMKO Environmental, Inc., Brown & Caldwell, and Engineering/Remediation Resources Group, Inc., on January 8, 2002 (the "Feasibility Study"). For antimony, the site-specific cleanup goal is 31 milligrams per kilogram (mg/kg), or parts per million (ppm), based on the U.S. EPA Region IX preliminary remediation goal for a residential scenario. For arsenic, the site-specific cleanup goal is 6 mg/kg based on the local background

conditions. For lead, the site-specific cleanup goal is 224 mg/kg based on the California Department of Toxic Substances Control LeadSpread Model.

Comparison of the cleanup goals with the data in Table 1 indicates that the arsenic concentrations at DHS-5 and the lead concentrations at DHS-1 and DHS-5 exceed the HRBD site-specific cleanup goals. In accordance with standard practice, all samples with lead concentrations exceeding 50 mg/kg were also analyzed for soluble lead using the soluble threshold limit concentration (STLC) method. An STLC value in excess of 5 milligrams per liter indicates that the material is a hazardous waste under California regulations for the purpose of remediation, treatment, and disposal. The sample from DHS-1 exceeds the STLC level for lead. An additional analysis of the DHS-1 sample was conducted using deionized water in the waste extraction test (DI-WET). Whereas the STLC test uses an acid extractant, the DI-WET analysis is representative of the potential for the sediments to leach lead under natural conditions in the slough. Soluble lead was not detected in the DI-WET test.

Table 1
Sediment Sample Results
Dead Horse Slough
Chico, California

Sample Location	Total			STLC	DI-WET
	Antimony mg/kg	Arsenic mg/kg	Lead mg/kg	Lead mg/L	Lead mg/L
DHS-1	3.2	5.1	517	9.9	<0.10
DHS-2	0.61	2.9	62	2.8	
DHS-3	0.41	3	40.4		
DHS-4	0.42	2.2	15.7		
DHS-5	5.6	27.8	272	1.4	

Samples collected January 31, 2006

Based on the results of the January 31, 2006 sediment sampling, lead and arsenic are present above HRBD cleanup levels within sediments in Dead Horse Slough within the public right-of-way along SR 32. Recommendations to address the presence of these two metals are presented in the following section.

6.0 Conclusions and Recommendations

Based on the description of the proposed project provided by Mark Thomas and Company, and available information on the geology and hydrogeology of the project area, it is not expected that construction activities for the proposed project will encounter groundwater. Therefore, the analysis presented in this report focuses on the potential occurrence of toxic substances and hazardous materials in soil and sediment within or adjacent to the APE related to the HRBD.

Available documents and data collected specifically for this assessment demonstrate that toxic substances and hazardous materials related to HRBD are present within the APE. The two primary areas of concern include Dead Horse Slough within at least 100 feet to the south of SR 32, and the east side of Bruce Road within approximately 400 feet south of SR 32. Recent remediation activities have resulted in the excavation and consolidation of most of the waste material and contaminated soils and sediment at the Humboldt Road Burn Dump. These remediation activities, however, did not include sediments within Dead Horse Slough within at least 100 feet to the south of SR 32. In addition, waste material is still present extending underneath the pavement on the east side of Bruce Road within 400 feet south of SR 32.

The current APE, including the area to construct the potential traffic roundabout, in the area of the HRBD extends approximately 150 feet east of Bruce and 125 feet south of SR 32. Construction activities are not anticipated to occur in the area where waste material extends beneath the pavement on the east side of Bruce Road approximately 400 feet south of Bruce Road. Construction activities, including replacement of the box culvert under SR 32, however, will occur in the area where impacted sediments are present within the south branch of Dead Horse Slough. Therefore, specific measures will need to be taken to remove the sediments prior to construction.

Most of the waste materials present at HRBD have been contained in on-site disposal cells. These cells, however, have been closed and are not available for disposal of additional waste from the site. The contaminated sediments within the south branch of Dead Horse Slough will need to be removed and transported to a permitted off-site landfill for disposal. Based on the data shown in Table 1, it is assumed that the sediments will need to be disposed of at a Class 1 hazardous waste disposal facility. The nearest such facility to the site is located near Kettleman Hills on the west side of the San Joaquin Valley.

Prior to removal of the waste, a number of permits will need to be obtained. A remediation plan must be approved by either RWQCB or the Department of Toxic Substances Control (DTSC). The RWQCB is currently the administering agency for the HRBD. A report of waste discharge (ROWD), remedial action plan (RAP), and/or remedial design and implementation plan (RDIP) will need to be submitted to the RWQCB to obtain a Waste Discharge Requirement order or permit. If, in the future, however, RWQCB is no longer the administering agency, then it may be appropriate to submit the RAP to the Department of Toxic Substances Control (DTSC). It may also be possible to enter into a Voluntary Cleanup Agreement with DTSC to remove the sediments as part of a Removal Action. In that case, a Removal Action Work Plan (RAWP) would be submitted to DTSC for approval. In addition, a Streambed Alteration Agreement will need to be obtained from the California Department of Fish & Game, and an Authority to Construct permit would need to be obtained from the Butte County Air Quality

Management District. Appropriate documentation to comply with the California Environmental Quality Act (CEQA) would also need to be prepared.

Removal of the affected sediments will need to occur during the summer, when the slough is dry. Streambed restoration activities will need to be completed prior to mid-October to prevent sediment transport or erosion during the subsequent rainy season. The affected sediments are present at the base of the slough, within established stream banks and inside of the existing box culvert. The sediments are located on top of the bedrock surface or the floor of the box culvert. As a result, the affected sediments are readily discernible from unaffected native soils and bedrock. Although a detailed volume estimate has not been prepared, visual reconnaissance in Dead Horse Slough suggests that the total volume of affected sediments within the APE may be a few hundred cubic yards or less. To minimize the volume of material that is removed, it is recommended that consideration be given to removing the affected sediments using manual methods. Use of large construction equipment will result in the excavation and removal of appreciable volumes of native soils and bedrock material, significantly increasing the transportation and disposal costs. The excavated material would be placed in dump trucks operated by a licensed hazardous-waste transporter and delivered to an appropriate disposal facility under applicable manifest documentation.

The transport and disposal costs will be dependent not only on the volume of material to be removed but also the results of waste characterization testing. Therefore, it is not possible to accurately estimate the cost to address the presence of the affected sediments within the APE. Permitting costs could range from $50,000 to $100,000. The excavation, transport, and disposal costs could range from $100,000 to $1,000,000. It is not possible to further refine these costs without a more detailed estimate of the sediment volume and completion of the waste characterization. In addition, the regulatory agencies may charge permit fees and oversight costs.