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ADDITIONAL PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR ASSESSOR'S PARCEL NUMBERS 401-031-038, -044, -046, -055, -059, AND -060 SAMOA PENINSULA BROWNFIELD SITE SAMOA, HUMBOLDT COUNTY, CALIFORNIA

April 2007

Prepared for:

County of Humboldt
Community Development Services
Economic Development Division
520 'E' Street
Eureka, CA 95501

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Project No. 016670-5001-11110

Prepared for:

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APPENDICES

1.0 INTRODUCTION AND BACKGROUND

1.1 Executive Summary

Winzler & Kelly Consulting Engineers (Winzler & Kelly) conducted the Samoa Peninsula Brownfield Site field sampling effort to gather data under the EPA's Brownfields Initiative. The initial *Phase II Environmental Site Assessment* was reported in June 2005 under a Cooperative Agreement with the United States Environmental Protection Agency, Region 9 and Humboldt County Community Development Services Department. The findings of the initial investigation indicated that there were impacts in several areas of the site and additional investigation of these areas was required. In preparation for performing these additional investigations, a *Sampling and Analysis Plan Addendum and Workplan for Additional Sampling and Analysis* was submitted in January 2007, and approved by the Regional Water Quality Control Board and the US EPA (see Appendix A, Correspondence). The work detailed in this report was performed according to the methods detailed in the approved *Sampling and Analysis Plan*. This report presents results from the additional investigation at the subject sites. This investigation found:

Site 2, Lead Assessment around Houses

Lead was detected at levels that would classify the soil as a hazardous waste around all of the five buildings that were retested during this investigation (See Figures 2.2, 2.3, and 2.5 for sample locations). The impacts extended out fifteen feet from the structures, which in most cases was approximately to the property lines. The extent of the impacts at other structures not tested is unknown at this time. The depth of the impacted soil is also not known, as all samples collected were from the surface.

The stormwater samples collected from around the buildings did not have any lead in them at levels above the method detection limits; however, if the soil is disturbed and carried off in stormwater runoff, the lead would likely be transported with it.

Groundwater samples were not collected as part of this or the previous investigations of the houses; however, boring 4-B1 was installed during the previous investigation adjacent to the town and groundwater samples from it were tested for lead. The results from this boring were below the detection limits. This was also true for the previous borings 6-B1, 10-B1, 12-B5, and 15-B3. Boring 1-B2 was the only groundwater sample from this or the previous investigation, which reported lead levels above the detection limit in the groundwater, but these results are likely associated with the petroleum impacts reported at Site 1 (the Soccer Field). Given these results, it appears that the lead impacts are likely restricted to the soil; however, the vertical and horizontal extent of those soil impacts have yet to be defined.

Site 3, Railroad Sites

Boring 3-B17, located within the previous Phase II ESA area "3-B5 to B8" again reported very minor petroleum impacts with only 27 ppm of TPH-MO reported in the surface soil sample (See Figure 2.3, Appendix B for the sample locations). This is similar to the low levels of hydrocarbons detected at this site during the previous investigation. The groundwater sample from boring 3-B17 was below the method detection limits for TPH-D and TPH-MO, so it appears that the low levels of hydrocarbon impacts in this area have not impacted the groundwater.

Boring 3-B18, located within the Phase II ESA area "3-B9 to 3-B12" (see Figure 2.4 for the sample locations), reported low levels of TPH-D/MO in the surface sample (3.1 ppm/46 ppm) and at 5-feet below ground surface (bgs) (25 ppm/150 ppm). TPH-D/MO were below detection limits in the 10-foot bgs sample. The groundwater sample from boring 3-B18 reported 570 ppb TPH-D and 4,600 ppb TPH-MO.

These results indicate that the area around boring 3-B17 has only minor petroleum impacts near the surface that do not extend to depth and do not appear to be impacting groundwater. The soil impacts in that area around boring 3-B18 appear to be more extensive, and there are significant hydrocarbon impacts to the groundwater in this area. The extent of the soil and groundwater impacts in this area is yet to be defined.

Site 6, Teepee Burner

One groundwater sample was collected at this site to reassess the presence of TCDD in the groundwater. This groundwater sample was below the detection limit for all Dioxins/Furans analyzed for. The previous groundwater sample was not filtered prior to analysis and it is likely that minor levels of dioxin that were reported in the groundwater were in fact in the sediment in the groundwater sample. The filtered sample from this investigation did not confirm the presence of TCDD in the groundwater at this site.

Site 12, Rigging Shop

During the previous Phase II investigation, very minor impact from TPH-MO (33 ppm) was detected in the soils at the surface and 18-inches bgs, but not in the groundwater. The soil samples collected in the previous investigation were 4-point composite samples. In order to define the extent of impacts, four more discrete samples were collected from around the perimeter of the existing slab (see Figure 2.4 for the sample locations). The soil samples from Boring 12-B6 reported 1.2 and 1.0 ppm of TPH-D at the surface and 18-inches bgs respectively, and 76 and 35 ppm TPH-MO at the surface and 18-inches respectively. Boring 12-B7 reported 8.5 and 21 ppm of TPH-D at the surface and 18-inches bgs, and 40 and 98 ppm TPH-MO at the surface and 18-inches respectively. Boring 12-B8 was below the detection limit for TPH-D and TPH-MO in all soil samples. Boring 12-B9 reported 19 ppm TPH-MO in the surface sample and below detection limits for TPH-D and MO in all other samples.

The impacts in this area appear to be to the southwest, toward, and possibly related to the impacts reported at boring 3-B18. The extent of the impacts in this direction has not been defined.

Site 13, Garages near Cookhouse

During the previous Phase II investigation, this site had minor impacts from TPH-D (9.3 ppm) and TPH-MO (160 ppm) detected in the soils, all in samples collected within 6-inches of the surface. Nothing was reported in the deeper samples collected at 18- and 36-inches below ground surface. Additional sampling was performed to confirm the presence and extent of the TPH-D/MO impacts in the soil and groundwater. A total of three borings (13-B7, 13-B8, and 13-B9) were installed at this site (see Figure 2.6, Appendix B for sample locations) and surface soil and groundwater samples were collected. Borings 13-B7 and 13-B8 reported TPH-MO at 12 and 54 ppm in the surface soil samples, respectively. TPH-D was below the detection limit in these

samples as well as the surface soil sample from boring 13-B9. The surface soil sample from Boring 13-B9 was below the detection limits for TPH-MO as well. The groundwater samples from all three borings were also below the detection limits for TPH-D and TPH-MO.

There appear to be only minor surficial soil impacts from motor oil in this area. The soil impacts do not extend to 1.5-feet bgs and have not impacted the groundwater.

Site 17, Former Lumber and Log Storage

Minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) were detected in this area during the previous Phase II investigation. To address Regional Board concerns that low concentrations of TPH-D/ MO at this site may impact groundwater, a total of three borings were installed. Groundwater samples were collected from three borings (17-B21, 17-B22, and 17-B23), which were placed near the three sample locations that exhibited the highest levels of TPH-D/ MO (17-B10, 17-B16, & 17-B20) (see Figure 2.7). Surface soil samples were collected at each location and analyzed for TPH-D/MO with silica gel cleanup. Minor impacts from TPH-MO were reported in the surface soil samples from boring 17-B21 (24 ppm) and 17-B22 (31 ppm). The groundwater samples from all boring were below the detection limit for TPH-D and TPH-MO.

There appear to be minor surficial soil impacts from Motor Oil in this area, which have not impacted the groundwater.

Site 18, Background Soil Sample Area

Background samples were collected for the analysis of arsenic in soils and groundwater. Three separate borings were installed (see Figure 2.1 for boring locations). Boring 18-B4 reported arsenic at 2.741 ppm in the surface soil sample and below the detection limit of 2.0 ppb in the groundwater sample. Boring 18-B5 reported arsenic at 3.147 ppm in the soil sample and below the detection limit in the groundwater sample. Boring 18-B6 reported arsenic at 2.84 ppm in the soil sample and below the detection limit in the groundwater sample. So it appears that the background soil arsenic level is approximately 3 ppm. This is consistent with other soil samples collected across the site except for the soil samples collected at 2-LS17 to 20 (arsenic levels from 13.66 to 15.15 ppm).

Background levels of arsenic in the groundwater appear to be below 2 ppb. Groundwater samples collected at 3-B18 (3.0 ppb), 17-B21 (3.6 ppb), and 13-B8 (6.4 ppb) were above the background levels, but still below the 10 ppb Federal Maximum Contamination Level (MCL). The arsenic levels in the groundwater sample from boring 1-B2 (15 ppb) collected during the last Phase II investigation is above background and the Federal MCL. Sites where the arsenic levels have been detected in the soil and groundwater significantly above the background levels should be further investigated to delineate the extent of the impacts (i.e. Site 1 and 2-LS17 to 20).

The conclusions presented herein do not necessarily reflect those of the EPA, but rather reflect the opinion of Winzler & Kelly.

1.2 Site Summary, Location, and Ownership

A. City/County: Samoa, Humboldt County, California

B.	Last Use:	Former Lumber Mill, Residential
C.	Site Name:	Samoa Peninsula
D.	Site Location:	Parcel Numbers 401-031-38, 401-031-44, 401-031-46, 401-031-55, 401-031-59, 401-031-60, and401-031-61 located in Samoa, Humboldt County, California
E.	Owner:	Samoa Pacific Group, LLC
F.	Address:	Samoa Pacific Group, LLC 5251 Ericson Way Arcata, CA 95521
G.	Representative:	Dan Johnson Investment Partner Telephone: (707) 822-9000

H. The conclusions presented within this Phase II Environmental Site Assessment (ESA) report are professional opinions based on the data described in this report. They are applicable only for the purpose, the location, and the project indicated. It should be noted that the opinions and recommendations presented herein apply to the site conditions existing at the time of the study. They cannot necessarily apply to site changes of which we are not aware and have not had the opportunity to evaluate. Changes in the conditions of the subject property can occur with time because of natural processes or due to human impact on the subject site or adjoining properties. Changes in applicable evaluation standards can occur as a result of legislation or from a broadening of current knowledge and sampling technologies. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control.

I. The project site is the town of Samoa, California, and several surrounding parcels located on the Samoa peninsula, Humboldt County, California. The subject parcels are Assessor's Parcel Numbers 401-031-038, 401-031-044, 401-031-046, 401-031-055, 401-031-059, 401-031-060, and 401-031-061. The property is located on the Samoa Peninsula, south of the Highway 255 (Samoa) Bridge. The town is located in coastal sand dunes on the elongated north spit which separates Humboldt Bay and the Pacific Ocean (see Figure 2.1, Appendix B). The subject parcel is currently owned by the Samoa Pacific Group, LLC, 5251 Ericson Way, Arcata, California 95521, (707) 822-9000.

1.3 Site Description and Historical Uses

The town of Samoa is relatively small and still has the appearance of a company lumber mill town. The town contains 98 residences, an elementary school, post office, restaurant, playground, tennis courts, soccer field, basketball courts, a former storehouse/fire station, and former gasoline station (See Figure 2.1, Appendix B.). The town is bordered on the east and south by current and former industrial lumber mill facilities. Largely undeveloped coastal dunes exist to the north and to the west. The subject parcels include the town of Samoa and former

industrial (mill) properties directly adjacent to the east and south of APN's 401-031-055, 401-031-60, and -61.

Samoa is a former mill town dating back to 1890, which was built adjacent to lumber mill operations. Other industrial operations were also located proximal during the town's history. In 1892, the Samoa Land and Improvement Company bought 270 acres of land in Samoa, including waterfront land, to promote development of Samoa as a town. In 1893, Vance Redwood Company bought the property, built a sawmill, and extended railroad service to Samoa. In 1900, A.B. Hammond bought Vance Redwood Company, including the sawmill, dry kilns, and two logging camps, establishing a large sash & door factory. In 1912, Hammond Lumber began purchasing the town site and constructing company houses. Hammond continued to operate the mill, adding a planing mill, molding plant, sorter sheds, warehouses, shops, and steamship dockage. A ship building plant was established along the waterfront and built several ships during World War I. This plant was demolished by 1924. By 1924, Hammond Lumber Company completed the purchase of all the houses in Samoa and managed the entire town.

In 1956, Georgia-Pacific Lumber Company bought the town and mill from Hammond. A new plywood mill was finished by 1959. In 1963, construction began on a 500-ton per day bleached Kraft pulp mill just south of Samoa, which was operational between 1965 and 1968. In 1973, Georgia-Pacific divested ownership of the Samoa facilities to Louisiana-Pacific, who then managed the town. In 1998, the pulp mill, Samoa, and adjacent industrial lands were bought by Simpson Timber Company. In 2001, 65 acres, including the town of Samoa, was bought by the Samoa Pacific Group, LLC. and in September of that year, they completed the purchase of an additional 150 acres of adjacent dune and industrial land.

The adjoining properties to the northeast and east (APN 401-031-55) were occupied by mill buildings and operations dating back to the turn of the century. Land to the south, portions of APN 401-031-46, APN 401-031-59, and -61 were primarily undeveloped dune lands until portions of the land were further developed for mill use, primarily for lumber and log storage, beginning in the late 1950's.

A former mill machine shop with associated blacksmith shop dating to at least 1923 is located just east of the cookhouse, on APN's 401-031-55 and -58. A Hammond Lumber Company refuse (teepee) burner was located southeast of the cookhouse, on APN 401-031-55. Other original Hammond mill facilities formerly located on this parcel and the adjacent APN 401-031-40 included a power plant, boiler plant, planing mill, carrier house, and various other mill buildings dating back to the turn of the century (1900). Almost all of the previous old mill buildings and facilities have since been demolished. The original Hammond mill was demolished (burned) in 1966. A dock and warehouse facilities were historically located along the shoreline on APN 401-031-40. The dock and some warehouse facilities remain in use. In 1963 the Georgia–Pacific plywood mill was built on APN 401-112-13, south of Samoa, and just south of the subject parcels. Newer mill operations were also built and operated further south along APN 401-031-61, and have subsequently been removed in recent years, including the Simpson co-generation plant and an additional greenchain facility. Parcel APN 401-031-55 is now largely vacant.

Parcel 401-031-44, located west of Samoa, is open coastal dune land adjoining the Pacific Ocean. A parking area for coastal access, a water pumping facility, and water lines of the

Humboldt Bay Municipal Water District are located on this otherwise vacant parcel, as is the leachfield for the western portion of the Samoa wastewater treatment facility.

1.4 Previous Studies

The subject site and adjoining parcels have been evaluated in the Phase I & II ESAs as well as the report *Results of Soil and Groundwater Investigation for the Soccer Field, Former Service Station (Former Lorenzo Shell), and Chemical Storage Areas,* (SCS Engineers, October 2003). Twenty one sites in and around Samoa were identified as Recognized Environmental Conditions in the report *Phase I Environmental Site Assessment For Assessor's Parcel Numbers 401-031-38, -44, -46, -55, -59, and –60 Samoa,* February 2004, Winzler & Kelly, otherwise referred to herein as the Phase I ESA. These 21 sites, with the exception of the former Lorenzo Shell Station, have been aggregated into 18 sites where sampling was deemed warranted. The former Lorenzo Shell Station is being addressed in a separate investigation.

The previous Phase II investigation, *Phase II Environmental Site Assessment For Assessor's Parcel Numbers 401-031-38, -44, -46, -55, -59, and –60 Samoa,* June 2005, Winzler & Kelly, offered the following conclusions:

Site 1, Soccer Field: TPH-D (up to 25 ppm in soil and 270 ppb in groundwater), TPH-MO (up to 320 ppm in the soil and 180 ppb in groundwater), TPH-G (up to 21 ppm in soil and 160 ppb in groundwater) and arsenic (up to 4.9 ppm in soil and 15 ppb in groundwater) was detected in the soil and groundwater. Low levels of benzene (up to 1.4 ppb) were also detected in the groundwater. The previous SCS investigation in this area also detected hydrocarbon impacts. The laboratory reported that the hydrocarbons did not "exhibit the peak pattern typical" of the various hydrocarbons and it is possible that the natural organics in the wastewater could show up on the chromatographs as TPH-G/D/MO. There was wood debris encountered in all of the borings installed in this area and it appears that there is extensive wood waste over this entire area. The levels of hydrocarbons in the soil and groundwater are of concern; however, the proposed development of this area into a paved convention center will help to cap the area and prevent further migration of the hydrocarbons and prevent direct contact by the public with the impacted soils. Care will have to be taken during construction excavation to ensure worker protection and proper disposal of excess impacted soils. Consideration should also be given to the bearing capacity of the soil in this area given the large amount of wood debris encountered.

Site 2, Lead Base Paint Survey: Paint on all of the ten structures tested was determined to be lead based paint. Lead in soil around the structures was also detected at concentrations up to 2,350 ppm. Notification will have to be provided to all tenants of the lead in the paint and the soil.

Site 3, Railroad Sites: Very low levels of TPH-D (up to 5.4 ppm) and TPH-MO (up to 21 ppm) were reported in the soil. At these low levels the impacts are not of serious concern. Lead was also detected in soil (168 ppm) at levels similar to background levels.

Site 4, Sewer System: Low levels of TPH-D (5.5 ppm) and TPH-MO (23 ppm) were detected in the soil and slightly higher levels of TPH-D (110 ppb) and TPH-MO (450 ppb) as well as TPH-G (65 ppb) and benzene (0.75 ppb) were detected in the groundwater. The laboratory reported that the hydrocarbons did not "exhibit the peak pattern typical" of the various hydrocarbons and it is

possible that the natural organics in the wastewater could show up on the chromatographs as TPH-G/D/MO. The levels of nitrates (6.5 ppm) and orthophosphate (17 ppm) in the soil are not at levels of concern and the level of iron in the soil is similar to the background levels. The levels of ortho-phosphate in the water (4,500 ppb) are fairly elevated, but there is no PRG or Maximum Contamination Level (MCL) established for orthophosphate to use as a comparison, and again it is highly unlikely that the groundwater in this area will ever be utilized for drinking water, given its high salinity. The continued use of this area as part of the wastewater treatment system will also prevent human exposure to the soils and groundwater.

Site 6, Teepee Burner: Total TCDD in the groundwater was reported at 0.0068 ppb. The PRG for TCDD is 0.000000448 ppb for drinking water. No dioxins or furans were reported in the soil at this site.

Site 7, Chemical Storage Shed: The soil in the shed had elevated levels of TPH-D (74 ppm) and TPH-MO (1,000 ppm). It is assumed that this shed will be demolished during the construction of the commercial parking areas and buildings proposed for the new development. Care will have to be taken during construction excavation to ensure worker protection and proper disposal of excess impacted soils. There is an ongoing investigation in this area (as well as Sites 8, 9, and 10) connected with a historic underground storage tank associated with the Former Lorenzo Shell station.

Site 8, Oil Storage Shed: There were minor impacts from TPH-D (3.4 ppm), TPH-MO (41 ppm), TPH-G (3.6 ppm) and benzo(a)pyrene (0.65 ppm) in the soil at the site, as well as elevated levels of lead (1,000 ppm). It is assumed that this shed will be demolished during the construction of the commercial parking areas and buildings proposed for the new development.

Site 9, Garage, Behind Lorenzo Shell Station: There were minor impacts from TPH-D (4.0 ppm) and TPH-MO (90 ppm) as well as elevated levels of lead (850 ppm) in the soil. It is assumed that this shed will be demolished during the construction of the commercial parking areas and buildings proposed for the new development.

Site 10, Drum Storage Area: Very minor impact from TPH-MO (22 ppm) and slightly elevated levels of lead (210 ppm) were detected in soil. The lead levels are above the residential PRGs but below the industrial PRGs. Since the Drum Storage area is in the vicinity of Sites 7, 8, and 9, it should treated the same as these areas during construction activities.

Site 12, Rigging Shop: Very minor impacts from TPH-MO (33 ppm) was detected in the soils, and arsenic was detected in the groundwater (4.2 ppb) at levels that are likely similar to background. This area is in the proposed coastal dependent industrial area.

Site 13, Garages near Cookhouse: Minor impacts from TPH-D (9.3 ppm) and TPH-MO (160 ppm) were reported in the soils. This area is under a proposed parking lot which will serve to cap the soils and prevent migration or exposure to the soils.

Site 14, 2 Garages near Soccer Field: TPH-MO was reported at concentrations up to 630 ppm and lead was detected in soil at concentrations up to 700 ppm. This area is on the edge of a

proposed parking lot which will serve to cap the soils and prevent migration or exposure to the soils.

Site 15, Hammond Powerhouse, Carriage House, Boiler Plant, Shops: Elevated levels of TPH-D (73 ppm) and TPH-MO (450 ppm) were detected in the soil. This area is proposed for coastal dependent industrial development.

Site 16, Hammond Powerhouse, Simpson Co-Generation Powerhouse, and the LP Pulp Mill: OCDD was detected at 0.0051 ppm in the soil. There are no PRGs established for OCDD so it was converted to an equivalent level of 2,3,7,8 -TCDD. One ppm of OCDD is equivalent to 0.0001 ppm of 2,3,7,8 -TCDD. Therefore, 0.0051 ppm of OCDD is equivalent to 0.00000051 ppm of 2,3,7,8-TCDD. The PRG's for 2,3,7,8-TCDD for residential and industrial sites are 0.0000039 ppm and 0.0000159 ppm, respectively. Therefore, the OCDD concentration is below both the residential PRG and the industrial PRG.

Site 17, Former Lumber and Log Storage: Minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) was detected in this area. This area is in the proposed Business Park area of the development.

The North Coast Regional Water Quality Control Board (NCRWQCB) responded to the Phase II Report in a letter dated November 29, 2005 (See Appendix A). This letter requested a workplan for the complete definition of the horizontal and vertical extent of the contamination identified in the seventeen locations, as well as a prioritization of the site investigations and a schedule for the implementation. This latest Phase II investigation is in response to the NCRWQCB's request. Subsequent correspondence letters are also contained in Appendix A.

1.5 Phase II Statement of Purpose

Winzler & Kelly conducted the Samoa sampling effort to gather data as part of an environmental site assessment under the EPA Brownfields Initiative to further evaluate the extent of impacted soils and groundwater at specific sites in and adjacent to the Town of Samoa, California.

The intent of this Additional Phase II ESA Report is to expand upon the information obtained during the Phase I and earlier Phase II ESA by verifying and substantiating data collected during the previous Phase II investigation. The sampling effort at seven of the eighteen sites was intended to further delineate the presence and extent of chemical concentrations in soil and groundwater at select sites. All sampling was conducted under protocol approved by the EPA, as detailed in the *Quality Assurances and Sampling and Analysis Plan*, December 10, 2004 and *Sampling and Analysis Plan Addendum and Workplan for Additional Sampling and Analysis, Samoa Peninsula Brownfield Site, Humboldt County, California,* January 2007, prepared by Winzler & Kelly.

2.0 PHYSICAL CHARACTERISTICS

2.1 Site Description

Most of the town of Samoa is located east of New Navy Base Road and west of Vance Avenue, with a portion of the town located east of Vance Avenue and west of North Bayview Avenue (See Figures 1.0, 2.0 and 2.1 Appendix B). There are presently approximately 98 dwelling units,

generally located on APN 401-031-46. The residential areas also include a playground, tennis courts, soccer field, and basketball courts. The southerly portion of APN 401-031-46, and parcels 401-031-59 and –60, extending southward, are currently vacant lots previously used for the storage of dry stack lumber and as log decks. A portion of APN 401-031-59 contains the oxidation pond and percolation basin for the eastern Samoa wastewater treatment system. The Peninsula Union elementary school is located on APN 401-031-16, which is located immediately north of the subject parcels.

The former storehouse/fire station, former gasoline station, 'bus garage' and the current post office are located in a central 'downtown' area, as is a large 'carpenter shop', which is currently used for town maintenance. The Samoa Cookhouse restaurant and a gift shop are located on APN 401-031-38. A long established railway line runs between the residential and downtown section of Samoa and the industrial parcels to the east. The parcel along the east side of the railroad line, APN 401-031-55 encompasses current and former mill/industrial facilities, including the former Hammond mill complex and succeeding mill operations. That parcel is zoned as Coastal Dependant Industrial. The parcels between the railroad line and New Navy Base Road, APN's 401-031-60, -59, and -46, are zoned as MG-Industrial General. The parcel west of New Navy Base Road, APN 401-031-44, is zoned as NR-Natural Resources. Figure 2.1, Appendix B, is an aerial photo of the town of Samoa and displays the above mentioned APN #'s.

2.2 Hydrology and Characteristics

The site is bordered to the west by the Pacific Ocean and to the east by Humboldt Bay. The ground surface elevation between the two water bodies is a maximum of approximately 40 feet above sea level. Groundwater was predominantly encountered at shallow depths below ground surface (bgs) during the borings constructed in this sampling effort. Groundwater was encountered at depths ranging from 2 feet bgs to 12 feet bgs. Areas wherein groundwater was encountered at a deeper depth were likely the result of the borings being placed in areas of higher topographic elevation rather than an actual fluctuation in area groundwater levels. Groundwater flow direction is expected to fluctuate between east and west (between the Pacific Ocean and Humboldt Bay) based upon tidal elevations.

2.3 Topography

Ground surface topography along the Samoa Peninsula (Figure 1.0) is typically gently sloping toward Humboldt Bay over much of the peninsula. Rolling sand dune topography is present along the beach side of the peninsula, where the highest elevations of roughly 40 feet above sea level are present.

2.4 Soil Types and Characteristics

Based upon notes collected during this sampling effort and boring logs collected during this and previous investigations performed within the town of Samoa, the soil underlying the project area predominantly consist of poorly to moderately developed organic horizon (O or A horizons) up to 1 foot bgs overlying a poorly sorted, sub-angular to rounded, medium grained sand to the total explored depth of approximately 20 feet bgs. In some sites no organic horizons were encountered due to historic and present industrial use.

Developmental fill was encountered at various sites throughout Samoa. Woody debris was encountered to depths of approximately 7 feet bgs in 2 borings installed at the Soccer Field (Site

#1). Soils consisting of sandy clays were noted in the boring placed east of the sewer system's former Bark Filter (Site #4, boring 4-B1). These site were the only sites wherein typical native soils did not exist.

3.0 SITE CHARACTERIZATION PLAN

3.1 Introduction

This section describes soil sampling activities, groundwater sampling activities, and information about site sample locations, such as why the sites were selected for sampling, the media that was sampled, analyses that were performed on the media, and important observations recorded by Winzler & Kelly at the respective sites. The quality of the data obtained from sampling and analysis at the site meets the criteria for usage in accordance with the data quality objectives (DQO), as documented in the *Guidance for the Data Quality Objectives Process* (USEPA QA/G-4), August 2000.

In accordance with the Sampling Analysis Plan (SAP) approved by the EPA, seven of the original eighteen sites in Samoa were selected for additional sampling. The sites were located throughout Samoa. Winzler & Kelly field personnel scaled off the locations of all sample points and collected the samples through the use of hand trowels, hand augers, direct push augers, and appropriate water sampling containers. Site sketches, site pictures, GPS waypoints at sample locations, water quality parameters, and general site notes were collected at each site and recorded in the general field notes. A copy of the field notes can be found in Appendix D. Soil samples were collected from six of the seven proposed sites, while groundwater samples were collected from five of the seven sites, and surface water samples were collected at one site. The designation of all samples names corresponds with the site number where the samples were collected. The first number in the sample name corresponds with that site #. See Figures 2.1 through 2.7, Appendix B, for site maps displaying the locations of all soil and water samples.

Sample collection, documentation activities, and quality control procedures were performed in adherence to the protocol specified in the SAP. Quality Control/ Quality Assurance is further addressed in Section 4.3. Any changes in the sampling protocol contained in the SAP, knowingly committed during implementation of the sampling plan, were noted in daily field notes, which can be found in Appendix D.

The general spatial area of the Phase II ESA sampling area included the town of Samoa and former industrial (mill) properties directly adjacent to the east and south. This included APNs 401-031-038, 401-031-044, 401-031-046, 401-031-055, 401-031-059, 401-031-060, and 401-031-61 (Figures 2.0 through 2.7, Appendix B).

Specific individual sites and/or environmental conditions were identified in the previous Phase I and II ESAs. The following locations in and around the larger site of Samoa are listed below, identified in this document, and on the associated figures (Figure 2.0 through 2.7, Appendix B) by the following numerical listing. The sites highlighted in bold are the ones that were further assessed as part of this Phase II ESA.

Site 1 Samoa soccer field
Site 2 Lead based paint on houses

Site 3	**Railroad easements**
Site 4	Wastewater treatment system
Site 5	Unlined burn pit
Site 6	**Refuse (teepee) burner**
Site 7	Former chemical storage building
Site 8	Former oil storage shed
Site 9	Garage (behind Shell Station)
Site 10	Oily waste drum storage
Site 11	Fill debris
Site 12	**Former rigging shop**
Site 13	**Garages, automotive storage (Bayview Ave.)**
Site 14	Garages, automotive storage (near Soccer Field)
Site 15	Hammond powerhouse, carrier house, boiler plant, industrial shops
Site 16	Stack emission sources
Site 17	**Former log deck/wood stack storage**
Site 18	**Background Soil Sample Area**

The site histories and descriptions of the sites that were further assessed as part of this Phase II ESA are described below. The results from the previous Phase II ESA report and redevelopment uses are also described.

Site 2 – Lead Based Paint Impacts Around Houses

Samoa contains approximately 98 houses, and about 15 other structures including a hostelry, a fire department, a post office, gymnasium, the Samoa Cookhouse restaurant, and several other storage and maintenance structures. Many of these date back to the early 1900s. Previous surveys for lead based paint (LBP) were conducted in 1996 and 1997 by Louisiana Pacific (LP). The results indicated the presence of LBP in the buildings. A limited survey of lead based paint (LBP) by XRF detection and the analysis of paint chips, dust wipes, and soil samples occurred in 1996 and 1997, as excerpted in the *Samoa Town Master Plan Administrative Draft EIR*. The results indicate that lead based paint was found in all of the tested dwellings in Samoa, as would be expected in buildings of that era. Numerous dust wipe samples exceeded allowable HUD standards, as did one soil sample. Significant peeling and deterioration of exterior paint was noted on many structures during the site investigations in January 2004 by Winzler & Kelly as part of the preparation of the Phase I report. The documented presence of lead based paint and the observed condition of painted surfaces indicate a release or material threat of a release of lead base paint to the soil in the "drip zone" of the structures. The previous Phase II ESA investigation consisted of XRF assessment of the paint on several houses and the collection and analysis of soil samples from around the houses. The results found all of the ten structures sampled to have lead based paint. Lead was also detected in the soil around the structures at concentrations up to 2,350 ppm.

The sampling performed as part of this Phase II investigation, was intended to determine whether the lead found in the soil surrounding the houses is being carried off in stormwater runoff, and determining the lateral extent and the soluble threshold limit concentrations (STLC) of the lead in the soil.

Site 3 – Railroad Right-of-Way

The single-line railroad line easement through the subject properties (APN 401-031-14 and 401-031-39) date back to 1911. Various contaminants, including petroleum products and lubricants are typically associated with railway lines, as is spillage of materials from rail cars. The rail line rights of way (ROW) are to remain under rail ownership.

In the previous Phase II, to determine possible impacts on the subject parcels adjacent to the ROW, four representative Exposure Assessment (EA) areas were delineated for testing. Each EA measured 1/10 of an acre and included an area of 20' X 220' along the rail ROW in four separate locations. Four sample locations were located in each EA, for a total of 16 sample sites total. The previous Phase II ESA found levels of TPH-D (up to 5.4 ppm), TPH-MO (up to 21 ppm), and lead (at 168 ppm) in the soil.

This Phase II investigation attempted to determine whether there were any groundwater impacts associated with the low levels of soil impacts reported previously.

Site 6, Teepee Burner

A Hammond mill refuse (teepee) burner was located on subject parcel APN 401-031-55 just south of the Samoa Cookhouse site. The burner dates back to 1900 and operated for many years, with emissions visible in a 1939 air photo. Stack emissions and ash could have included dioxins, and furans. The previous Phase II ESA found Total TCDD at 0.0068 ppb in the groundwater. No dioxins or furans were reported in the soil.

This Phase II investigation attempted to confirm the presence of TCDD in the groundwater.

Site 12, Rigging Shop

A "rigging shop" was historically located along Bayview Avenue on the north end of Samoa, west of the cookhouse, identified as the "construction office and garage" on the 1923 plans and later identified as a rigging shop by notation on an APN map on file in the Humboldt County Tax Assessors office. In the course of "rigging", this building was used as a metals and welding shop. This building has been subsequently removed. As many of the original Samoa buildings, the original shop may have had wooden plank flooring; however, the site is now occupied by a large concrete slab. It is possible that there have been impacts to the site soil and groundwater from various metals, including lead, and various organic compounds.

The previous Phase II ESA reported minor impacts from TPH-MO (33 ppm) in the soil. TPH-MO was not detected in the groundwater at this site. Arsenic was detected in the groundwater at 4.2 ppb.

This Phase II investigation attempted to determine the extent of the Motor Oil impacts in the soil.

Site 13, Garages near Cookhouse

An elongated garage (approx. 20' X 120') is located along Bayview Avenue near the Samoa Cookhouse access road (APN 401-031-46). It was historically used for automotive parking and continues to be used for such. The garage appears on 1923 town maps. It is possible that automotive parking, storage, and repair activities may have resulted in petroleum impacts to the

soil and groundwater beneath the structure. The flooring was believed to be wood planking or bare earth; however concrete slabs were discovered during the previous Phase II sampling. Soil samples were therefore collected from the perimeter of the structure and installed at angles in order to obtain samples from beneath the concrete slabs.

The previous Phase II ESA reported minor impacts from TPH-D (9.3) and TPH-MO (160 ppm) in the soil.

This Phase II investigation attempted to determine the horizontal and vertical extent of the soil impacts and to determine whether there are any groundwater impacts associated with the soil impacts.

Site 17, Former Lumber and Log Storage

A portion of APN 401-031-60 was periodically used for log deck and wood stack storage. Previous uses for transport and storage of logs and lumber may have resulted in contamination by petroleum products.

The previous Phase II ESA reported minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) in the soil. Also noted, the area contained a large amount of wood waste.

This Phase II investigation attempted to determine if the low levels of TPH-D/MO reported in the soil have impacted the groundwater in this area.

Site 18, Assessment of background concentrations of arsenic

Concentrations of arsenic have been detected at various locations across the property in the soil and the groundwater. Levels in the soil at some locations (highest level reported = 4.9 ppm) have exceeded the EPA's residential and industrial Preliminary Remediation Goals (PRGs) (0.39 and 1.59 ppm respectively). The levels reported in some groundwater samples (highest level = 15 ppb) also exceeded the Maximum Contamination Level for drinking water (10 ppb).

Because arsenic is naturally occurring and is known to be present at the site, this Phase II investigation attempted to establish additional data on background concentrations and spatial variations, to allow better interpretation of existing and new data on arsenic concentrations at the property. In their November 29, 2005 letter, the NCRWQCB also requested that all areas be re-sampled for arsenic.

3.2 Soil Sampling Procedures

Exact soil sampling locations were determined in the field based on accessibility, visible signs of potential contamination (e.g., stained soils), and topographical features which could indicate location of hazardous substance disposal (e.g., depressions that may indicate a historic excavation). Soil sample locations were recorded in the field logbook. A sketch of the sample location was entered into the logbook and any physical reference points were labeled. If possible, distances to the reference points were also given. A hand held Global Positioning System (GPS) receiver was also used to establish coordinates of the sample points. See Appendix D for the field notes for each sample location.

Surface soil samples were collected as discrete samples from a depth of 0 to 6 inches below ground surface. Surface soil samples were collected using a stainless steel hand trowel. Samples to be analyzed for selected metals were placed in a sample dedicated 1 gallon disposable pail and homogenized with a trowel. Material in the pail was transferred with a trowel from the pail to the appropriate sample containers. Sample containers were filled to the top, taking care to prevent soil from remaining in the lid threads prior to being closed to prevent potential contaminant migration to or from the sample. Sample containers were closed as soon as they were filled, chilled to 4°C if appropriate, and processed for shipment to the laboratory.

Soil samples were also collected and submitted for laboratory analysis for total petroleum hydrocarbons as diesel/motor oil (TPH-D/MO) and were processed with a silica gel clean-up prior to analysis to help screen possible interference with lipids associated with wood debris, which is commonly encountered in and around Samoa.

Subsurface soil samples were collected by hand auger from shallow depths, not exceeding 36 inches in the generally sandy substrate. A stainless steel hand auger designed for environmental work was utilized, with one or more barrel type augers for sample retention. The auger tools were decontaminated just prior to soil sampling intervals. The auger tools were decontaminated between borings by scrubbing in soap solution, clean water rinse, and final rinse with distilled water. Samples were obtained by placing a brass soil tube in the split spoon sampler and driving the sample into the subsurface with a slide hammer. Sample tubes were then removed from the sampler and the ends sealed with Teflon sheets and plastic end caps. The samples were then labeled, placed in Ziploc baggies and placed in a cooler on ice, prior to delivery to the analytical laboratory.

Subsurface samples from deeper depths were obtained through the use of a GeoProbe direct push drill. The drill was decontaminated between boring locations by pressure washing or scrubbing in soap solution, clean water rinse, and final rinse with distilled water. The drill was decontaminated between sampling depths by scrubbing in soap solution, clean water rinse, and final rinse with distilled water. Composite subsurface samples were collected by boring to the desired sample depth using a GeoProbe auger. Once the desired sample depth was reached, the auger was brought to the surface and the 5 foot acetate liner was removed that contained a soil sample for the specific 5 foot section. Samples were then transferred from the sampler tube to a sample-dedicated 1-gallon disposable pail and homogenized with a trowel. Material in the pail was transferred with a stainless steel trowel from the pail to the appropriate sample containers. Sample containers were filled to the top taking care to prevent soil from remaining in the lid threads prior to being sealed to prevent potential contaminant migration to or from the sample. After sample containers were filled, they were immediately sealed, chilled if appropriate, and processed for shipment to the laboratory.

3.3 Groundwater and Surface Water Sampling Procedures

Groundwater samples were collected at five sites 3, 6, 13, 17, and 18 (See Figure 2.0 Appendix B for site locations). Groundwater samples were collected from hydropunch borings by placing screened well points throughout the depths of the borings. Disposable Polyethylene bailers with ball check valves were then used to collect groundwater from the well points after 1.5 gallons of water was purged. Well points were decontaminated between borings and all disposable equipment was discarded between borings. Groundwater samples were collected and submitted

for analysis of the following constituents: TPH-D/MO, arsenic (dissolved), and Dioxins/Furans. Again, all TPH-D/MO samples for this project were processed with a silica gel clean-up prior to analysis to help screen possible interference with lipids associated with wood debris, which is commonly encountered at sites around Samoa.

Surface water samples were collected at all buildings analyzed for lead based paint impacts as part of this investigation during a single rain storm event on February 7, 2007 (See Figure 2.1 Appendix B for site location). Pressurized polyethylene bailers were used to collect surface water runoff. Due to the rapid infiltration rate of water in the sandy soil at these locations, surface water was collected where runoff stayed at the surface for more the five minutes. Samples from the bailers were transferred to the appropriate sample container, which were labeled, placed in Ziploc baggies and then placed on ice while awaiting transfer to the analytical laboratory. Samples were filtered and preserved immediately upon receipt at the Laboratory. Surface water samples were collected and submitted for analysis of lead (dissolved).

3.4 Site Specific Sampling Information

The sections below detail the tasks performed at each of the specific sites. This information is also represented in Tables 1 and 2, Appendix C. Figures 2.0 through 2.7 (Appendix B) detail the locations of the sampling points.

Site #2, Lead Base Paint

During the previous Phase II investigation, paint on all of the ten structures tested was determined to be lead based paint. Lead in soil around the structures was also detected at concentrations up to 2,350 ppm. The regulatory threshold levels for lead to be classified as a hazardous waste are Total Threshold Limit Concentrations (TTLC) above 1,000 mg/kg, Soluble Threshold Limit Concentrations (STLC) above 5.0 mg/L, or Toxic Characteristic Leaching Procedures concentrations (TCLP) above 5.0 mg/L. The Health & Safety Code and the Toxic Substances Control Act also establish regulatory levels of 400 ppm in bare soils in children's play areas as the level protective of children's health.

The Health and Safety Code Section 25157.8 also requires that a waste containing lead above 350 mg/kg that meets the criterion specified in the statute, but is not otherwise a California Hazardous waste is to be disposed of in a Class 1 (Hazardous Waste) landfill. However, the soil around the houses is not a waste, since it has not been removed from the ground, so this regulation does not apply at this time. The Regional Board had also stated in their November 29, 2005 letter that they wish to know if the lead in the soil is impacting surface water runoff.

To address these issues, surface soil samples were collected at the five houses where surface soil was found to contain lead levels above 400 mg/kg during the previous Phase II investigation. A total of four, 4-point composite surface samples were collected at each of the five houses where the highest levels of lead were detected. At each of the five residences, one 4-point composite was collected from surface soil at a distance of 5 feet from the house, one 4-point composite collected from a distance of 10 feet from the house, and one 4-point composite sample collected at the property line or 15 feet from the house (whichever was closer). These samples were tested for TTLC lead by EPA Method 6010B and STLC lead by the CCR Title 22 Method.

Stormwater runoff samples were also collected at all five of these sites and analyzed for dissolved lead during a single sampling event to determine whether surface water is being impacted by lead in soil. During a rain event sufficient to produce surface water runoff from the house site, an appropriate stormwater runoff sample location was selected at each house by field personnel. Sample site were selected to collect stormwater runoff that had contacted soil below the dripline of the house, to attempt to assure that the stormwater had contacted the soil with the greatest lead impacts. Stormwater samples were collected in unpreserved containers and brought to the analytical laboratory for immediate filtration and preservation. The samples were then analyzed for dissolved lead by EPA Method 200.8.

Site #3, Rail Road Tracks

During the previous Phase II investigation, very minor levels of TPH-D (up to 5.4 ppm) and TPH-MO (up to 21 ppm) were reported in the soil at two sites along the Railroad (the area of borings 3-B5 to B8 and the area of borings 3-B9 to B12). To address Regional Board concerns that low concentrations of TPH-D/ MO at these sites may be impacting groundwater, a total of two borings were installed (3-B17 and 3-B18). Boring 3-B17 is located within the previous Phase II ESA area "3-B5 to B8" and boring 3-B18 is located with the Phase II ESA area "3-B9 to 3-B12" (Figures 2.2 and 2.3, respectively, Appendix B).

Soil samples were collected from the borings at the surface, 5-feet below ground surface (bgs) and 10-feet bgs. The soil samples were analyzed for TPH-D/ MO with silica gel cleanup by EPA Method 3550/3630/GCFID/8015B and for arsenic by EPA Method 6020M. Groundwater samples were also collected from each boring and analyzed for TPH-D/MO with silica gel cleanup by EPA Method 3510/8015B and dissolved arsenic by EPA Method 200.8.

Site #6, Teepee Burner

During the previous Phase II investigation, total TCDD in the groundwater was reported at 0.0068 ppb in boring 6-B1. The PRG for TCDD is 0.000000448 ppb for drinking water. No dioxins or furans were reported in the soil at this site. One groundwater sample was collected at this site during this investigation to confirm the presence of TCDD in groundwater. See Figure 2.5, Appendix B, for sampling location. The hydropunch boring was extended to 12 feet. Groundwater was encountered at the shallow depth of approximately 2 feet bgs. The sample was submitted for laboratory analysis of Dioxins/Furans by EPA Method 8280A.

Site #12, Rigging Shop

During the previous Phase II investigation, very minor impacts from TPH-MO (33 ppm) were detected in the soils at the surface and 18-inches bgs, but not in the groundwater. Arsenic was detected in the groundwater (4.2 ppb). The soil samples collected in the previous investigation were 4-point composite samples. In order to define the extent of impacts, four more discrete samples were collected from around the perimeter of the existing slab with a hand auger at the surface and 18-inches bgs. No groundwater samples were collected. The soil samples were analyzed for TPH-D/MO with silica gel cleanup by EPA Method 3550/3630/GCFID/8015B. See Figure 2.4, Appendix B, for the sampling locations.

Site #13, Garages near Cookhouse

During the previous Phase II investigation, this site had minor impacts from TPH-D (9.3 ppm) and TPH-MO (160 ppm) detected in the soils, all in samples collected within 6-inches of the

surface. Nothing was reported in the deeper samples collected at 18- and 36-inches below ground surface. No groundwater samples were collected. Additional sampling was performed to confirm the presence and extent of the TPH-D/MO impacts in the soil and groundwater. Per the Regional Boards comments, the levels of arsenic in groundwater in this area were also assessed. A total of three borings (13-B7, 13-B8, and 13-B9) were installed for assessment of arsenic and TPH-D/MO. Surface soil and groundwater samples at each of the three borings were analyzed for TPH-D/MO with silica gel cleanup. The groundwater sample collected from boring 13-B8 was also analyzed for dissolved arsenic. See Figure 2.6, Appendix B, for sampling locations.

Site #17, Former Lumber and Log Storage/Proposed Business Park

Minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) were detected in this area during the previous Phase II investigation. To address Regional Board concerns that low concentrations of TPH-D/ MO at this site may impact groundwater, a total of three borings were proposed. Groundwater samples were collected from three borings (17-B21, 17-B22, and 17-B23, See Figure 2.7, Appendix B), which were placed near the three sample locations that exhibited the highest levels of TPH-D/ MO (17-B10, 17-B16, & 17-B20). Surface soil samples were also collected at each location and analyzed for TPH-D/MO with silica gel cleanup. Per the Regional Board's direction, the soil and groundwater in this area was also re-sampled for arsenic.

Site #18, Background Soil Sample Area

Generally low concentrations of arsenic have been detected at various locations across the property. Because arsenic is known to be present at the site, additional effort to establish better confidence in background concentrations and spatial variations will help better interpret existing and new data on arsenic concentrations at the property. A total of three widely spaced borings are proposed to provide more information on background arsenic concentrations. The three proposed borings (18-B4, 18-B5, 18-B6) were spread along New Navy Base Road, out of any areas of previous known industrial activities (Figure 2.1, Appendix B). Surface soil samples and groundwater samples were collected from these locations and analyze for arsenic and dissolved arsenic, respectively.

4.0 SAMPLING PROCEDURES, QA/QC, AND ANALYTICAL RESULTS

4.1 Field Sampling

Samples were collected from the locations, indicated in Section 3, beginning on January 11, 2007 and concluding on February 7, 2007. The field sampling team consisted of three individuals from Winzler & Kelly: Lia Webb, Ryan Crawford and Carlos Acu. The assignments for the individuals were as follows:

- Lia Webb – Located sample areas, recorded field notes, assisted with sample collection, and oversaw field sampling activities
- Ryan Crawford – Located sample areas, recorded field notes, assisted with sample collection
- Carlos Acu – Located sample areas, recorded field notes, assisted with sample collection

The samples were submitted to entirely to North Coast Laboratories LTD, located at 5680 West End Road, Arcata, California, 95521-9202. North Coast Laboratories subcontracted the Arsenic in soil analysis to CRG Marine Laboratories, Inc. and the Dioxin/Furan analysis to STL.

4.2 Analyses Requested

Analysis of requested Dioxins/Furans involved the analysis of multiple constituents within the one general heading. The groundwater sample from boring 6-B2 was tested for dioxine/furans and was below the detection limit for all analytes (see Table 2, Appendix C). The table below lists all the constituents which were analyzed under the general headings Dioxins/Furans

Dioxins/Furans			
2,3,7,8-TCDD	1,2,3,7,8,9- HxCDD	Total TCDF	2,3,4,6,7,8- HxCDF
Total TCDD	Total HxCDD	1,2,3,7,8-PeCDF	1,2,3,7,8,9- HxCDF
1,2,3,7,8-PeCDD	1,2,3,4,6,7,8-HpCDD	2,3,4,7,8-PeCDF	Total HxCDF
Total PeCDD	Total HpCDD	Total PeCDF	1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8-HxCDD	OCDD	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8,9-HpCDF
1,2,3,6,7,8- HxCDD	2,3,7,8-TCDF	1,2,3,6,7,8- HxCDF	Total HpCDF
OCDF			

4.3 Quality Assurance/Quality Control

QA/QC procedures outlined in the SAP were followed for sample collection and laboratory analysis. For field QC of all analysis, Equipment Banks were collected to evaluate possible equipment contamination of field samples. A random field QA/QC was performed to provide an assessment of possible field contamination. On the day of 1/30/07Equipment (rinsate) blanks were collected in the field from non-dedicated, non-reusable, non-disposal equipment used for collecting water and soil. One Equipment Blank for water was taken from a well point casing in the boring rig and one Equipment Blank was taken from hand trowels. The samples were submitted for laboratory analysis, and included the analysis for each analyte which was sampled on the day of collection. The following procedures were utilized for equipment blank sample collection: Equipment rinsate blanks were collected to evaluate field sampling and decontamination procedures by pouring High Performance Liquid Chromatography (HPLC) organic-free (for organics) or deionized water (for inorganics) over the decontaminated sampling equipment. Equipment rinsate blanks were obtained by passing water through or over the decontaminated sampling devices that were used that day. The rinsate blanks that were collected were analyzed for only those analytes which were sampled on that day which were TPH-D/MO and Arsenic (dissolved). All equipment rinsate blanks were reported as non-detect (ND) and are

summarized in Table 3, Appendix C. Copies of the laboratory reports are contained in Appendix E.

Split samples were also analyzed for several soil samples tested for arsenic. The sample was received by the laboratory and split and each half analyzed separately. The results were all within the acceptable reproducibility range. Both results are reported in Table 1, Appendix C.

Laboratory QA/QC included, at a minimum, for each project analyte, analysis of a "Method Blank" sample to verify the absence of false readings, the analysis of "Laboratory Control Spike" (LCS) samples to evaluate the percentage of recovery for each analyte in a clean blank matrix, and the analysis of an "LCS Duplicate" sample to evaluate the reproducibility of the lab analysis, as expressed in "relative percent difference" (%RPD). The Laboratory provided the following notes in their laboratory reports (see Appendix E for copies of the Lab Reports):

Lab Order # 0701266

- The Laboratory Control Spike (LCS) recovery for the CAM WET samples was 5.8% below the lower acceptance limit. Therefore sample results may represent minimum values.

Lab Order # 0702194

- The laboratory control spike (LCS) recovery was 0.81% below the lower acceptance limit.

Lab Order # 0701564

- TPH as Diesel/Motor Oil w/ Silica Gel Cleanup- Water:
  - The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for diesel. This indicates that the results could be variable.
  - Sample 3-B18-W1 contains material similar to degraded or weathered diesel oil.
- TPH as Diesel/Motor Oil w/ Silica Gel Cleanup- Soil:
  - The laboratory control sample duplicate (LCSD) recovery was above the upper acceptance limit for diesel. The laboratory control sample (LCS) recovery was within the acceptance limits; therefore, the data were accepted.
  - Samples 3-B18-1 and 3-B18-2 contain material in the diesel range of molecular weight, but the material does not exhibit the peak pattern typical of diesel oil.
- TPH as Diesel/Motor Oil - Soil:
  - The LCSD recovery was above the upper acceptance limit for diesel. The LCS recovery was within the acceptance limits; therefore the data were accepted.

Lab Order # 0702159

- The samples were received and analyzed past the hold time.
- TPH as Diesel/Motor Oil w/ Silica Gel Cleanup:
  - The laboratory control sample duplicate (LCSD) recovery was above the upper acceptance limit for diesel and motor oil. The laboratory control sample (LCS) recoveries were within the acceptance limits; therefore, the data were accepted.

- The relative percent difference (RPD) for the laboratory control samples were above the acceptance limit for diesel and motor oil. This indicates that the results could be variable.

➢ Samples 12-B6-1 surface, 12-B6-2 18" and 12-B7-2 18" contain material similar to degraded or weathered diesel oil.

Lab Order # 0702412

➢ TPH as Diesel/Motor Oil:
  - The laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) recoveries were above the upper acceptance limit for motor oil. These recoveries indicate that the sample results may be erroneously high. There were no detectable levels of motor oil in the sample therefore, the data were accepted.

Lab Order # 0701555

➢ TPH as Diesel/Motor Oil w/ Silica Gel Cleanup:
  - The laboratory control sample duplicate (LCSD) recovery was above the upper acceptance limit for diesel and motor oil. The laboratory control sample (LCS) recovery was within the acceptance limits; therefore, the data were accepted.

➢ Samples 17-B22-1 and 17-B21-1 do not have the typical peak pattern of fresh motor oil. However, the results reported represent the amount of material in the motor oil range.

4.4 Laboratory Analytical Results

This section details the results of the soil and water sampling at each site. Table 1, Appendix C, contains tabular results of all soil laboratory analytical results, Table 2, Appendix C contains a summary of all surface and groundwater samples. Copies of all laboratory analytical results can be found in Appendix E.

Site 2, Lead Assessment around Houses

Surface soil samples were collected at the five houses where surface soil was found to contain lead levels above 400 mg/kg during the previous Phase II investigation. A total of four, 4-point composite surface samples were collected at each of the five houses where the highest levels of lead were detected. At each of the five residences, one 4-point composite was collected from surface soil at a distance of 5 feet from the house, one 4-point composite collected from a distance of 10 feet from the house, and one 4-point composite sample collected at the property line or 15 feet from the house (whichever was closer). Sample locations are shown on Figures 2.2, 2.3, and 2.5 in Appendix B. These samples were tested for TTLC lead by EPA Method 6010B and STLC lead by CCR Title 22.

Site 2 LS-9 to 12 (See Figure 2.2) is a private residence, which had lead levels reported at 465 parts per million (ppm) under the drip line of the house during the initial Phase II investigation (see Table 4, Appendix C). The Total Threshold Limit Concentration (TTLC) levels for this site during this investigation were 210 µg/g (ppm) at 5-feet, 190 ppm at 10-feet and 150 ppm at 15-feet (See Table 1, Appendix C). All of these levels were above the 50 ppm level that requires a STLC to be run. STLC results were 11,000 µg/L (11 mg/L), 8.5 mg/L and 7.2 mg/L at 5-, 10-, and 15-feet respectively. These levels are all above the 5 mg/L threshold level that classify the soils as hazardous waste. Arsenic levels were also analyzed for in the soil samples, and the

results reported were; 5.236/5.167, 4.009, and 3.999 µg/g in the 5/5-foot split, 10-, and 15-foot samples. These results are all similar to the background arsenic results from boring B18 (approximately 3 ppm). Stormwater runoff samples were also collected at this site and analyzed for dissolved lead. The stormwater sample did not contain any lead at levels above the 5 µg/L method detection limit (See Table 2, Appendix C).

Site 2LS-13 to 16 (See Figure 2.3) is also a residence that had lead levels during the previous Phase II investigation of 407 ppm under the drip line of the house (see Table 4, Appendix C). The TTLC levels during this investigation were reported as 240, 200, 140 µg/g at 5-, 10- and 15-feet respectively. The STLC levels were 14, 10, 7.8 mg/L at 5-, 10- and 15-feet respectively (See Table 1, Appendix C). These levels are all above the 5 mg/L threshold level that classify the soils as hazardous waste. Arsenic levels were also analyzed for in the soil samples, and the results reported were 3.846, 4.793, and 4.92 µg/g in the 5-, 10-, and 15-foot samples. These results are all similar to the background arsenic results from boring B18. Stormwater runoff samples were also collected at this site and analyzed for dissolved lead. The stormwater sample did not contain any lead at levels above the 5 µg/L method detection limit (See Table 2, Appendix C).

Site 2LS-17 to 20 (See Figure 2.3) is the Post Office that had lead levels during the previous Phase II investigation of 684 ppm under the drip line of the building (see Table 4, Appendix C). The TTLC levels during this investigation were reported as 426.3/340.5, 167.4, 163.9 µg/g at 5/5-foot split-, 10- and 15-feet respectively. The STLC levels were 14, 7.8, and 5.9 mg/L at 5-, 10- and 15-feet respectively (See Table 1, Appendix C). These levels are all above the 5 mg/L threshold level that classify the soils as hazardous waste. Arsenic levels were also analyzed for in the soil samples, and the results reported were 15.03/15.15, 13.66, and 14.39 µg/g in the 5/5-foot split, 10-, and 15-foot samples. These results are all higher than the background arsenic results from boring B18. Stormwater runoff samples were also collected at this site and analyzed for dissolved lead. The stormwater sample did not contain any lead at levels above the 5 µg/L method detection limit (See Table 2, Appendix C).

Site 2LS-21 to 24 (See Figure 2.3) is a private residence that had lead levels during the previous Phase II investigation of 2,350 ppm under the drip line of the house (see Table 4, Appendix C). The TTLC levels during this investigation were reported as 170, 132.5, 143.6 µg/g at 5-, 10- and 15-feet respectively. The STLC levels were 6, 6.4, and 16 mg/L at 5-, 10- and 15-feet respectively (See Table 1, Appendix C). These levels are all above the 5 mg/L threshold level that classify the soils as hazardous waste. It is also interesting to note that at all other houses, the further away from the house the sample was taken, the lower the lead results were, for this house, the STLC levels increased further away from the house. Arsenic levels were also analyzed for in the soil samples, and the results reported were 4.888, 4.988, and 5.715 µg/g in the 5-, 10-, and 15-foot samples. These results are all similar to the background arsenic results from boring B18. Stormwater runoff samples were also collected at this site and analyzed for dissolved lead. The stormwater sample did not contain any lead at levels above the 5 µg/L method detection limit.

Site 2LS-33 to 36 (See Figure 2.5) is the Samoa Cookhouse, which had lead levels during the previous Phase II investigation of 1,010 ppm under the drip line (see Table 4, Appendix C). The TTLC levels during this investigation were reported as 542.7, 224.7, 233.7 µg/g at 5-, 10- and

15-feet respectively. The STLC levels were 22, 24, and 7 mg/L at 5-, 10- and 15-feet respectively (See Table 1, Appendix C). These levels are all above the 5 mg/L threshold level that classify the soils as hazardous waste. Arsenic levels were also analyzed for in the soil samples, and the results reported were 7.869, 2.688, and 3.188 µg/g in the 5-, 10-, and 15-foot samples. These results are all similar to the background arsenic results from boring B18. Stormwater runoff samples were also collected at this site and analyzed for dissolved lead. The sample did not contain any lead at levels above the 5 µg/L method detection limit (See Table 2, Appendix C).

Site 3, Railroad Sites

During the previous Phase II investigation, very minor levels of TPH-D (up to 5.4 ppm) and TPH-MO (up to 21 ppm) were reported in the soil at two sites along the Railroad (the area of borings 3-B5 to B8 and the area of borings 3-B9 to B12). To address Regional Board concerns that low concentrations of TPH-D/ MO at these sites may be impacting groundwater, a total of two borings were installed (3-B17 and 3-B18). Boring 3-B17 is located within the previous Phase II ESA area "3-B5 to B8" and boring 3-B18 is located with the Phase II ESA area "3-B9 to 3-B12" (Figures 2.3 and 2.2, respectively, Appendix B).

The soil samples collected from boring 3-B17 were below the detection limits for TPH-D and TPH-MO in all the samples collected at the surface, 5-feet bgs and 10-feet bgs except for 27 ppm of TPH-MO reported in the surface soil sample. The soil samples were also tested for arsenic and the results reported were 2.806, 2.687, and 0.895 ppm at the surface, 5-feet bgs, and 10-feet bgs respectively. These are similar to the background arsenic levels. The groundwater sample from boring 3-B17 was also below the method detection limits for TPH-D and TPH-MO as well as arsenic.

The soil samples collected from boring 3-B18 reported TPH-D levels of 3.1 ppm in the surface sample and 25 ppm in the sample collected at 5-feet bgs. The soil sample collected at 10-feet bgs was below the detection limit for TPH-D. The samples also reported 46 and 150 ppm of TPH-MO reported in the surface and 5-foot bgs soil samples, and below detection limits in the 10-foot bgs sample. The soil samples were also tested for arsenic and the results reported were 3.092/2.749, 4.756 and 1.863 ppm at the surface/surface split, 5-feet bgs, and 10-feet bgs respectively. These are similar to the background arsenic levels. The groundwater sample from boring 3-B18 reported 570 ppb TPH-D and 4,600 ppb TPH-MO as well as arsenic at 3.0 ppb.

Site 6, Teepee Burner

During the previous Phase II investigation, total TCDD in the groundwater was reported at 0.0068 ppb in boring 6-B1. The PRG for TCDD is 0.000000448 ppb for drinking water. No dioxins or furans were reported in the soil at this site. One groundwater sample was collected at this site to confirm the presence of TCDD in groundwater. See Figure 2.5, Appendix B, for sampling location. The groundwater sample was below the detection limit for all Dioxins/Furans analyzed for.

Site 12, Rigging Shop

During the previous Phase II investigation, very minor impacts from TPH-MO (33 ppm) was detected in the soils at the surface and 18-inches bgs, but not in the groundwater. Arsenic was detected in the groundwater at 4.2 ppb. The soil samples collected in the previous investigation

were 4-point composite samples. In order to define the extent of impacts, four more discrete samples were collected from around the perimeter of the existing slab with a hand auger at the surface and 18-inches bgs (See Figure 2.4, Appendix B, for the sampling locations). No groundwater samples were collected.

The soil samples from Boring 12-B6 reported 1.2 and 1.0 ppm of TPH-D at the surface and 18-inches bgs, and 76 and 35 ppm TPH-MO at the surface and 18-inches respectively. Boring 12-B7 reported 8.5 and 21 ppm of TPH-D at the surface and 18-inches bgs, and 40 and 98 ppm TPH-MO at the surface and 18-inches respectively. Boring 12-B8 was below the detection limit for TPH-D and TPH-MO in all soil samples. Boring 12-B9 reported 19 ppm TPH-MO in the surface sample and below detection limits for TPH-D and MO in all other samples. No groundwater samples were collected.

Site 13, Garages near Cookhouse

During the previous Phase II investigation, this site had minor impacts from TPH-D (9.3 ppm) and TPH-MO (160 ppm) detected in the soils, all in samples collected within 6-inches of the surface. Nothing was reported in the deeper samples collected at 18- and 36-inches below ground surface. No groundwater samples were collected. Additional sampling was performed to confirm the presence and extent of the TPH-D/MO impacts in the soil and groundwater.

A total of three borings (13-B7, 13-B8, and 13-B9) were installed at this site (See Figure 2.6, Appendix B) and surface soil and groundwater samples were collected. Borings 13-B7 and 13-B8 reported TPH-MO at 12 and 54 ppm in the surface soil samples, respectively. TPH-D was below the detection limit in these samples as well as the surface soil sample from boring 13-B9. The surface soil sample from Boring 13-B9 was below the detection limits for TPH-MO as well. The groundwater samples from all three borings were also below the detection limits for TPH-D and TPH-MO. The ground water sample from 13-B8 was also tested for arsenic and reported 6.4 ppb of arsenic.

Site 17, Former Lumber and Log Storage

Minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) were detected in this area during the previous Phase II investigation. To address Regional Board concerns that low concentrations of TPH-D/ MO at this site may impact groundwater, a total of three borings were proposed. Groundwater samples were collected from three borings (17-B21, 17-B22, and 17-B23), which were placed near the three sample locations that exhibited the highest levels of TPH-D/ MO (17-B10, 17-B16, & 17-B20). Surface soil samples were collected at each location and analyzed for TPH-D/MO with silica gel cleanup. Per the Regional Board's direction, all the areas were re-sampled for arsenic. Surface soil at the three borings was also analyzed for arsenic and the groundwater samples were also analyzed for dissolved arsenic. See Figure 2.7, Appendix B, for sampling locations.

Boring 17-B21 reported 24 ppm of TPH-MO in the surface soil sample and was below the detection limit for TPH-D. Arsenic was reported at 2.245 ppm in the surface soil sample. The groundwater sample from this boring was below the detection limit for TPH-D and TPH-MO and arsenic was reported at 3.4 ppb.

Boring 17-B22 reported 31 ppm of TPH-MO in the surface soil sample and was below the detection limit for TPH-D. Arsenic was reported at 2.385 ppm in the surface soil sample. The groundwater sample from this boring was below the detection limit for TPH-D, TPH-MO and arsenic.

Boring 17-B23 was below the detection limit for TPH-D and TPH-MO in the surface soil sample. Arsenic was reported at 2.149 ppm in the surface soil sample. The groundwater sample from this boring was below the detection limit for TPH-D, TPH-MO and arsenic.

Site 18, Background Soil Sample Area

Concentrations of arsenic have been detected at various locations across the property in the soil and the groundwater during the previous Phase II assessment. Levels in the soil at some locations (highest level reported = 4.9 ppm) have exceeded the EPA's residential and industrial Preliminary Remediation Goals (PRGs) (0.39 and 1.59 ppm respectively). The levels reported in some groundwater samples (highest level = 15 ppb) also exceeded the Maximum Contamination Level for drinking water (10 ppb). Background samples were collected for the analysis of arsenic in soils and groundwater. The sample area is typified by windblown coastal sand dunes. The background control area was the undeveloped coastal dune area located upwind, to the northwest of the project area. Three separate soil samples were collected from the control area (See Figure 2.1) during project sampling.

Boring 18-B4 reported arsenic at 2.741 ppm in the surface soil sample and below the detection limit of 2.0 ppb in the groundwater sample. Boring 18-B5 reported arsenic at 3.147 ppm in the soil sample and below the detection limit in the groundwater sample. Boring 18-B6 reported arsenic at 2.84 ppm in the soil sample and below the detection limit in the groundwater sample.

5.0 CONCLUSIONS & RECOMMENDATIONS

Site 2, Lead Assessment around Houses

Lead was detected at levels that would classify the soil as a hazardous waste around all of the five building that were retested during this investigation. The impacts extended out fifteen feet from the structures, which in most cases was approximately to the property lines. The extent of the impacts at other structures not tested is unknown at this time. The depth of the impacted soil is also not known, as all samples collected were from the surface.

The stormwater samples collected from around the buildings did not have any lead in them at levels above the method detection limits; however, if the soil is disturbed and carried off in stormwater runoff, the lead would likely be transported with it.

Groundwater samples were not collected as part of this or the previous investigations of the houses; however, boring 4-B1 was installed during the previous investigation adjacent to the town and groundwater samples from it were tested for lead. The groundwater sample results from this boring were below the detection limits for lead. This was also true for the previous borings 6-B1, 10-B1, 12-B5, and 15-B3. Boring 1-B2 was the only groundwater sample from this or the previous investigation which reported lead levels above the detection limit in groundwater (29 ppb) but these results are likely associated with the petroleum impacts reported at Site 1 (the Soccer Field). Given these results, it appears that the lead impacts are likely

restricted to the soil, however, the vertical and horizontal extent of those soil impacts have yet to be defined.

Site 3, Railroad Sites

Boring 3-B17, located within the previous Phase II ESA area "3-B5 to B8" again reported very minor petroleum impacts with only 27 ppm of TPH-MO reported in the surface soil sample. This is similar to the low levels of hydrocarbons detected at this site during the previous investigation. The groundwater sample from boring 3-B17 was below the method detection limits for TPH-D and TPH-MO, so it appears that the low levels of hydrocarbon impacts in this area have not impacted the groundwater.

Boring 3-B18, located within the Phase II ESA area "3-B9 to 3-B12", reported low levels of TPH-D/MO in the surface sample (3.1 ppm/46 ppm) and at 5-feet bgs (25 ppm/150 ppm). TPH-D/MO were below detection limits in the 10-foot bgs sample. The groundwater sample from boring 3-B18 reported 570 ppb TPH-D and 4,600 ppb TPH-MO.

These results indicate that the area around boring 3-B17 has only minor petroleum impacts near the surface that do not extend to depth and do not appear to be impacting groundwater. The soil impacts in that area around boring 3-B18 appear to be more extensive, and there are significant hydrocarbon impacts to the groundwater in this area. The extent of the soil and groundwater impacts in this area is yet to be defined.

Site 6, Teepee Burner

One groundwater sample was collected at this site to reassess the presence of TCDD in the groundwater. This groundwater sample was below the detection limit for all Dioxins/Furans analyzed for. The previous groundwater sample was not filter prior to analysis and it is likely that minor levels of dioxin that were reported to be in the groundwater were in fact in the sediment contained in the groundwater sample. The filtered sample from this investigation did not confirm the presence of TCDD in the groundwater at this site.

Site 12, Rigging Shop

During the previous Phase II investigation, very minor impact from TPH-MO (33 ppm) was detected in the soils at the surface and 18-inches bgs, but not in the groundwater. The soil samples collected in the previous investigation were 4-point composite samples. In order to define the extent of impacts, four more discrete samples were collected from around the perimeter of the existing slab. The soil samples from Boring 12-B6 reported 1.2 and 1.0 ppm of TPH-D at the surface and 18-inches bgs, and 76 and 35 ppm TPH-MO at the surface and 18-inches respectively. Boring 12-B7 reported 8.5 and 21 ppm of TPH-D at the surface and 18-inches bgs, and 40 and 98 ppm TPH-MO at the surface and 18-inches respectively. Boring 12-B8 was below the detection limit for TPH-D and TPH-MO in all soil samples. Boring 12-B9 reported 19 ppm TPH-MO in the surface sample and below detection limits for TPH-D and MO in all other samples.

The impacts in this area appear to be to the southwest, toward, and possibly related to the impacts reported at boring 3-B18. The extent of the impacts in this direction has not been defined.

Site 13, Garages near Cookhouse

During the previous Phase II investigation, this site had minor impacts from TPH-D (9.3 ppm) and TPH-MO (160 ppm) detected in the soils, all in samples collected within 6-inches of the surface. Nothing was reported in the deeper samples collected at 18- and 36-inches below ground surface. Additional sampling was performed to confirm the presence and extent of the TPH-D/MO impacts in the soil and groundwater. A total of three borings (13-B7, 13-B8, and 13-B9) were installed at this site and surface soil and groundwater samples were collected. Borings 13-B7 and 13-B8 reported TPH-MO at 12 and 54 ppm in the surface soil samples, respectively. TPH-D was below the detection limit in these samples as well as the surface soil sample from boring 13-B9. The surface soil sample from Boring 13-B9 was below the detection limits for TPH-MO as well. The groundwater samples from all three borings were also below the detection limits for TPH-D and TPH-MO.

There appear to be only minor surficial soil impacts from motor oil in this area. The soil impacts do not extend to 1.5-feet bgs and have not impacted the groundwater.

Site 17, Former Lumber and Log Storage

Minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) were detected in this area during the previous Phase II investigation. To address Regional Board concerns that low concentrations of TPH-D/ MO at this site may impact groundwater, a total of three borings were proposed. Groundwater samples were collected from three borings (17-B21, 17-B22, and 17-B23), which were placed near the three sample locations that exhibited the highest levels of TPH-D/ MO (17-B10, 17-B16, & 17-B20). Surface soil samples were collected at each location and analyzed for TPH-D/MO with silica gel cleanup. Minor impacts from TPH-MO were in the surface soil samples reported in boring 17-B21 (24 ppm) and 17-B22 (31 ppm). The groundwater samples from all boring were below the detection limit for TPH-D and TPH-MO.

There appear to be minor surficial soil impacts from Motor Oil in this area which have not impacted the groundwater.

Site 18, Background Soil Sample Area

Background samples were collected for the analysis of arsenic in soils and groundwater. Three separate borings were installed and boring 18-B4 reported arsenic at 2.741 ppm in the surface soil sample and below the detection limit of 2.0 ppb in the groundwater sample. Boring 18-B5 reported arsenic at 3.147 ppm in the soil sample and below the detection limit in the groundwater sample. Boring 18-B6 reported arsenic at 2.84 ppm in the soil sample and below the detection limit in the groundwater sample. So it appears that the background soil arsenic levels are approximately 3 ppm. This is consistent with other soil samples collected across the site except for the soil samples collected at 2-LS17 to 20 (arsenic levels from 13.66 to 15.15 ppm).

Background levels of arsenic in the groundwater appear to be below 2 ppb. Groundwater samples collected at 3-B18 (3.0 ppb), 17-B21 (3.6 ppb), and 13-B8 (6.4 ppb) were above the background levels, but still below the 10 ppb Federal Maximum Contamination Level (MCL). The arsenic levels in the groundwater sample from boring 1-B2 (15 ppb) collected during the last Phase II investigation is above background and the Federal MCL. Site where the arsenic levels

have been detected in the soil and groundwater significantly above the background levels should be further investigated to delineate the extent of the impacts.

6.0 DISTRIBUTION

Copies of this Workplan have been submitted to:

Andrew Whitney, Project Manager
County of Humboldt
Economic Development Division
520 "E" Street
Eureka, CA 95501

Mike Nelson, Project Manager
DANCO Group
5251 Ericson Way
Arcata, CA 95521

Diane Strassmaier, Project Officer
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-1)
San Francisco, CA 94105

Kasey Ashley
North Coast Regional Water Quality Control Board
5550 Skylane Blvd. Ste. A
Santa Rosa, CA 95403

Appendix A
Correspondence

California Regional Water Quality Control Board
North Coast Region
Beverly Wasson, Chairperson

Alan C. Lloyd, Ph.D.
Agency Secretary

http://www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: 1 (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Arnold Schwarzenegger
Governor

August 25, 2005

Mr. Dan Johnson
Samoa Pacific Group LLC
5251 Ericson Way
Arcata, CA 95521

Dear Mr. Johnson:

Subject: Request for Reports
File: Samoa Peninsula, Samoa, California, Case No. 1NHU890

I recently obtained information concerning the Phase I and Phase II Environmental Site Assessments that were completed by Winzler & Kelly for the Samoa Peninsula Brownfields site. The information contained in the two documents needs to be reviewed in order to determine if any actions are needed in the cleanup and abatement of discharges associated with the site. You need to submit copies of the Phase I and Phase II Environmental Site Assessment to our agency by September 15, 2005. Section 13267 of the California Water Code contains the authority for this request.

Please contact me at (707) 576-2673 if you have any questions.

Sincerely,

Kasey Ashley

Kasey Ashley P.G.
Engineering Geologist

KA:tab/082505kasamoa01.doc

cc: Tony Shen, Redevelopment Agency, County of Humboldt, 520 E Street, Eureka, CA 95501
Pat Kaspari, Winzler & Kelly, Consulting Engineers, 633 Third Street, Eureka, CA 95501

Alan C. Lloyd, Ph.D.
Agency Secretary

California Regional Water Quality Control Board
North Coast Region
Beverly Wasson, Chairperson

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Arnold
Schwarzenegger
Governor

November 29, 2005

Mr. Dan Johnson
Samoa Pacific Group, LLC
5251 Ericson Way
Arcata, CA 95521

Dear Mr. Johnson:

Subject: Comments on Phase II Environmental Site Assessment

File: Samoa Peninsula, Samoa, California, Case No. 1NHU890

I reviewed the *Phase II Environmental Site Assessment* (Report) completed by Winzler & Kelly for the Samoa Peninsula Brownfields site. I have several concerns with information and statements contained in the Report. The following outlines my general comments on the Report. No specific comments will be sent.

- Levels of contaminants in soils and groundwater were compared to residential Preliminary Remediation Goals (PRGs) developed by the U. S. Environmental Protection Agency. You need to be advised that the use of PRGs for investigation and/or cleanup decisions is not valid. The PRGs for soil are not protective of groundwater. In addition, the Regional Water Board determines the water quality objectives (cleanup numbers) for groundwater.

- The data for all soil samples analyzed for volatile organic compounds (VOCs) are considered suspect. The Report indicates that these samples were homogenized with a trowel prior to transfer into the appropriate sample container. Agitation of soil samples to be analyzed for VOCs is not a valid sampling method.

- You need to be advised for any future activities, placing excess soils that contain contaminants back into the areas where the soils were removed is a violation of Chapter 15 of Title 23 of the California Code of Regulations. Contaminated soils must be placed at permitted facilities.

- In future rounds of investigation, you will need to resample all the areas for arsenic.

- I do not concur with the conclusions in the Report. The complete horizontal and vertical extent of soil and groundwater contamination identified in the seventeen locations has not been determined. In addition, until the extent of contamination is identified, you may not make valid abatement determinations.

In summary, you will need to submit a workplan for the complete definition of the horizontal and vertical extent of the contamination identified in the seventeen locations. As this is such an extensive project, you will first need to submit the prioritization of the locations and a time schedule that you will use to complete the individual investigations. You need to submit the prioritization list and the associated time schedule to our agency by January 30, 2006. Section 13267 of the California Water Code contains the authority for this request.

Please contact me at (707) 576-2673 if you have any questions.

Sincerely,

Kasey Ashley

Kasey Ashley P.G.
Engineering Geologist

112905_KA_kasamoa02

cc: Tony Shen, Redevelopment Agency, County of Humboldt, 520 E Street, Eureka, CA 95501
Pat Kaspari, Winzler & Kelly, Consulting Engineers, 633 Third Street, Eureka, CA 95501

PK

WINZLER & KELLY
CONSULTING ENGINEERS

Ref: 0166705001.11004

February 13, 2006

Ms. Kasey Ashley
North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Ste. A
Santa Rosa, CA 95403

Re: Site Priority List
Samoa Peninsula Brownfield Site,
Samoa, California
Case No. 1NHU890

Dear Ms. Ashley:

Winzler & Kelly has prepared this letter on behalf of the Samoa Pacific Group, LLC and Humboldt County Economic Development Division in response to your letter to the Samoa Pacific Group dated November 29, 2005. This letter addresses your request to submit a prioritization list for further investigations of the sites sampled as part of the Samoa Peninsula Phase II investigation. Upon your approval of the list outlined in this letter, Samoa Pacific Group, Humboldt County, and Winzler & Kelly will prepare a schedule for the implementation of the investigations. The County may utilize a portion of their recent EPA Brownfield Assessment grant to further the investigation of some of the Samoa Peninsula Brownfield sites. After receipt of your concurrence with this priority list, it will be determined which investigations outlined below can be conducted with these funds, and a schedule will be developed for the further investigation of these sites. The Sampling and Analysis Plan (SAP) developed for the EPA Brownfield grant will be used to comply with the Workplan requested in your letter.

Sites within the Samoa Peninsula Brownfield study area have been divided into three categories and prioritized within those categories based on the proposed development of the area as well as the type and concentration of constituents found during the physical inspection and soil and groundwater sampling performed as detailed in *Phase II Environmental Site Assessment for APN 401-031-38, -44, -55, -59, and -60, Samoa Peninsula Brownfield Site, Samoa Humboldt County, California*, Winzler & Kelly, June 2005. The site numbers and results provided are taken from the Phase II Report and site locations are shown on the attached figure.

The sites have been broken up into three categories, described as follows:

Category A: Those sites that have reported soil or groundwater impacts, but whose impacts are near background and/or are likely related to naturally occurring substances.

Category B: Those sites that have reported soil or groundwater impacts at levels that are likely not related to background.

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Category C: Those sites that we feel do not require additional assessment.

CATEGORY A SITES

Site 13, Garages near Cookhouse had minor impacts from TPH-D (9.3 ppm) and TPH-MO (160 ppm) detected in the soils. No groundwater samples were collected. This area will be located under a proposed parking lot, which will serve to cap the soils and prevent migration of any existing impacts to the groundwater and prevent human exposure to the soils. We recommend limited additional sampling to confirm the presence and extent of the TPH-D/MO impacts in the soil and groundwater. Per the Regional Boards comments, the levels of arsenic in the soil and groundwater in this area will also be assessed.

Site 15, Hammond Powerhouse, Carriage House, Boiler Plant, Shops, there was elevated levels of TPH-D (73 ppm) and TPH-MO (450 ppm) detected in the soil. All groundwater samples were below the method detection limit. This area is proposed for coastal dependent industrial development. The extent of the TPH-D/MO and arsenic impacts in the soil in this area need to be defined. Given there are no groundwater impacts detected, only soil samples will be collected.

CATEGORY B SITES

Site 1, the Soccer Field had TPH-D detected up to 25 ppm in the soil and 270 ppb in the groundwater, TPH-MO detected up to 320 ppm in the soil and 180 ppb in the groundwater, TPH-G detected up to 21 ppm in the soil and 160 ppb in the groundwater, and arsenic detected up to 4.9 ppm in the soil and 15 ppb in the groundwater. Low levels of benzene (up to 1.4 ppb) were also detected in the groundwater. There was wood debris encountered in all of the borings installed in this area and it appears that there is extensive wood waste over this entire site. The levels of arsenic in the soil are similar to the background levels (3.8 ppm collected from boring 18). It is likely that the arsenic detected in the groundwater is also naturally occurring; however background samples from the groundwater will need to be collected. The proposed development of this area into a paved convention center will help to cap the area and prevent further migration of the hydrocarbons to the groundwater and prevent direct contact by the public with the impacted soils. The extent of the TPH-G/D/MO and benzene impacts in the soil and groundwater need to be defined for this area, and per the Regional Board's direction, all the areas will be resampled for arsenic.

At Site 14, 2 Garages near Soccer Field there was TPH-MO reported in the soil at concentrations up to 630 ppm and lead detected in soil at concentrations up to 700 ppm. No groundwater samples were collected. This area is on the edge of a proposed parking lot, which will serve to cap the soils and prevent migration of impacts to the groundwater or exposure to the soils. The extent of TPH-MO, lead and arsenic impacts in the soil and groundwater in this area needs to be defined. The delineation of these impacts may be combined with the investigation at the Soccer Field site, depending on the required horizontal extent of the investigation at the Soccer Field.

Site 6, Teepee Burner: Total TCDD in the groundwater was reported at 0.0068 ppb. The PRG for TCDD is 0.000000448 ppb for drinking water. No dioxins or furans were reported in the soil at this site. It is recommended that minimal soil and groundwater sampling be performed to confirm the presence of TCDD in the groundwater at this site.

The following sites are all in very close proximity to the on-going Underground Storage Tank investigation occurring at the Former Lorenzo Shell site. For this reason we have grouped these sites together and propose that the data collected to-date on the Lorenzo site be assessed with the objective of determining if further investigation is required to fully delineate the impacts for these adjacent sites.

Site 7, Chemical Storage Shed: The soil in the shed had elevated levels of TPH-D (74 ppm) and TPH-MO (1,000 ppm).

Site 8, Oil Storage Shed: There were minor impacts from TPH-D (3.4 ppm), TPH-MO (41 ppm), TPH-G (3.6 ppm) and benzo(a)pyrene (0.65 ppm) in the soil at the site, as well as elevated levels of lead (1,000 ppm).

Site 9, Garage, Behind Lorenzo Shell Station: There were minor impacts from TPH-D (4.0 ppm) and TPH-MO (90 ppm) as well as elevated levels of lead (850 ppm) in the soil.

Site 10, Drum Storage Area: Very minor impact from TPH-MO (22 ppm) and slightly elevated levels of lead (210 ppm) were detected in soil.

CATEGORY C SITES

Based on the results from the initial Phase II investigation, we believe that the following sites are suitable for no further action:

Site 2, Lead Base Paint Survey: Paint on all of the ten structures tested was determined to be lead based paint. Lead in soil around the structures was also detected at concentrations up to 2,350 ppm.

We would propose no further delineation of the lead impacts to the soil around the houses. Notification will have to be provided to all tenants of the houses with regards to the lead in the paint and the soil. If any of the houses are demolished or extensively remodeled, the lead based paint and any removed soil will have to be dealt with per the appropriate regulations.

Site 3, Railroad Sites: Very minor levels of TPH-D (up to 5.4 ppm) and TPH-MO (up to 21 ppm) were reported in the soil. At these low levels the impacts do not appears to be of serious concern and are likely related to naturally occurring organics in the soil.

Site 4, Sewer System: Minor levels of TPH-D (5.5 ppm) and TPH-MO (23 ppm) were detected in the soil and slightly higher levels of TPH-D (110 ppb) and TPH-MO (450 ppb) as well as

TPH-G (65 ppb) and benzene (0.75 ppb) were detected in the groundwater. The laboratory reported that the hydrocarbons did not "exhibit the peak pattern typical" of the various hydrocarbons and it is possible that the natural organics in the wastewater could show up on the chromatographs as TPH-G/D/MO. The levels of nitrates 6.5 ppm and orthophosphate 17 ppm in the soil are minimal, and the level of iron in the soil is similar to the background levels. The levels of ortho-phosphate in the water (4,500 ppb) are fairly elevated, but there is no PRG or Maximum Contamination Level (MCL) established for orthophosphate to use as a comparison. The continued use of this area as part of the wastewater treatment system will also prevent human exposure to the soils and groundwater.

Site 12, Rigging Shop: Very minor impacts from TPH-MO (33 ppm) was detected in the soils, and arsenic was detected in the groundwater (4.2 ppb) at levels that are likely similar to background.

Site 16, Hammond Powerhouse, Simpson Co-Generation Powerhouse, and the LP Pulp Mill: OCDD was detected at 0.0051 ppm in the soil. There are no PRGs established for OCDD so it was converted to an equivalent level of 2,3,7,8 -TCDD. One ppm of OCDD is equivalent to 0.0001 ppm of 2,3,7,8 -TCDD. Therefore, 0.0051 ppm of OCDD is equivalent to 0.00000051 ppm of 2,3,7,8-TCDD. The PRG's for 2,3,7,8-TCDD for residential and industrial sites are 0.0000039 ppm and 0.0000159 ppm, respectively. Therefore, the OCDD concentration is below both the residential PRG and the industrial PRG.

Site 17, Former Lumber and Log Storage: Minor levels of TPH-D (2.2 ppm) and TPH-MO (51 ppm) was detected in this area. Given that this area was used as lumber storage, these levels are likely due to naturally occurring wood waste.

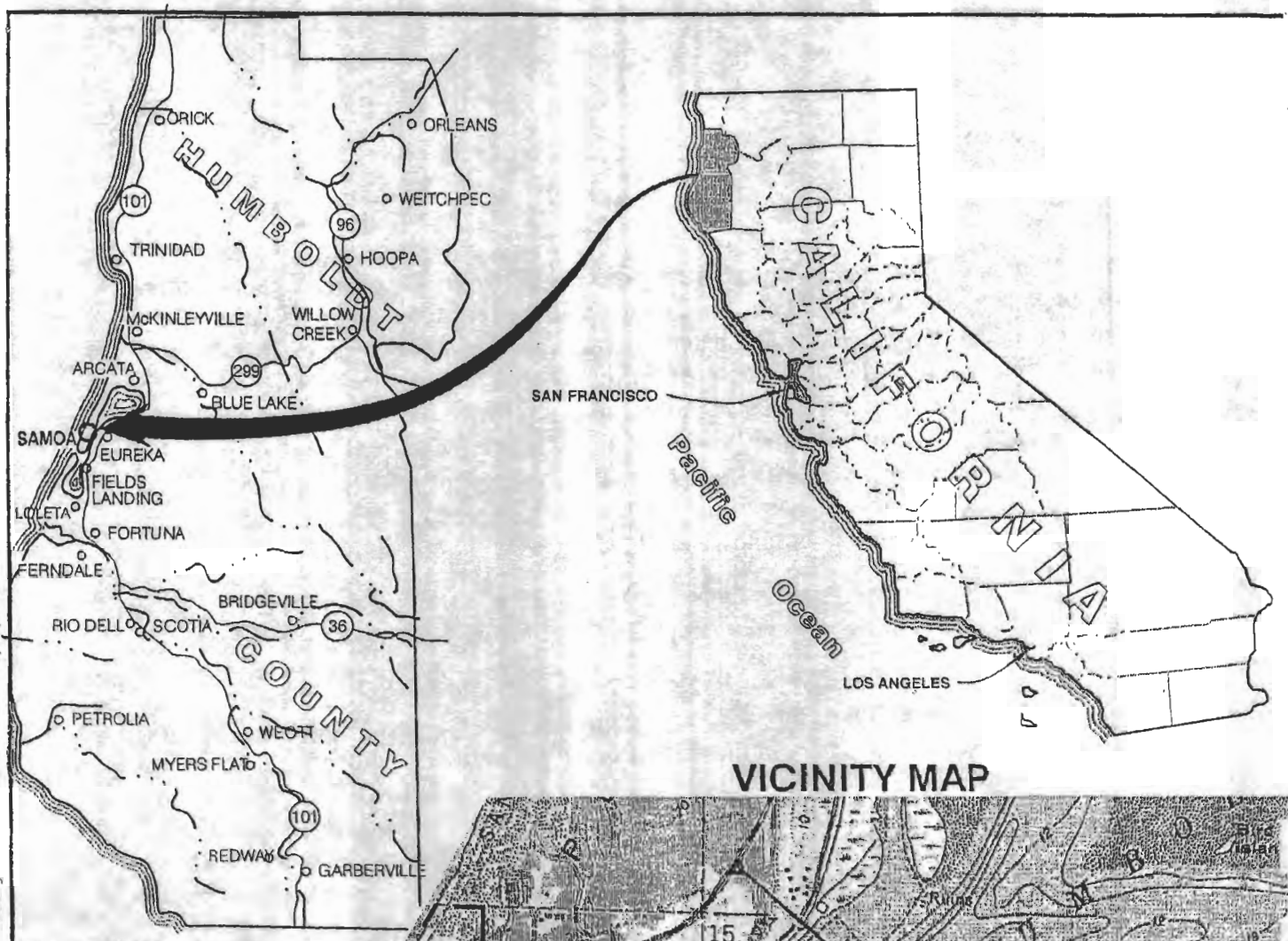
Please review this prioritization and provide direction/comments on this list. If you have any questions, please do not hesitate to call.

Sincerely,
WINZLER & KELLY

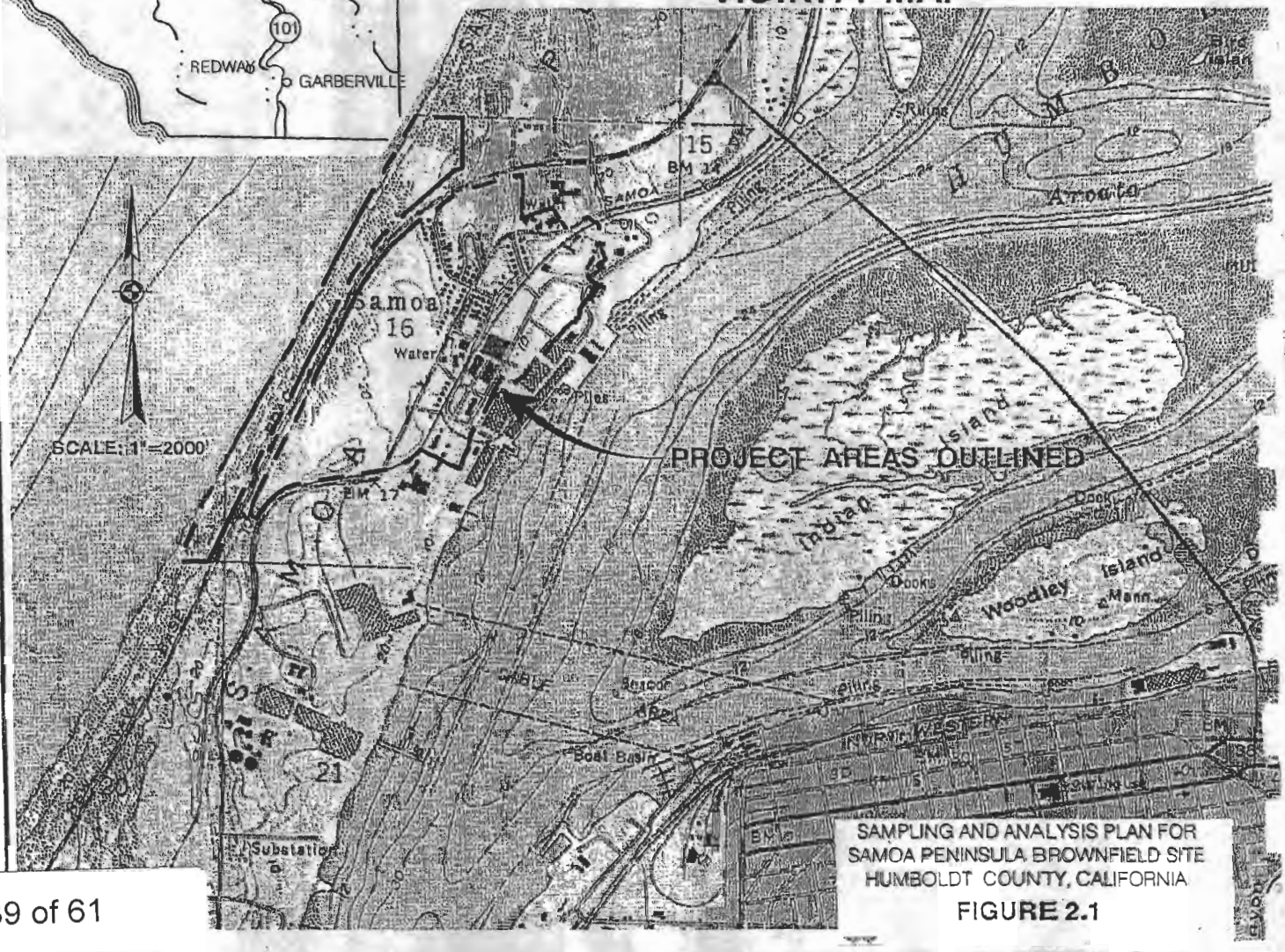
Patrick Kaspari, P.E.
Project Engineer

Enclosures: Figure 1 Vicinity Map
Figure 2 Site Plan

cc: Dan Johnson, Samoa Pacific Group, 5251 Ericson Way, Arcata, CA 95521
Tony Shen, Humboldt County Economic Development Division, 520 E Str., Eureka, CA 95501



VICINITY MAP



6/3/2005

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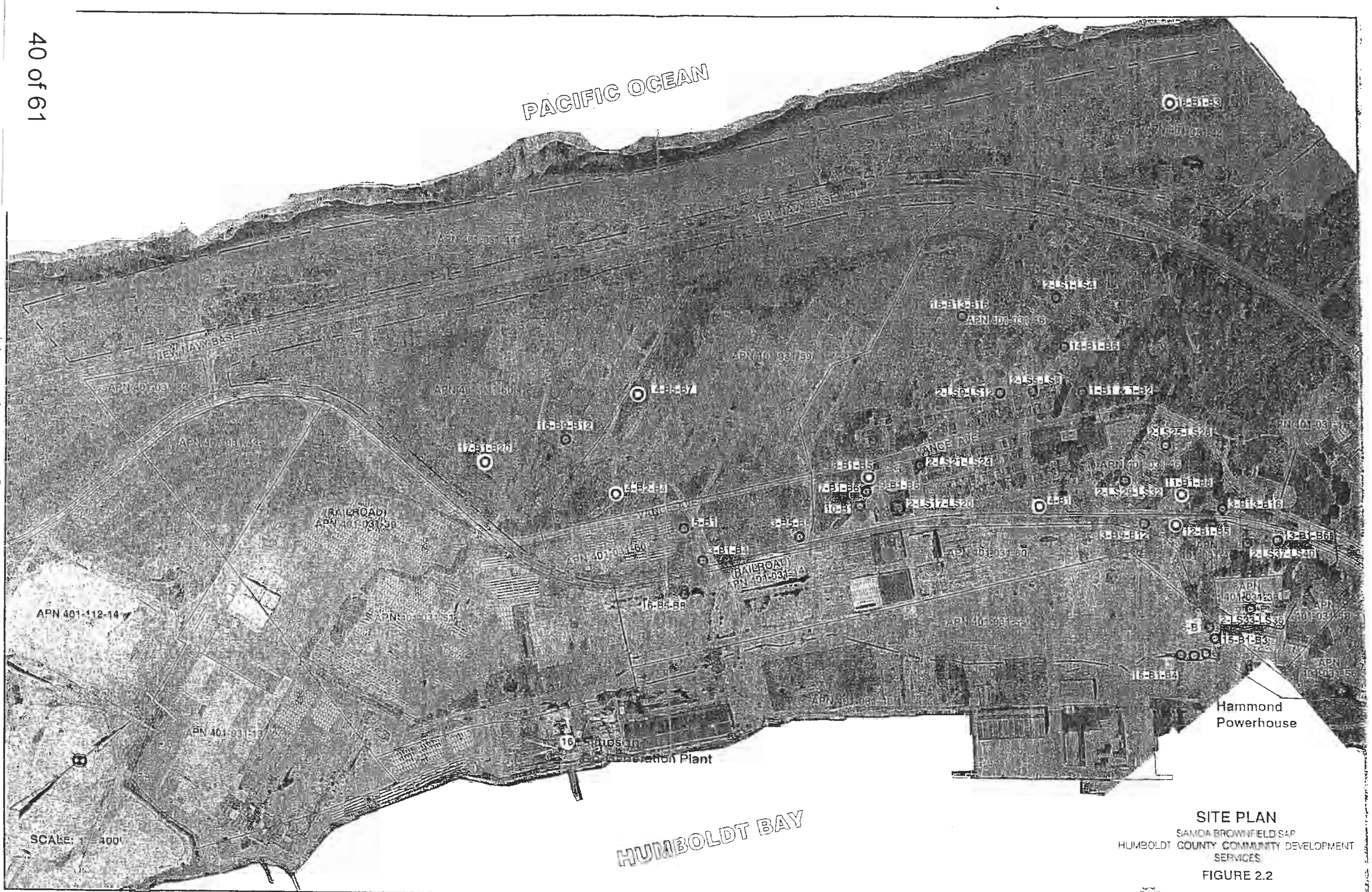
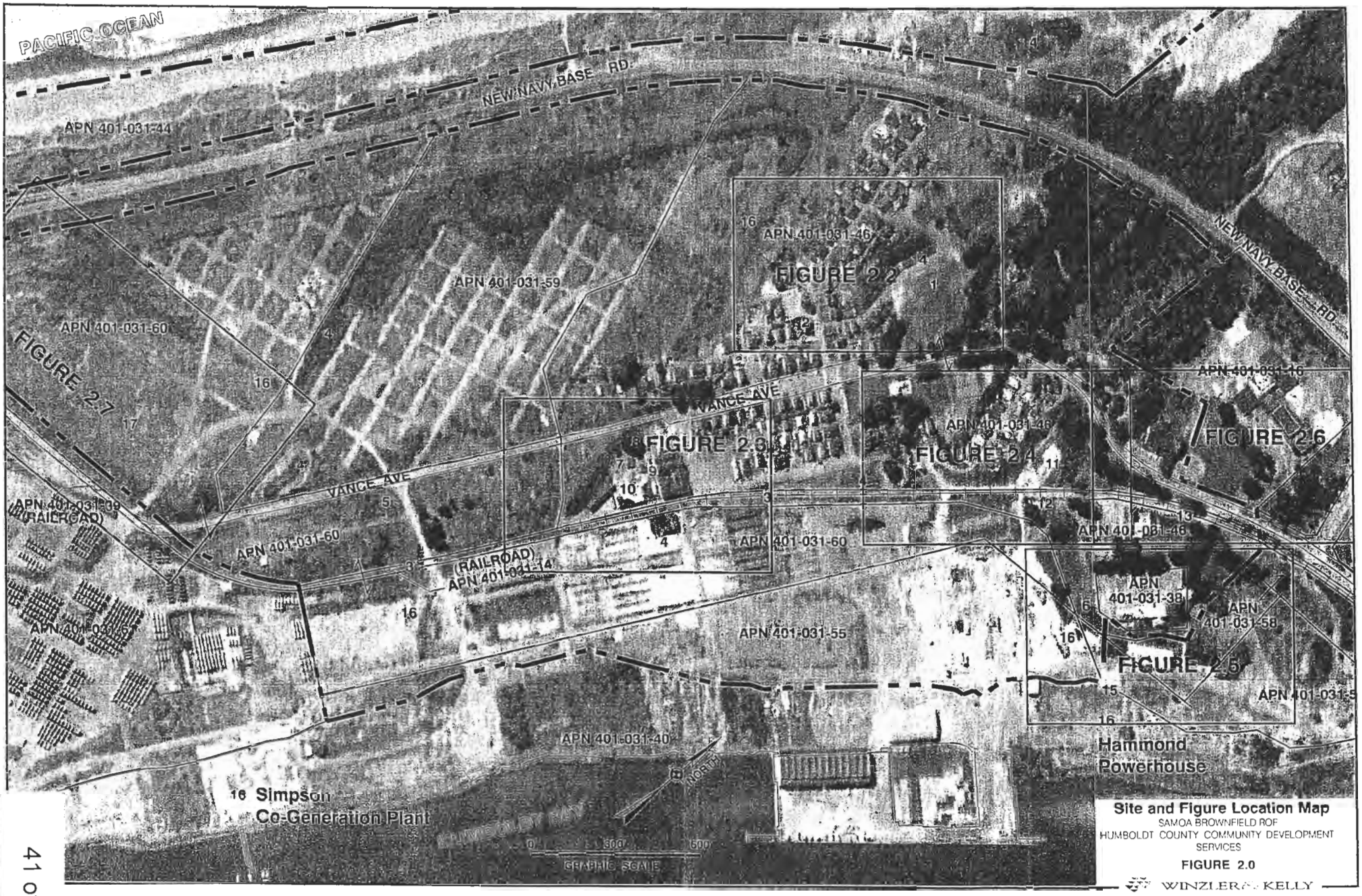
SAMPLING AND ANALYSIS PLAN FOR
SAMOA PENINSULA BROWNFIELD SITE
HUMBOLDT COUNTY, CALIFORNIA

FIGURE 2.1



SITE PLAN
SAMOA BROWNFIELD SAP
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES
FIGURE 2.2
WINZLER & KELLY



Site and Figure Location Map
SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES
FIGURE 2.0
WINZLER & KELLY

California Regional Water Quality Control Board
North Coast Region
William R. Massey, Chairman

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Linda S. Adams
Secretary for
Environmental Protection

Arnold
Schwarzenegger
Governor

August 4, 2006

Mr. Dan Johnson
Samoa Pacific Group LLC
5251 Ericson Way
Arcata, CA 95521

Dear Mr. Johnson:

Subject: Comments on Site Priority List

File: Samoa Peninsula, Samoa, California, Case No. 1NHU890

I reviewed the *Site Priority List* (List) completed by Winzler & Kelly for the Samoa Peninsula Brownfields site. I have several concerns with statements in the List. The following outlines my general comments on the Report. No specific comments will be sent.

- As stated in my letter of November 29, 2005, the use of Preliminary Remediation Goals (PRGs) for investigation and/or cleanup decisions is not valid. The PRGs for soil are not protective of groundwater. Cleanup numbers for soil contamination are the naturally occurring background levels where feasible. The process for determining the feasibility is outlined in Title 23, Division 3, Chapter 15, Section 2550.4 of the California Code of Regulations. In addition, the Regional Water Board determines the water quality objectives (cleanup numbers) for groundwater.

- I do not concur with no further action for the lead base paint survey areas. Hazardous levels of lead are located in surface soils. These contaminated surface soils need to be remediated. In additional, sampling is required to verify if the lead in the soils is a potential source of contamination of surface waters.

- In several locations, the statement is made that the levels of Total Petroleum Hydrocarbons are likely related to naturally occurring organics in the soil. There is no data to substantiate this statement. Prior to my concurrence that

no further work is required, laboratory samples will need to be collected to substantiate the premise.

In summary, you will need to submit a time schedule for the investigation of the areas of the site. You need to submit the time schedule to our agency by September 18, 2006. Section 13267 of the California Water Code contains the authority for this request.

Please contact me at (707) 576-2673 if you have any questions.

Sincerely,

Kasey Ashley

Kasey Ashley P.G.
Engineering Geologist

080406_KA_kasamoa03

cc: Tony Shen, Redevelopment Agency, County of Humboldt, 520 E Street, Eureka, CA 95501
Pat Kaspari, Winzler & Kelly, Consulting Engineers, 633 Third Street, Eureka, CA 95501

THE DANCO GROUP OF COMPANIES

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Danco Builders
Danco Cabinets
Danco Development
Danco Homes
Danco Property Management
Pacific West Communities
Western Living Concepts

5251 Ericson Way
Arcata, California 95521
www.danco-group.com
phone (707) 822 9000
fax (707) 822 9596

November 22, 2006

Ms. Kasey Ashley
North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

RE: Samoa Peninsula Brownfield Site, Case No. 1NHU890

Dear Ms. Ashley,

Thank you for your letter of August 4, 2006 addressed to Dan Johnson and the Samoa Pacific Group. Further to our subsequent conference call in October, I am writing to summarize our project status and intentions for the site.

It is my understanding from Andrew Whitney of the Humboldt County Economic Development Division that there is additional funding through a Community Wide Assessment Grant that can be applied towards completing the work Winzler & Kelly has undertaken so far. This funding cycle expires at the end of March, 2007. We have asked Pat Kaspari of Winzler & Kelly to create a revised Scope of Work and Schedule to comply with this time frame. Our principal goal with this next stage of the work is to address the concerns you expressed in your letter of August 4, 2006 and to clearly identify the extent of remediation required.

We do not expect to begin any new construction or substantive changes to the existing town for at least two more years. We recently re-designed the project based on Tsunami concerns and are still processing our revised EIR. After County approvals we will begin the Coastal Commission approval process. In the interim, we will continue to work with the County and Winzler and Kelly to determine the best way forward and the extent of remediation required on the site. We will be actively pursuing addition grants and/or low-interest loans to complete the remediation work. We will keep you posted on our progress in this regard.

Sincerely,

Mike Nelson
Development Project Manager
Direct Line (707) 825-1594
mnelson@danco-group.com

cc: Andrew Whitney, Humboldt County Economic Development Division
Pat Kaspari, Winzler & Kelly Consulting Engineers.

California Regional Water Quality Control Board
North Coast Region
William R. Massey, Chairman

Linda S. Adams
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Arnold
Schwarzenegger
Governor

January 12, 2007

Mr. Dan Johnson
Samoa Pacific Group LLC
5251 Ericson Way
Arcata, CA 95521

Dear Mr. Johnson:

Subject: Concurrence with Workplan for Additional Sampling and Analysis

File: Samoa Peninsula, Samoa, California, Case No. 1NHU890

I reviewed the *Workplan for Additional Sampling and Analysis* (Plan) developed by Winzler & Kelly Consulting Engineers for the further investigation of discharges at the Samoa Peninsula Brownfield Site. The Plan is generally considered adequate for the further investigation of discharges. I look forward to the implementation of the Plan at the earliest possible date.

You need to submit the report of field activities to our agency by May 1, 2007. Section 13267 of the California Water Code contains the authority for this request.

Please contact me at (707) 576-2673 if you have any questions.

Sincerely,

Kasey Ashley

Kasey Ashley P.G.
Engineering Geologist

011207_KA_kasamoa04

cc: Tony Shen, Redevelopment Agency, County of Humboldt, 520 E Street, Eureka, CA 95501
Pat Kaspari, Winzler & Kelly, Consulting Engineers, 633 Third Street, Eureka, CA 95501
Norm Crawford, Humboldt County Health Department, 100 H Street, Suite 100, Eureka, CA 95501

RECEIVED
JAN 12 2007
HUMBOLDT CO. DIVISION OF ENVIRONMENTAL HEAL

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT
WELL and BORING PERMIT APPLICATION

Facility ID # 1NHU890 Permit # 2132-B

Facility Name: Samoa Peninsula Brownfield Site

Site Address:

Site Owner: Samoa Pacific Group Telephone: 822-0826
Address: 5251 Ericson Way, Arcata AP#: 401-031-38, 44, 46, #55, 59, 60, and 61
RP Name: Mr. Dan Johnson Telephone:
Address: same
Consultant: Winzler + Kelly – Lia Webb Telephone: 443-8326
Address: 633 Third Street, Eureka Reg.#/Type: PG 7352
Driller: Laco Associates Telephone: 443-5054
Address: 21 West 4th Street, Eureka C-57 Lic.#: 442322

# On-site				# Offsite			
Wells	0	Borings	12	Wells	0	Borings	0

Activity: ☐ Construct ☐ Destroy ☐ Repair/Modify Electrode Type:

Well Type: ☐ Monitoring Well ☐ Injection Well ☐ Vapor Extraction ☒ Geologic Boring
☐ Extraction Well ☐ Piezometer ☐ Vapor Point ☐ Soil Gas Survey
☐ Vadose Well ☐ Cathodic Protection ☐ Direct Push Boring ☐ Temporary Well Point

Investigation Type: ☒ Site Assessment ☐ Disposal Practice ☐ UST ☐ Other*
☐ Surface Contamination ☐ Surface Impoundment ☐ AST
*Specify:

Investigation Phase: ☐ Initial ☒ Subsequent ☐ Remediation ☐ Closure

Suspected Contaminants: TPHD/MO, lead, arsenic, dioxin/furans, metals,

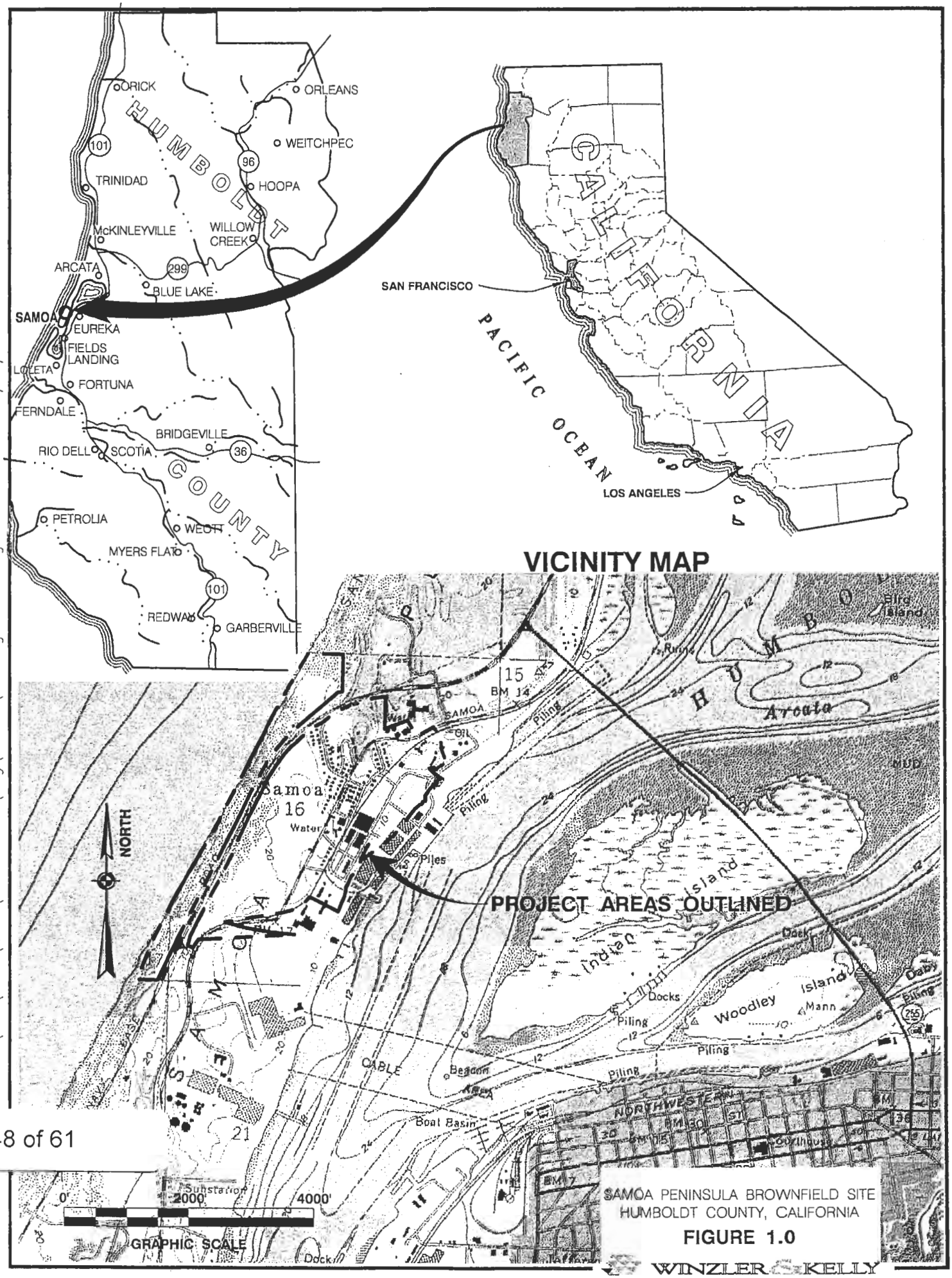
Disposal/Containment for Soil Cuttings: 55-gallon drums
Disposal/Containment for Rinsate: 55-gallon drums
Disposal/Containment for Development Water: " " "

Permits will not be processed with out the following information:

☒ Scaled Construction Detail
☒ NA (borings only) Detailed Site Plan
☒ Appropriate Fees
☒ Copy of Workplan (if not on file at HCDEH)
☐ Lead Agency Approval Letter – awaiting final approvals
☐ Off Site Well Requirements:
☐ Legal Right of Entry
☐ Off Site Address/Location
☐ Encroachment Permit
☐ Coastal Zone Permit

Proposed Work Date: 1/29/07 – 1/30

Appendix B
Figures



2/27/2007

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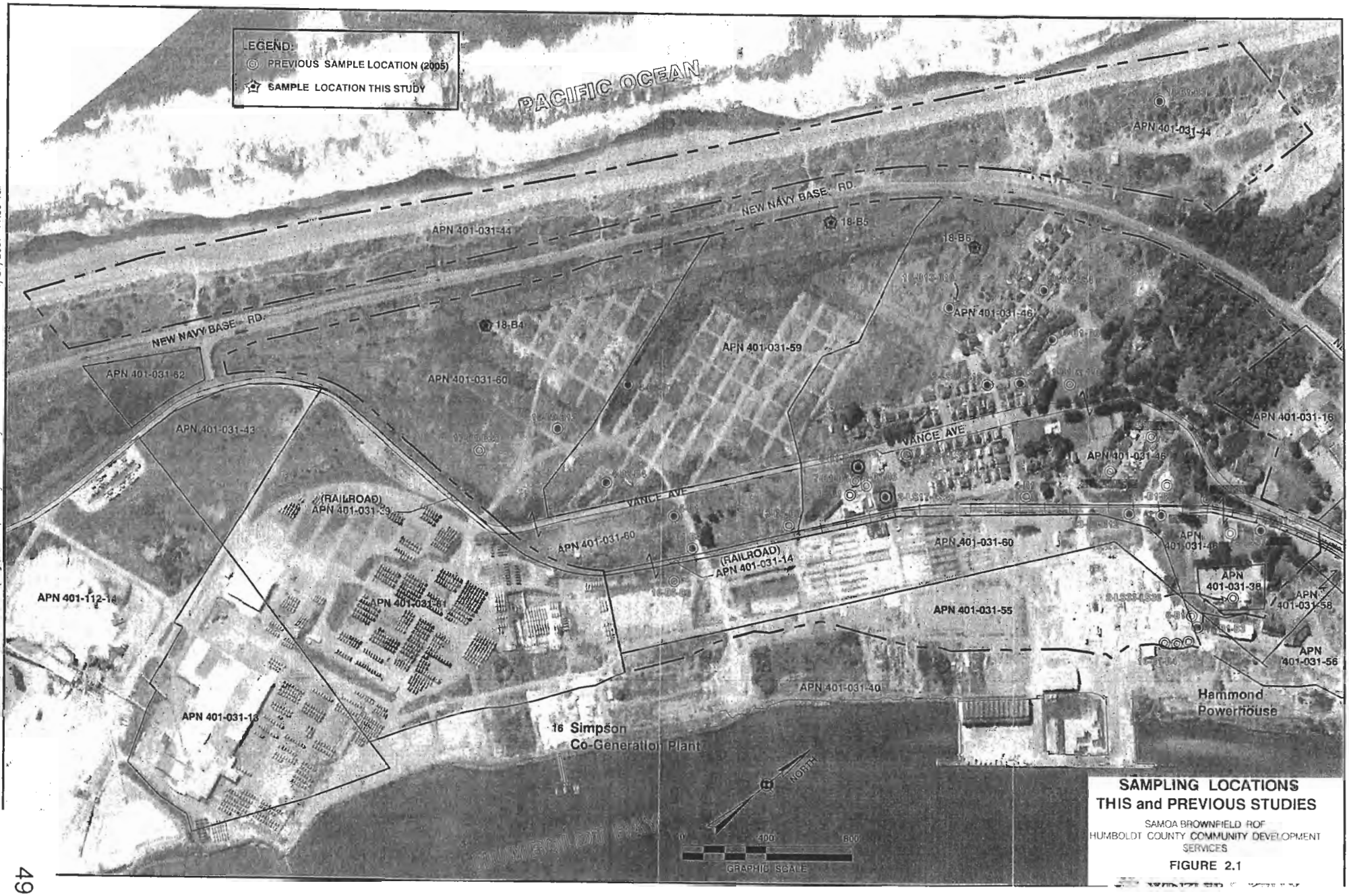

SAMPLING LOCATIONS
THIS and PREVIOUS STUDIES

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.1

4/27/2007 11:39 AM

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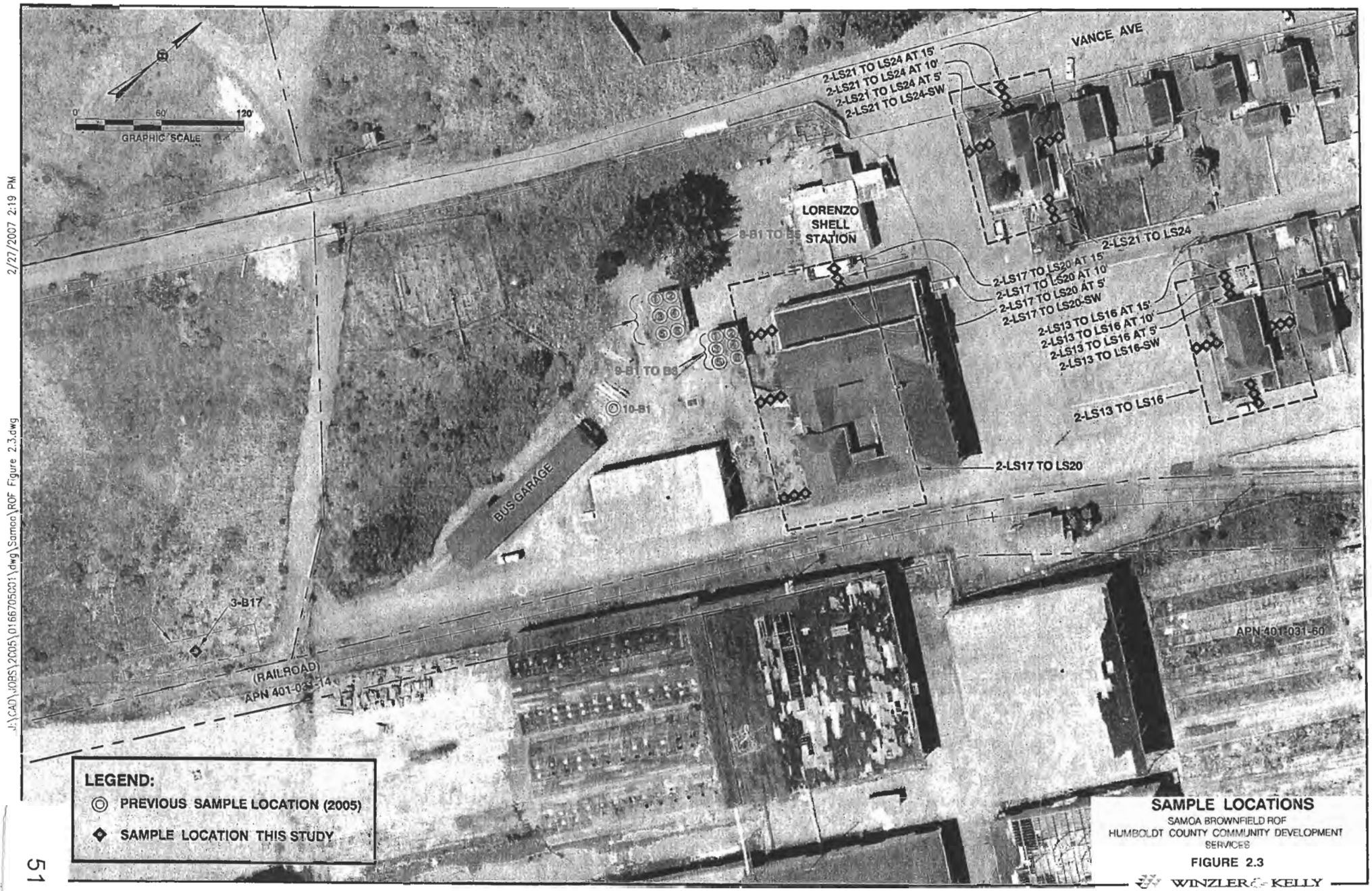
SAMPLE LOCATIONS

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.2

WINZLER & KELLY



SAMPLE LOCATIONS

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.3

WINZLER & KELLY

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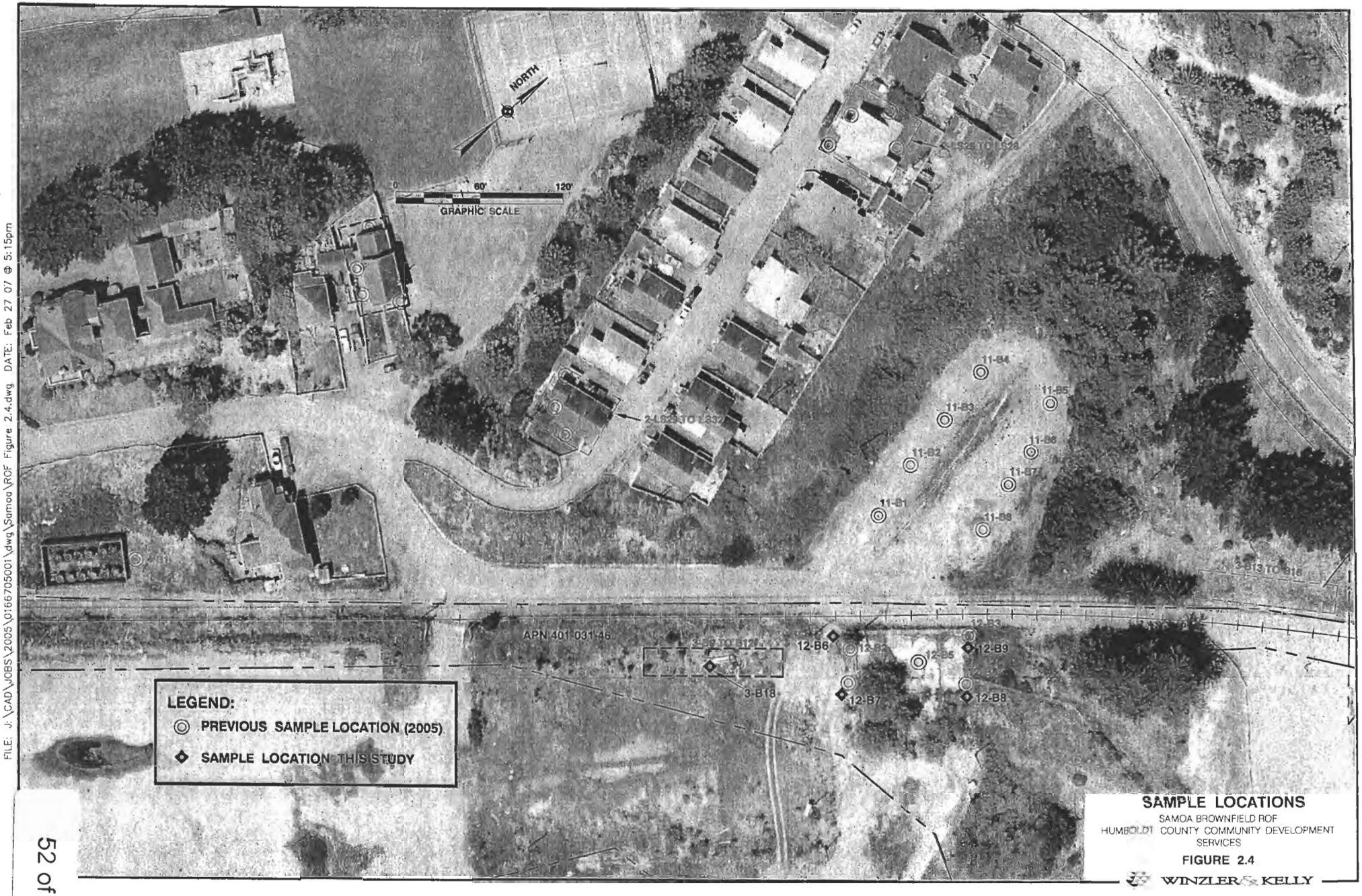

SAMPLE LOCATIONS

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.4

WINZLER & KELLY

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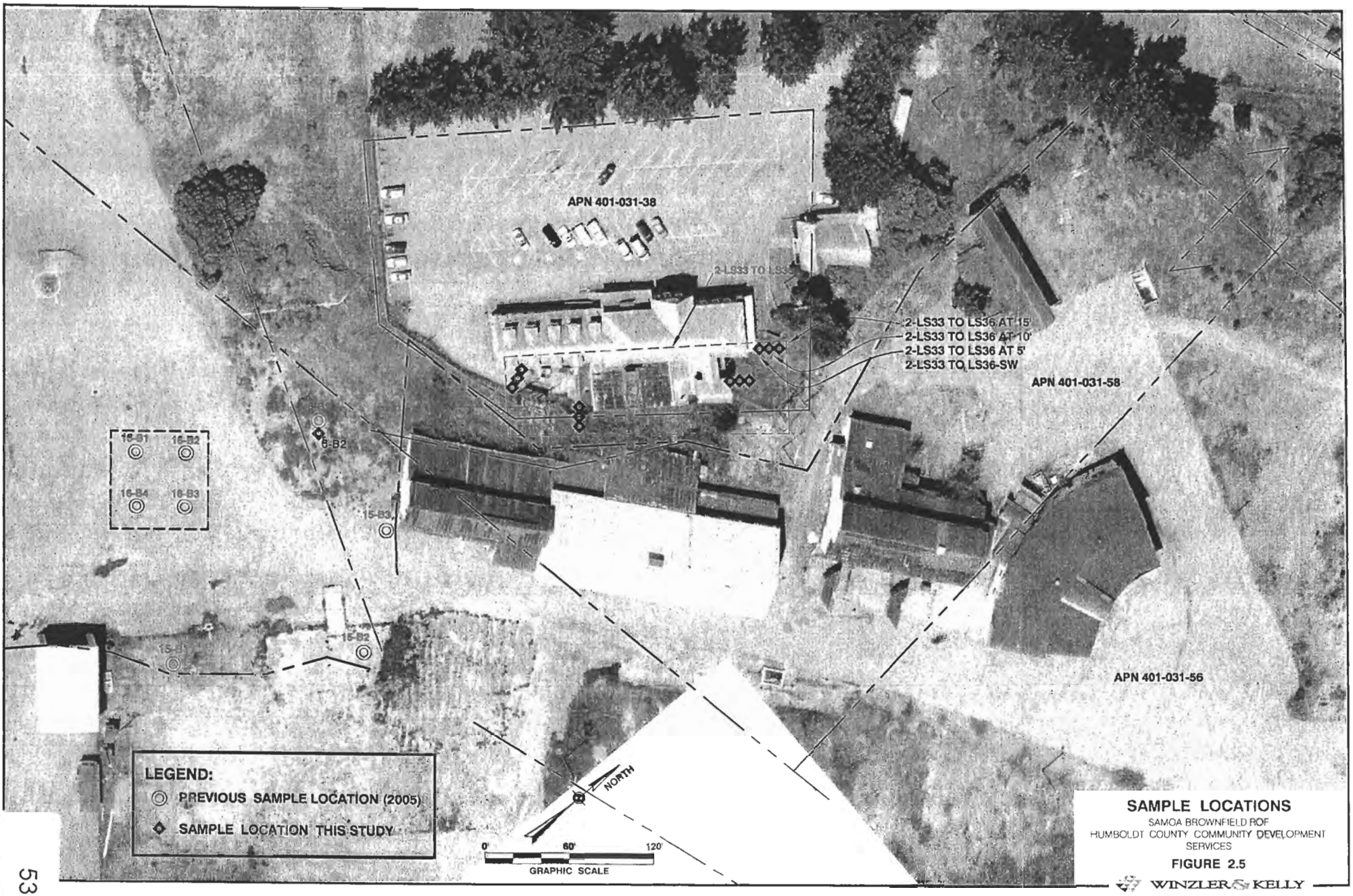
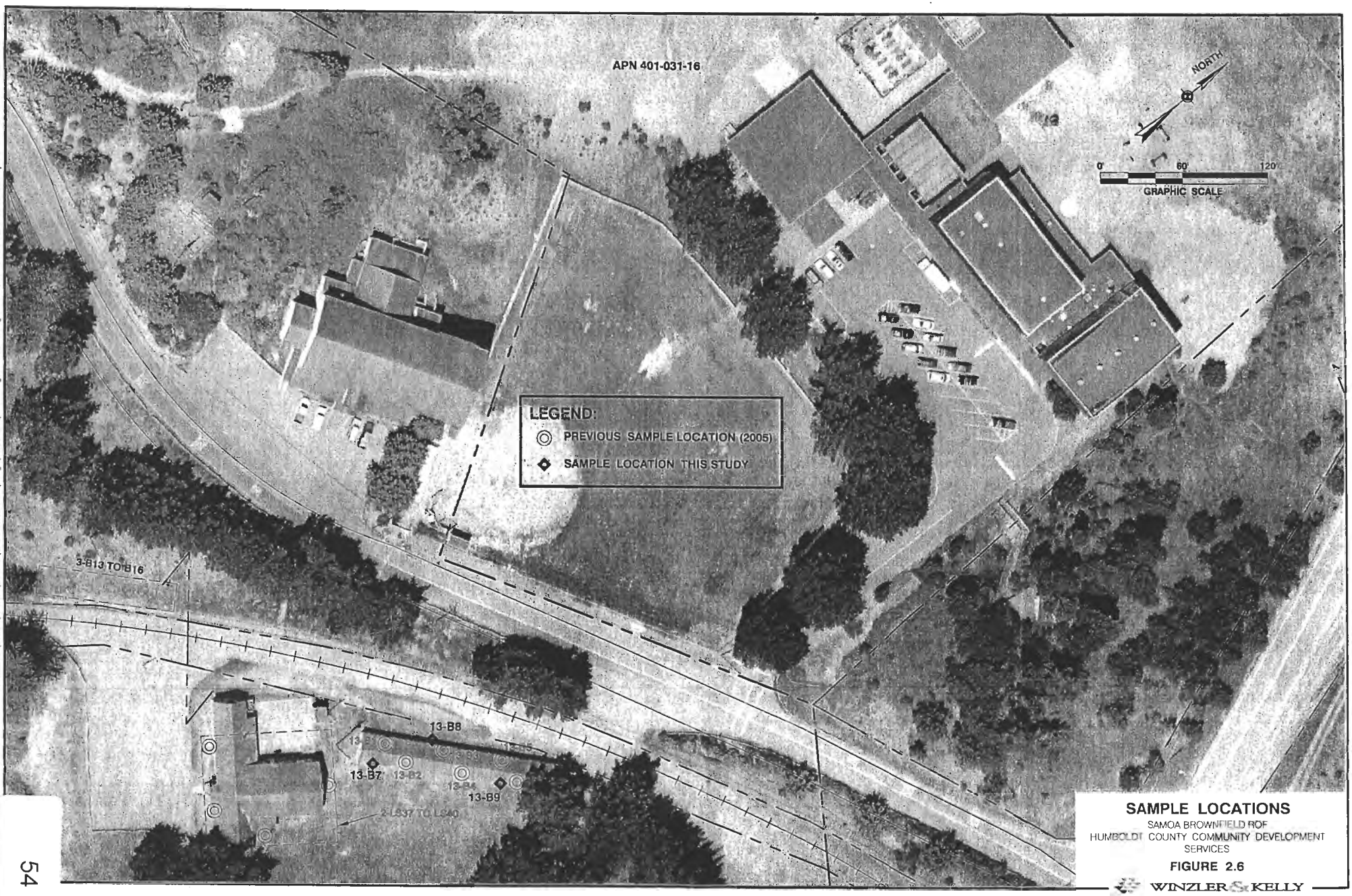


SAMPLE LOCATIONS

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.5

WINZLER & KELLY

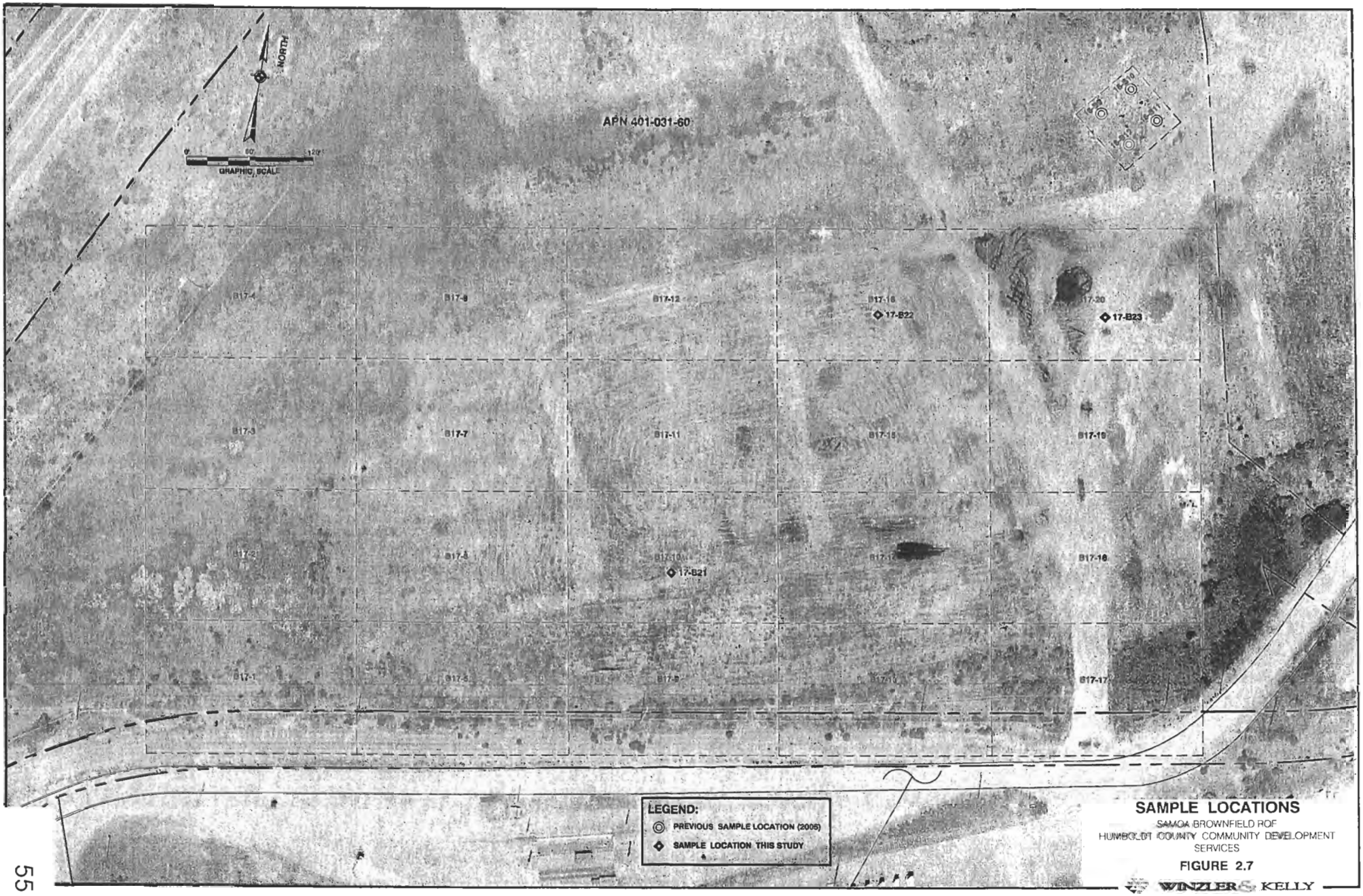


SAMPLE LOCATIONS

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.6

WINZLER & KELLY



SAMPLE LOCATIONS

SAMOA BROWNFIELD ROF
HUMBOLDT COUNTY COMMUNITY DEVELOPMENT SERVICES

FIGURE 2.7

WINZLER & KELLY

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Appendix C
Tables

PAGES NOT INCLUDED

Appendix D
Field Notes & Boring Logs

PAGES NOT INCLUDED

Appendix E
Laboratory Analytical Reports

PAGES NOT INCLUDED