



August 29, 1996  
961163NA

Ms. Madhulla Logan  
Hazardous Materials Specialist  
Alameda County Department of Environmental Health  
1131 Harbor Bay Parkway  
Alameda, CA 94503

**Subject: Removal Action Workplan for Lead-Impacted Soil  
Encinal Terminals Alameda Beltline Railroad Site, Alameda, California**

Dear Ms. Logan:

Woodward-Clyde Consultants (WCC), on behalf of Encinal Real Estate, Inc. (Encinal), is pleased to submit this work plan for performing excavation and off-site disposal of lead-impacted soil followed by backfilling at the Encinal Terminals Alameda Beltline Railroad Site in Alameda, California (the "Site"). The activities include soil excavation, stockpile characterization, soil sampling, field and confirmation laboratory analysis, remediation by off-site disposal of the excavated soil, and site restoration. A residential development is planned for future use of the Site.

## PREVIOUS INVESTIGATIONS

Previous investigations performed by WCC for Encinal include an Environmental Summary Report (ESR), dated August 14, 1996 (WCC, 1996). Locations of previous sampling locations are shown on Figure 1. Table III from the ESR contains a listing of results for Title 22 Metals including lead, which has been attached for your convenience.

The laboratory results indicated that lead was detected at three locations at concentrations above the residential use scenario Preliminary Remediation Goal (PRG) of 400 mg/kg for lead in shallow soil samples (B-5 at 6,440 mg/kg, S-1 at 6,140 mg/kg, and B-1 at 419 mg/kg).

## CLEANUP GOAL FOR THE SOIL EXCAVATION

As shown in Table III, the only metals detected in shallow soil at concentrations above United States Environmental Protection Agency (USEPA) Region IX PRGs were lead and beryllium. For beryllium, maximum detected concentration was 0.69 mg/kg, which is within the range of background concentrations in soil in the Bay Area (between 0.8 and 1.1 mg/kg, according to the Lawrence Berkeley National Laboratory's (LBNL) "Protocol for Determining Background Concentration of Metals at LBNL", August 1995). Since beryllium concentrations are within soil background, the only soil to be excavated is the one impacted by lead at concentration above the

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# Woodward-Clyde

Ms. Madhulla Logan  
Alameda County Department of Environmental Health  
August 29, 1996  
Page 2

cleanup goal. Based on a conversation between Marco Lobascio of WCC and Ms. Madhulla Logan of Alameda County, excavation will be performed to remove lead-impacted surficial soil at concentrations above 400 mg/kg. Alameda County also recommended that the cleanup goal be applied to surficial soil up to a depth of at least two feet.

## REMOVAL ACTION SPECIFICATIONS

A qualified and licensed contractor will be retained by Encinal to perform the excavation work. Prior to excavation activities, soil samples will be collected to explore the areal extent of lead-impacted surface soil on an approximately 3-foot expanding radius around sample locations with lead concentrations above the cleanup goal of 400 mg/kg. No sampling or excavation is planned for sample locations with lead concentrations below the cleanup goal.

During excavation activities, one soil sample will be collected every 20 feet along the perimeter and one for every 400 square feet at the bottom of the excavation, for each 1/2-foot increment of soil excavated. Excavation activities will cease when bottom of excavation soil samples contain less than 400 mg/kg total lead.

## HEALTH AND SAFETY PLAN

A WCC Site-Specific Health and Safety Plan (HSP) will be developed for removal actions at the Site. The HSP will include a discussion of anticipated hazards and risks, an exposure monitoring plan for dust, dust control measures, general health and safety requirements, area control, reports, emergency procedures, and references. The route from the Site to the nearest hospital will also be provided in the HSP.

## SAMPLING AND ANALYSIS SPECIFICATIONS

### In-Situ Soil Samples

Soil samples will be analyzed for total lead using a mobile laboratory with an X-Ray Fluorescence (XRF) Spectrophotometer. The mobile laboratory will have the capability to analyze up to 32 field samples in one day. Ten percent confirmation samples shall be collected and analyzed at a California Approved Analytical Laboratory as confirmation samples for total lead. A regression curve analysis will be developed to show the correlation between the field XRF data and the analytical laboratory data for total lead. EPA guidance requires a 70 percent correlation between XRF and analytical laboratory data. WCC experience is that this criteria is easily met.



# Woodward-Clyde

Ms. Madhulla Logan  
Alameda County Department of Environmental Health  
August 29, 1996  
Page 3

## Ex-Situ Soil Samples

The excavated soil will be stockpiled on-site or placed in roll-off bins. Stockpiles will be separated into soil with total lead concentrations detected above the Total Threshold Limit concentration (TTLC) and below the TTLC of 1,000 mg/kg. Excavated soil with total lead exceeding the TTLC of 1,000 mg/kg is considered a hazardous waste.

A four-point composite sample will be collected at a minimum from each 100 cubic yards of stockpiled soil. The four-point composite soil samples will be analyzed using the XRF in the field for total lead with ten percent confirmation sampling at an analytical laboratory for total lead. As required for disposal, the four-point composite samples shall also be analyzed at an analytical laboratory for soluble lead using the acid California Waste (CWET). If the CWET test results exceed the Soluble Threshold Limit Concentration (STLC) of 5 mg/L for lead, the soil represented will be considered a California hazardous waste, and the Toxicity Characteristic Leaching Procedure (TCLP) test will be performed on the soil to evaluate whether the soil is a federal hazardous waste.

## WASTE DISPOSAL OPTIONS

Depending on the analytical results, excavated soil will either be disposed of at an off-site Class II or Class I landfill as daily cover. Encinal will choose a waste disposal contractor for hauling the soil off-site.

- If analytical results for total lead concentrations for the four-point composite soil samples from excavated soil are below the TTLC of 1,000 mg/kg and soluble lead concentrations using the acid CWET are below the STLC of 5 mg/L, the soil is not a hazardous waste and can be disposed of as landfill cover at a California Class II landfill.
- If analytical results for total lead concentrations for the four-point composite soil samples from excavated soil are below the TTLC of 1,000 mg/kg and soluble lead concentrations using the acid CWET are above the STLC of 5 mg/L, then the soil is considered a California hazardous waste. If soil is disposed in state, then the soil would need to be disposed at a Class I California landfill. If the TCLP results are below the regulatory limit of 5 mg/L, then the soil can be disposed of as landfill cover at an out-of-state Class II landfill as a non-Resource Conservation and Recovery Act (RCRA) waste.
- If total lead results for the four-point composite soil samples are greater than the TTLC of 1,000 mg/kg and the soluble lead results using the acid CWET are less than the STLC of 5



## Woodward-Clyde

Ms. Madhulla Logan  
Alameda County Department of Environmental Health  
August 29, 1996  
Page 4

mg/L for excavated soil, the soil will be analyzed for the federal TCLP test criteria for soluble lead.

- If TCLP results are less than the regulatory limit of 5 mg/L, then the soil can be disposed as a California Hazardous Waste.
- If TCLP results are greater than the regulatory limit of 5 mg/L, then the soil will be disposed of as a federal RCRA hazardous waste.

### SITE RESTORATION

Backfilling and site restoration activities will be performed as described below.

- A four-point composite sample will be collected at a minimum from each 100 cubic yards of on-site stockpiled soil. Composite samples will be analyzed for potential on-site compounds of concern including lead and 1,1-DCA.
- On-site soil or clean imported backfill will be placed in uniform lifts not exceeding 10 inches in uncompacted thickness.
- The soil will be brought to 1 to 3 percent above the optimum moisture content.
- The fill will be compacted to a minimum of 90 percent relative compaction.
- The level of compacted fill will be placed to meet the original grade and provide surface drainage away from the excavation area.

Upon completion of the project, all equipment and construction materials will be decontaminated and removed from the Site. Waste from decontamination activities will be sampled and analyzed for lead and disposed of properly.

### REPORTING

A report will be prepared documenting the excavation, sampling, laboratory analyses, and site restoration activities.



# Woodward-Clyde

Ms. Madhulla Logan  
Alameda County Department of Environmental Health  
August 29, 1996  
Page 5

## LIMITATIONS

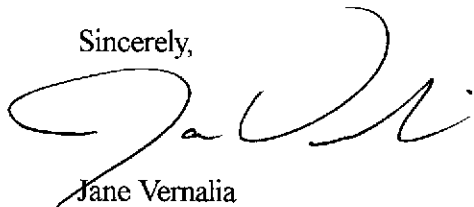
This workplan has been prepared by the staff of Woodward-Clyde Consultants solely for the use of Encinal. The scope was limited to the requested scope of work as defined by Encinal. The findings, recommendations, specifications, or professional opinions are presented, within the limits prescribed by Encinal, after being prepared in accordance with generally accepted engineering practice in Northern California at the time this workplan was prepared. No other warranty is either expressed or implied. Any reliance on this report by third parties shall be at such party's sole risk.

## REFERENCE

Woodward-Clyde Consultants, August 14, 1996, "Environmental Summary Report, Planned Marina Village Homes, Alameda, California"

We appreciate the opportunity to offer this workplan to you. If you have any questions, or if we can offer any further assistance, please call Mr. Albert Ridley at (510)874-3125 or me at (510)874-3156.

Sincerely,



Jane Vernalia  
Assistant Project Manager



Albert P. Ridley, CEG  
Senior Consultant

Enclosures

cc: Mr. Marco Lobascio, WCC



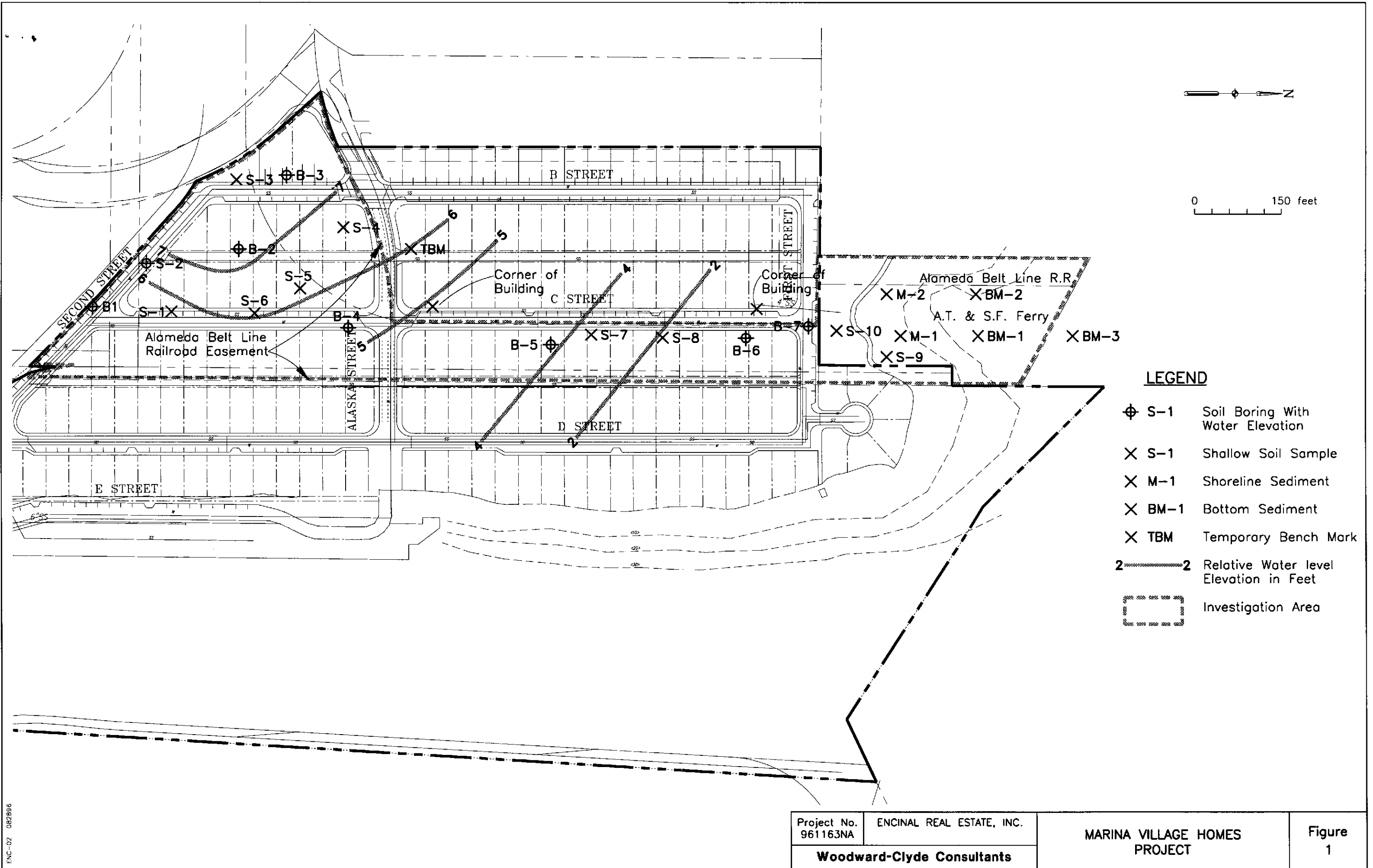
**TABLE III**  
**RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES FOR TITLE 22 METALS**  
 results in mg/kg

	B-1	B-2	B-3	B-4	B-5	B-6	B-7	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	M-1	M-2	EPA Res	Title 22	
																				PRG mg/kg	TTLC	
Antimony	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	31	500
Arsenic	5.1	7	3.5	6.9	8.6	12.8	6.2	5.2	9.3	7.2	2.5	2.7	4.7	7	8.7	6.7	6.3	3.5	3.2	3.2	32	500
Barium	73.9	78.1	50.5	37.1	163	112	243	72	82.5	112	57.1	42.7	81.8	91.1	100	3.8	99.1	10.9	24.2	24.2	5,300	10,000
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.69	<0.5	0.58	0.52	<0.5	<0.5	<0.5	0.14	75
Cadmium	0.87	<0.5	<0.5	<0.5	0.88	0.91	<0.5	<0.5	0.62	<0.5	<0.5	<0.5	<0.5	0.7	0.82	0.61	0.8	<0.5	<0.5	<0.5	38	100
Chromium	36.8	30.9	47.2	51.4	192	48.6	108	157	34.9	38.1	28.8	27.5	37.7	42	49	64.2	31.7	16.1	44.4	44.4	210	2,500
Cobalt	7.9	8	7.3	9.4	17	13.9	23.2	14.8	9.2	9.3	5.5	6	9.8	14.7	13.2	10	14.2	5.7	7.8	7.8	4,600	8,000
Copper	138	62.9	22.2	35.5	61.4	119	21.7	35	39.3	103	20.1	41.8	20.9	58.8	65.4	39.5	68.9	22.2	28.8	28.8	2,800	2,500
Lead	419	159	35.5	11.1	6,440	192	22.9	6,140	74.4	179	22.2	28.8	32.7	80.8	188	26.5	214	25.5	10	10	130*	1,000
Mercury	0.14	0.089	0.1	0.088	0.21	0.18	0.084	0.051	0.19	0.16	0.04	0.071	0.064	0.15	0.25	0.3	0.19	0.038	<0.033	<0.033	**	20
Molybdenum	<1	1.4	<1	1.1	2.7	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	380	3,500
Nickel	34.5	42.7	40.4	48.8	72.5	75.7	143	87.2	29.6	48.9	29.1	33.6	36.7	64.3	59.6	58	52.2	23.2	44.2	44.2	150*	2,000
Selenium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	380	100
Silver	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	380	500
Thallium	<1	1.3	<1	<1	2.4	1.9	<1	<1	<1	<1	<1	<1	<1	<1	1.4	<1	1.3	<1	<1	<1	**	700
Vanadium	34.2	27.5	28.9	45.8	41.7	39.9	31	30.2	39.3	31.4	24	29.8	38.4	40.3	45.3	53.1	53.9	26.4	38.2	38.2	540	2,400
Zinc	122	105	55.1	57.7	2,950	134	73.9	93.4	121	127	43.6	55.5	56.3	120	142	95.5	242	76.9	62.4	62.4	23,000	5,000

exceeds Preliminary Remediation Goal (PRG)

\* Cal Modified PRG

\*\*No PRG listed



**LEGEND**

- ⊕ S-1 Soil Boring With Water Elevation
- × S-1 Shallow Soil Sample
- × M-1 Shoreline Sediment
- × BM-1 Bottom Sediment
- × TBM Temporary Bench Mark
- 2-----2 Relative Water level Elevation in Feet
- ⌞ Investigation Area

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Project No. 961163NA	ENCINAL REAL ESTATE, INC.	MARINA VILLAGE HOMES PROJECT	Figure 1
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