FOR REFERENCE ONLY

Marina Lagoon Dredging Assessment (Moffat & Nichol, 2018)

Regional General Permit (USACE, 2022)

Final Lake or Streambed Alteration Agreement (CDFW, 2017)

Sediment Characterization Sampling and Analysis Plan (Pacific EcoRisk, 2025)

Marina Lagoon Dredging Assessment

(Moffat & Nichol, 2018)

MARINA LAGOON PRELIMINARY DREDGING ASSESSMENT

CITY OF SAN MATEO

Prepared For:

Department of Public Works

City of San Mateo

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Glossary

AF	Acre-feet
BCDC	Bay Conservation and Development Commission
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CY	Cubic Yards
DBAW	California Department of Boating and Waterways
EPA	Environmental Protection Agency
gpm	gallons per minute
LSA	Lake and Streambed Alteration
MLLW	Mean Lower Low Water
M&N	Moffatt & Nichol
NAVD88	North American Vertical Datum 1988
NMFS	National Marine Fisheries Service
NTS	Not To Scale
RWQCB	Regional Water Quality Control Board
SMD	City of San Mateo Datum + 100
TMDL	Total Maximum Daily Loads
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1. Introduction

Marina Lagoon is an approximate four mile long brackish water body that meanders through the City of San Mateo. Since its original construction in 1964, the primary functions of the Lagoon have been storm water retention and recreation. Though flows within the Lagoon are controlled by tide gates along the southern end and a pump station at the northern end, Bay water entering the tide gates has deposited sediments along the length of the Lagoon, lessening its storm water retention capacity and water depths for recreational vessels. The City of San Mateo has recognized the need to dredge the sediment to regain the original water depths and retention capacity.

1.1. Background

Originally known as Seal Slough, Marina Lagoon was a tidal slough hydrologically connected to San Francisco Bay. The Lagoon was constructed in the 1960's when both the northern and southern end were diked to control flows within the Lagoon. The pump station consisting of four active pumps and one stand-by pump has a total rated capacity of 600,000 gpm (150,000 gpm each) to transfer excess water collected in the Lagoon. The Lagoon receives water from the tide gates at the southern end, which convey Bay water from Belmont and O'Neill Slough, as well as three discharge channels and numerous storm drains. During the summer, water levels are maintained at an elevation of +97 feet San Mateo Datum (SMD) [1] and lowered to +95 feet SMD during the winter months to capture storm water runoff. Elevations within the Lagoon are operated as shown in Table 1-1.

TABLE 1-1: OPERATING WATER LEVELS OF MARINA LAGOON
(adapted from cityofsanmateo.org)

Period	Level Adjustment	Elevation	Comments
May 1 - October 31	--	+97.0 feet	Summer Operating Level
November 1 - November 30	-1 foot	+96.0 feet	Preparing for Winter Rains
December 1 - January 14	-1 foot	+95.0 feet	Winter Operating Level
January 15 - February 15	-1.5 foot	+93.5 feet	Dock Maintenance Period
February 16 - March 31	+1.5 foot	+95.0 feet	Winter Operating Level
April 1 - April 30	+1 foot	+96.0 feet	Spring Intermediate Level
May 1	+1 foot	+97.0 feet	Summer Operating Level

The tide gates at the southern end of the Lagoon consist of four sluice gates, each two feet square. Water enters the gates from Belmont and O'Neill Slough, both tidal sloughs of San Francisco Bay. Sediment enters the system with the flow through the tide gates, which are only closed occasionally during the summer months to maintain the summer operating water level. Therefore, flow in the Lagoon is from South to North, as can be seen by the sedimentation patterns. The largest amount of deposition has occurred in the southern reaches of the Lagoon, with the northern reaches maintaining water depths of approximately six feet.

[1] SMD = City of San Mateo Datum +100
[0' SMD = +2.36' NGVD29 = +5' NAVD88 = City of San Mateo Datum +100]

FIGURE 1-1 : VICINITY MAP

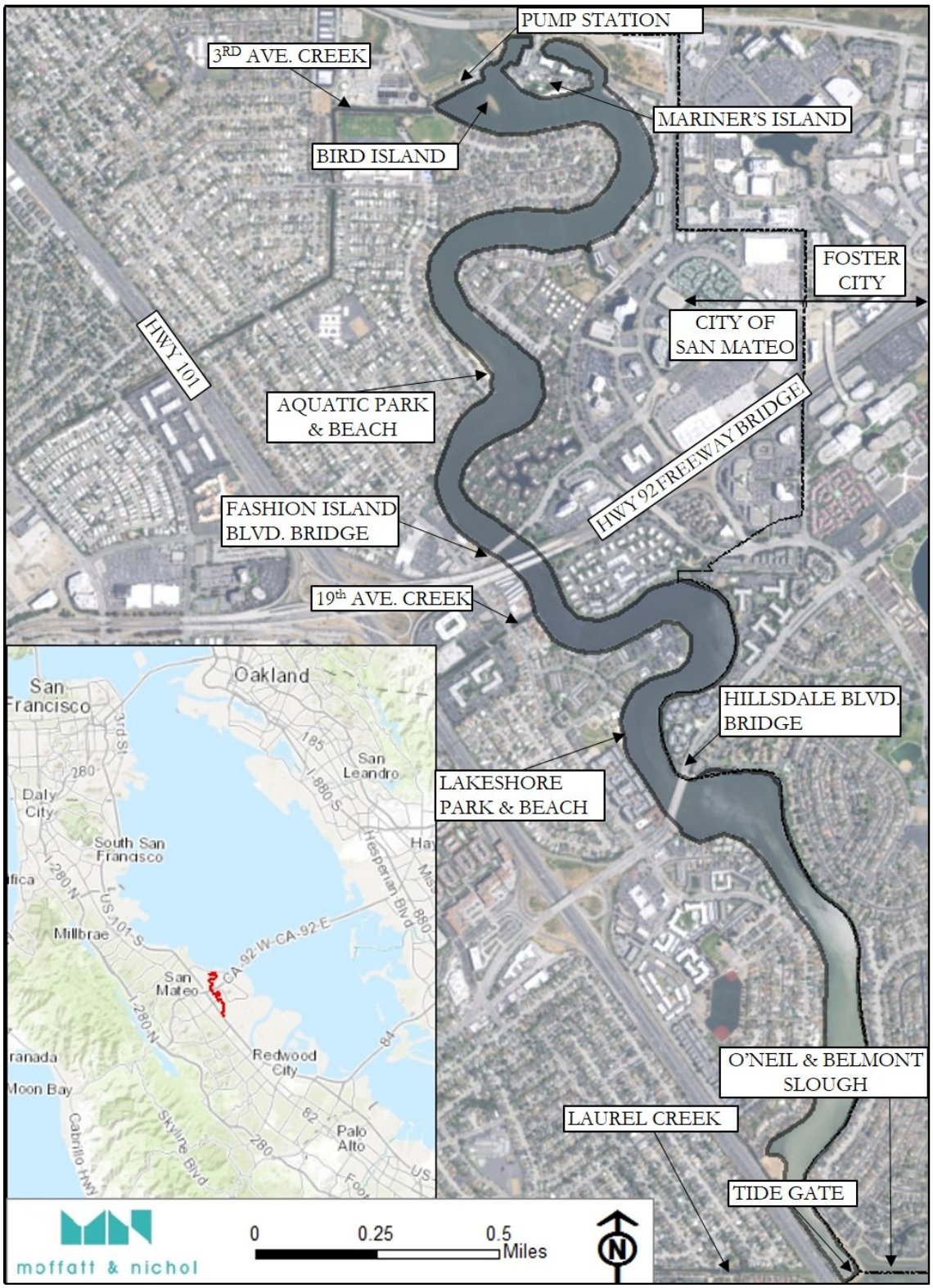


FIGURE 1-2: RECREATION ZONES WITHIN MARINA LAGOON

Multiple structures have been implemented along the shoreline of the Lagoon. Both private and public docks and launch ramps are present, riprap shoreline protection, stone and wooden bulkheads as well as vegetated slope and sandy beaches. Since many of these projects were constructed on an individual basis by adjacent landowners, the design and condition of each is not uniform. However, the permit from the US Army Corps of Engineers (USACE) did require all shoreline structures not to exceed 25 feet from the summer high water level (+97 contour) except in the Mariner's Island subdivision where this restriction was increased to 40 feet from the summer high water level.

1.2. Purpose

Since the last dredging episode to remove siltation performed in the 1980's, sedimentation has been on-going within the Lagoon and is threatening the storm water retention capacity and recreational uses. To help establish a dredging plan, The City of San Mateo has retained Moffatt & Nichol (M&N) to develop a feasibility analysis of dredging options for the Lagoon. Work associated with this objective is presented in the following section.

1.3. Scope

The Scope of Work for the Marina Lagoon Dredging Feasibility Assessment includes the following tasks:

1. A hydrographic survey of Marina Lagoon to capture all potential limits of dredging and to aid in determining the amount of siltation that has occurred since the last readily available hydrographic survey performed in 1996).
2. Exploratory Sediment Characterization was performed by Pacific EcoRisk. This task included performing preliminary laboratory testing of potential dredged material to determine general sediment chemistry as well as decant water properties associated with beneficial reuse and upland disposal sites. The Exploratory Sediment Characterization followed protocol developed by the Dredged Material Management Office (DMMO) so that the results of the analysis could be used as background information in the future when seeking permit approvals. The protocol includes the following phases:
    a. Sediment Analysis Plan (SAP) - Develop a plan for sample collection, laboratory testing, physical and chemical analysis.
    b. Sediment Sampling and Testing - All sediment sampling and testing procedures to follow the protocol developed by the DMMO.
    c. Sediment Analysis Results (SAR) - Develop a report that summarizes the collection, testing, and results of the analysis.
3. A Maintenance Dredging Assessment Report that is made up of the following components:
    a. Review Existing Data & Site Walk - Available data from the City including historical surveys, operation documents, dredging records and sediment testing results was reviewed and summarized. A site walk was conducted to identify relevant site conditions and potential construction related options.
    b. Volume Estimate- Dredging areas and volumes were identified.

c. Sediment Suitability - Based on the SAR, a recommended strategy for disposal has been prepared.

d. Identify Disposal Options - Three feasible option for dredged material disposal have been identified and evaluated.

e. Regulatory Considerations - Anticipated required permits are discussed, including the DMMO process and California Environmental Quality Act (CEQA).

f. Cost Estimates - Planning level cost estimates for the selected disposal options have been prepared. Costs include estimated sediment testing costs, permitting fees, engineering design and construction costs.

g. Schedules - Conceptual schedules for each phase of work have been developed.

h. Recommendations - Based on the assessment, recommendations for subsequent action have been provided.

4. Project Management responsibilities including conference calls, biweekly project updates, and three meetings with City officials.

2. Existing Conditions

The existing conditions at Marina Lagoon were assessed by conducting two site visits, performing a hydrographic survey, and conducting an exploratory sediment characterization. The following paragraphs summarize the present conditions existing along Marina Lagoon.

2.1. Site Description

The centerline of Marina Lagoon stretches approximately 3.85 miles from San Francisco Bay to the confluence of O'Neill Slough, Belmont Slough, and Laurel Creek (see Figure 1-1). The Lagoon is lined with docks and ramps belonging to private owners as well as public parks, beaches, launch ramps, and walking or bike paths. Approximately 39 storm drain outfalls line the length of the Lagoon. It is crossed by three bridge structures.

Site conditions were observed during the field reconnaissance surveys conducted on June 29, 2017 and September 14, 2017. Both onshore and in-water observations were recorded. Weather condition were similar for both days, with average temperatures of approximately 65°F, sunny conditions with average winds of 15 mph from the West-Southwest direction (as measured at the San Francisco International Airport wind gauge- KSFO). During the initial field visit, algae and other vegetation was observed within the Lagoon, indicating poor water circulation. During the second reconnaissance survey, the amount of vegetation observed was significantly less. Deeper portions experienced small, choppy wind-waves while shallower areas, especially in the southern reaches, contained stagnant water.

The western shoreline of the Lagoon looks to be almost entirely privately owned areas. Of the 3.85 miles of shoreline on the west, a public walking path is only evident in the northern most reach (approximately 250 feet long) and the southern-most area (approximately 2,000 feet long). Aquatic Park and Beach and Lakeshore Park and Beach also contain areas for public access. The majority of the western shoreline contains docks and ramps lining the Lagoon are in various conditions. In most areas, the shoreline itself looks to be protected by riprap or wood, stone or concrete bulkheads. A long, privately owned section of Lagoon contains a naturally vegetated shoreline. Measurements were taken of randomly selected docks and ramps and none were observed to exceed the 25 feet from the summer water line as dictated by the USACE permit.

The northern approximately 2.6 miles of the eastern shoreline (including Mariner's Island) is located in the City of San Mateo. The remaining portion is the border with Foster City. The portion within the City of San Mateo resembles the western shoreline in that the majority is privately owned docks and ramps. However, unlike the western shoreline, the homes along this shoreline extend over the edge of the bank and are supported on piles. Therefore, many of the docks in this reach extended farther than 25 feet from the summer water level.

Approximately one mile before the end of the City of San Mateo city limits, the Foster City Levee Pedestrian Pathway begins and runs the remaining length of the eastern shoreline. Unlike the western shoreline, private properties do not extend to the water's edge but, instead, stop approximately 20-50 feet landward of the summer water line.

2.2. Elevation Data

The hydrographic survey was conducted by Meridian Surveying and Engineers LLC (Meridian) in June and July 2017, shown in Figure 2-1. The vertical datum used in the survey was NAVD88, where 0 feet

NAVD88 is equivalent to 95 feet SMD. Bottom elevations within the Lagoon vary between 89 and 102 feet SMD and decrease moving north to south. The northern portion of the Lagoon and the channels surrounding Mariner's Island Subdivision contain bottom elevations between 91 and 93 feet SMD. Just south of this area is the deepest segment of Lagoon, where bottom elevations reach as low as 89 feet SMD. Bottom elevations along the middle portion of the Lagoon range between 91 and 93 feet SMD. The shallowest water depths are found along the southern reaches of the Lagoon, where bottom elevations range between 93 and 97 feet SMD.

The southern-most 600 feet of the Lagoon has been closed to boat traffic, therefore, water depths there could not be measured during the hydrographic survey. During the site visit, pole sounding were taken at the tide gate leading to O'Neill and Belmont Slough. Water depths in this area were estimated at just over 4 feet. Though the center of the Lagoon in this region was not measured, photos from the site visit show birds walking along the water bottom, indicating that water depths are as low as a few inches. Aerial images confirm that a channel connecting the outfall pipes at the southwestern tip of the Lagoon, the tide gates, and the Laurel Creek culvert meanders through a mudflat in this reach.

2.3. Sediment Characterization

Sediment sampling was completed within Marina Lagoon between November 13th and 16th, 2017. For sampling purposes, the Lagoon was divided into five Dredging Units (DU). Four (4) samples were taken within each DU for a total of 20 samples. The 4 samples within each DU were then combined to create 1 composite sample per DU for a total of 5 composites for testing purposes. The grain size distribution, shown in Table 2-1, is based on these 5 composites. Results from the testing is described in Section 4.3 of this report.

TABLE 2-1: GRAIN SIZE DISTRIBUTION OF SEDIMENT IN MARINA LAGOON

Grain Size (%, dry wt)	**ML-DU5-Comp**	**ML-DU4-Comp**	**ML-DU3-Comp**	**ML-DU2-Comp**	**ML-DU1-Comp**
Gravel	0.00	0.00	0.00	0.00	0.00
Sand	13.12	10.11	31.99	18.76	23.77
Silt	60.63	64.89	50.38	61.44	57.74
Clay	26.25	25.00	17.63	19.80	18.49

FIGURE 2-1: 2017 WATER BOTTOM ELEVATIONS

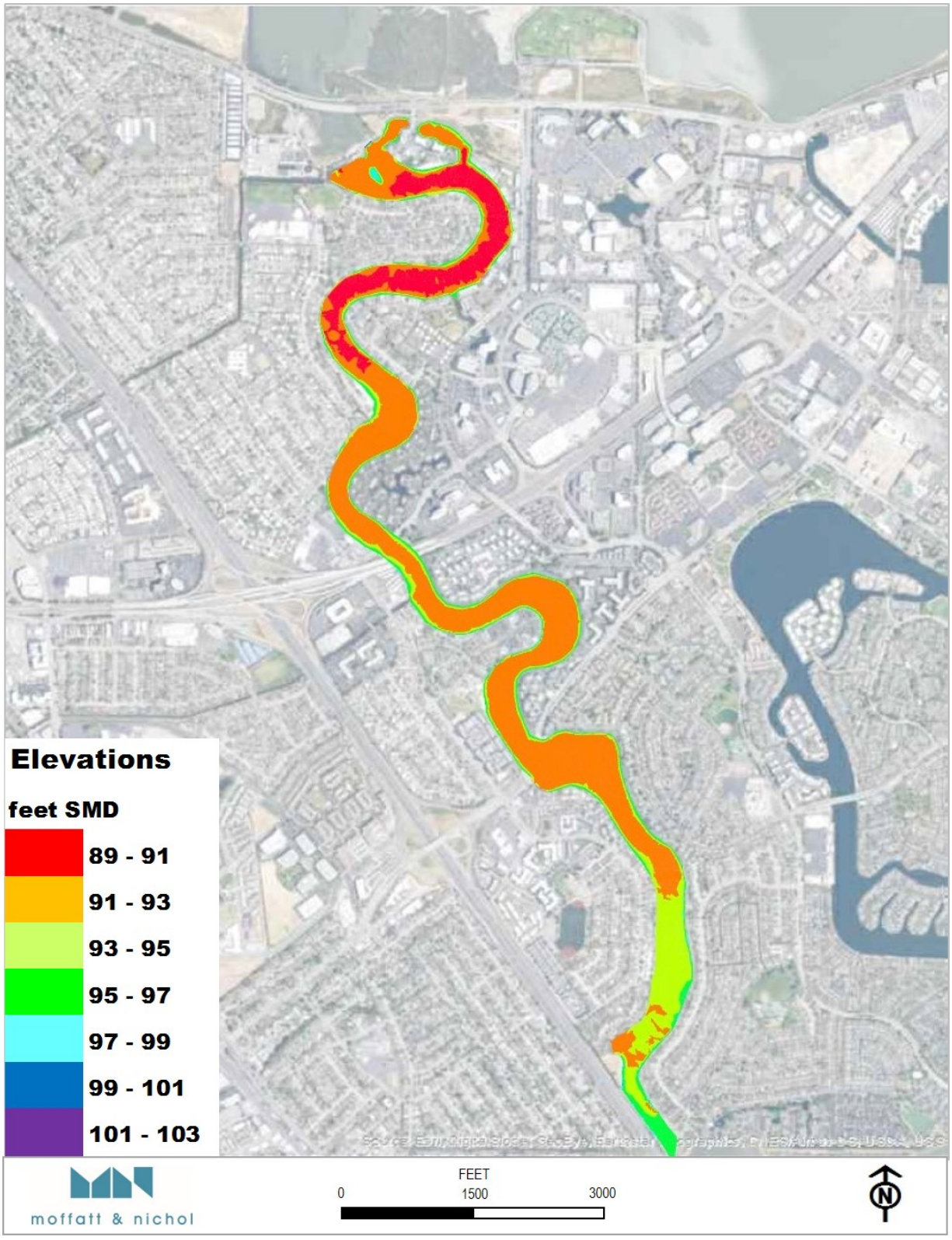


FIGURE 2-2: DRAFT DURING SUMMER WATER LEVEL

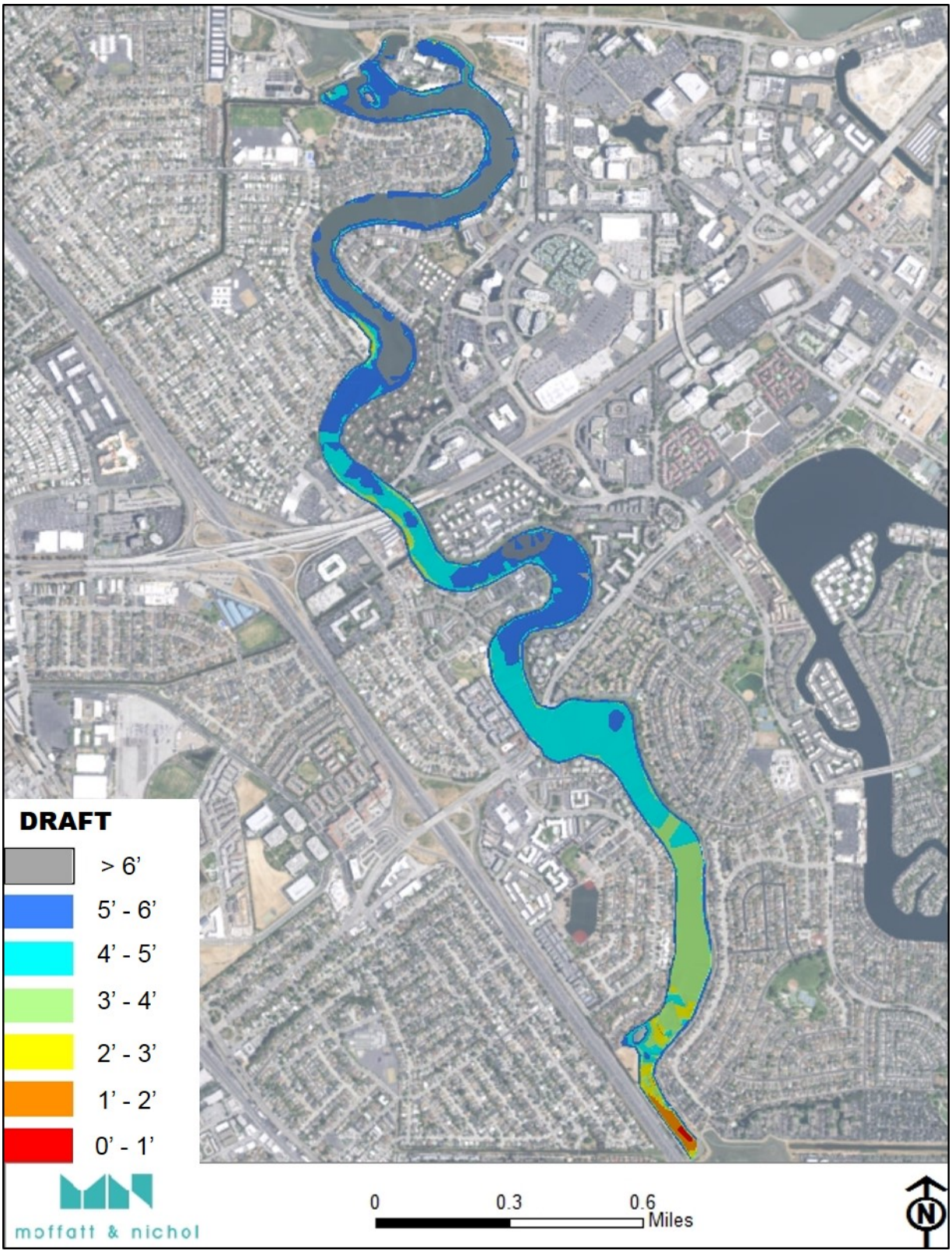
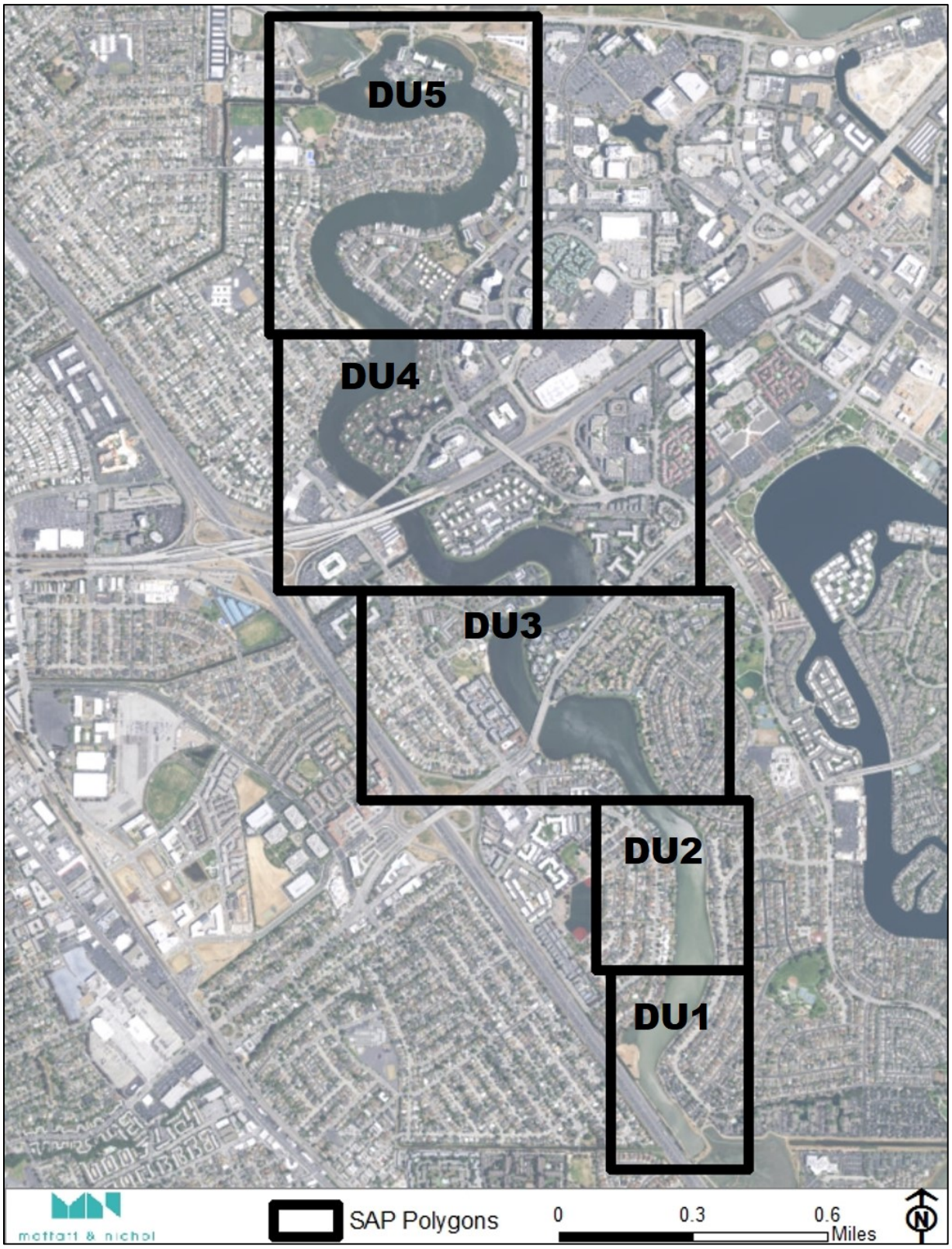


FIGURE 2-3: DREDGING UNITS (DU) FOR SEDIMENT CHARACTERIZATION



3. Sedimentation and Change in Retention Capacity

The Preliminary Dredging Assessment conducted by Moffatt & Nichol in 1998 was reviewed for this study. The assessment includes a review of existing data dating back to the original construction of Marina Lagoon. Additionally, a dredging analysis was conducted to establish a dredging template, estimate quantities of dredged volume, and determine changes in storm water retention capacity. Relevant information obtained from the previous assessment is presented in subsequent paragraphs.

3.1. Historical Conditions

The Preliminary Dredging Assessment (M&N 1998) reviewed design drawings from the construction of the Lagoon in 1965. Figure 3-1 depicts dredging limits and typical sections of the dredged template and proposed dock construction. The top-of-cut of the original dredging template corresponded to the property line in most areas along the Lagoon. Side slopes were generally kept at 5 (Horizontal):1 (Vertical), though the design drawings showed some variation (M&N 2008). The bottom elevation of the dredging template was presumably held at +91 feet SMD along the entire Lagoon. Water levels within the Lagoon were controlled by tide gates located at the northern limit of the Lagoon. Also, based on the US Army Corps of Engineers Permit 213561S, individual boat docks and ramps were not to exceed 25 feet into the Lagoon from the intersection of the summer water line and the shoreline, except within Mariner's Island, where this limitation was extended to 40 feet.

The original template did not include Bird Island or Mariner's Island, which were presumably added at a later date. The canal separating Mariner's Island was diked off from Marina Lagoon at the northern entrance near the historic tide gates. For the purposes of this study, it was assumed that this area was dredged to the same template as the rest of Marina Lagoon. Bird Island was also not present in the initial proposed dredging template. This area was either dredged around during the initial dredging event or was created by placement of material.

3.2. Elevations

For the Preliminary Dredging Assessment, a hydrographic survey conducted in 1996 by Aquatics Habitat Management was compared to the original dredged template to determine the amount of shoaling and loss of retention within Marina Lagoon. Because the exact template of the original dredging of Marina Lagoon is unknown, some qualifying assumptions were made to develop the template to compare it to the 1996 survey. Information provided indicates that the 1965 template was initiated at the property line, which has an approximate elevation of 100 feet SMD. From this elevation, the template was dredged down at a 5(H):1(V) side slope to the 91 contour.

To determine sedimentation below the summer water level of 97' within Marina Lagoon, the 1996 and 2017 surveys were compared to the original template as presented in Table 3-1.

FIGURE 3-1: ORIGINAL LIMITS AND DREDGED TEMPLATE

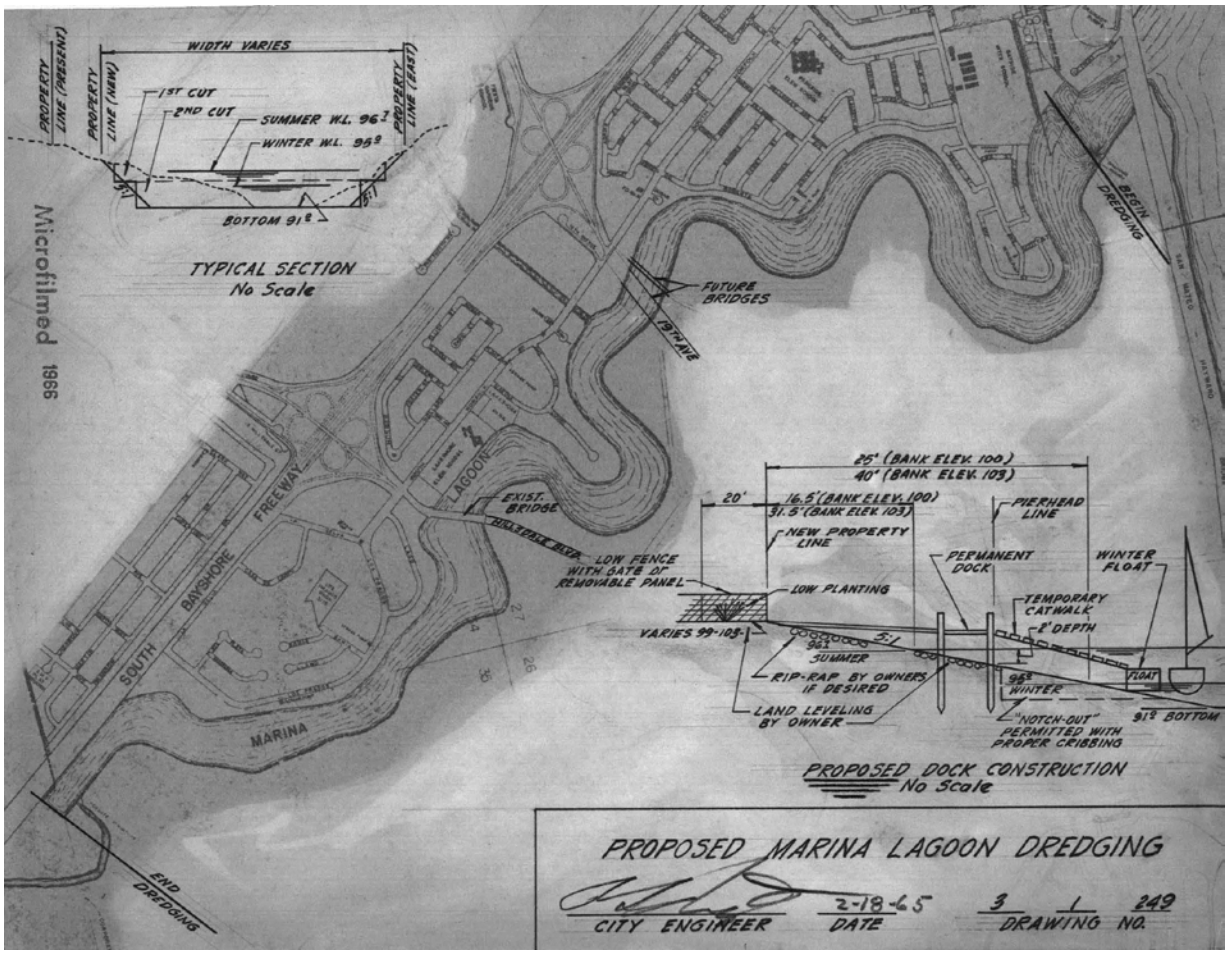


TABLE 3-1: SEDIMENTATION WITHIN MARINA LAGOON

Comparison	Total Shoaling (cubic yards)	Yearly Average (cubic yards/yr)	Sedimentation Rate (inches/year)
1996 Survey vs. 1965 Template	200,600	6,470	0.27
2017 Survey vs. 1965 Template	314,190	6,040	0.25
2017 Survey vs. 1996 Survey	113,587	5,410	0.22

The comparison shows that shoaling was greatest during the first 30 years of the project life and has slowed in the following 20 years. This is expected as sedimentation often declines once a dredged area begins to reach its natural depth. The decrease in shoaling rate may also be attributed to sedimentation in O'Neil Slough, which has decreased the amount of sediment-laden flow entering Marina Lagoon. Currently, the majority of flow enters Marina Lagoon during high tides.

Examining the approximate 50 years between the original dredging and the latest survey conducted in Summer of 2017, the average unit shoaling rate within the Lagoon is approximately ¼ inch per year.

Both surveys indicate that this is greatest in the southern portions of the Lagoon, with the northern portions experiencing little to no sedimentation.

3.3. Lagoon Capacity and Depth

Sedimentation within Marina Lagoon will reduce the Lagoon capacity and water depth. The following subsections quantify this loss in capacity and water depth based on the assumed original template and surveys conducted in 1996 and 2017.

3.3.1. Stormwater Capacity

One of the primary functions of the Lagoon is to collect stormwater runoff from the surrounding areas. A decrease in Lagoon storage volume will affect how much runoff can be collected. Table 3-2 summarizes the Lagoon storage volumes for the original template and the 1996 and 2017 surveys.

TABLE 3-2: LAGOON STORAGE VOLUMES

Period	Summer Volume (to 97')		Winter Volume (to 95')		Storm Water Retention	
	CY	AF	CY	AF	CY	AF
1965 (Original)	1,693,590	1,050	1,096,806	680	596,784	370
1996 Survey	1,649,299	1,022	1,028,633	638	620,665	385
2017 Survey	1,286,458	797	753,082	467	533,376	331

During the winter months, the water is pumped out of the Lagoon to lower the water level to 95 feet SMD to allow for the collection of stormwater runoff. The stormwater capacity (storage volume between the 95-feet water level and the 97-feet water level) is therefore the difference between the summer volume and the winter volume in the table above.

The 1996 survey indicates although there was sedimentation in the Lagoon there was an increase in storm water retention by 15 acre-feet. This is due to the addition of the two channels encompassing Mariner's Island, referred to as the 'Rabbit Ears'. However, sedimentation within the original template can be seen in the decrease in summer and winter volume, 28 acre-feet and 42 acre-feet, respectively. Therefore, though sedimentation within the Lagoon occurred between the original Lagoon dredging in 1965 and the survey in 1996, it was offset by the additional volume added by the inclusion of the Rabbit Ears.

Shoaling within the Lagoon is evident when comparing the 2017 survey to the previous surveys. However, because storm water retention is between the 95' and 97' water levels, the decrease in storm water retention capacity has not been significant. Less than 40 acre-feet has been lost since the original dredging occurred in 1965.

3.3.2. Depth for Recreational Use

In addition to stormwater runoff retention, the other primary function of the Lagoon is recreation, including boaters, water skiers, and swimmers. The California Department of Boating and Waterways (DBAW) provides recommendations for minimum depth requirements in areas with boat traffic. For fairways, defined as a watercourse by which boats travel between interior channels and berths, the recommended water depth for a boat less than 40 feet long is 6 feet deep with a minimum of 4 feet. During the summer months, when the water level is maintained at approximately 97 feet SMD, a

bottom elevation of 91 feet SMD will achieve the recommended water depth. During the winter months, the water elevation is 95 feet SMD, resulting in 4 feet of water depth at a bottom elevation of 91 feet SMD.

Areas that meet the above requirement based on both the 1996 and 2017 surveys are shown in Figure 3-2. Table 3-3 provides the acreage and loss of water depth due to sedimentation.

TABLE 3-3: AREAS WITH WATER DEPTHS > 6 FEET DURING SUMMER WATER LEVEL

Template	Area (acres)	Percentage Lost
Original	160	-
1996	51	68%
2017	37	77%

Currently, only 33% of the original 160 acres meets the DBAW requirements for recommended water depths of 6 feet during the summer months. 85% meet the minimum water depth of 4 feet during the summer months. Only 25% meet the minimum water depth of 4 feet during the winter water level of 95 feet SMD. The area in the northern portion of the Lagoon with acceptable depths is used for power boating and water skiing, however, power boating and water skiing area in the southern reaches do not meet the minimum depth requirement.

FIGURE 3-2: WATER DEPTHS IN MARINA LAGOON

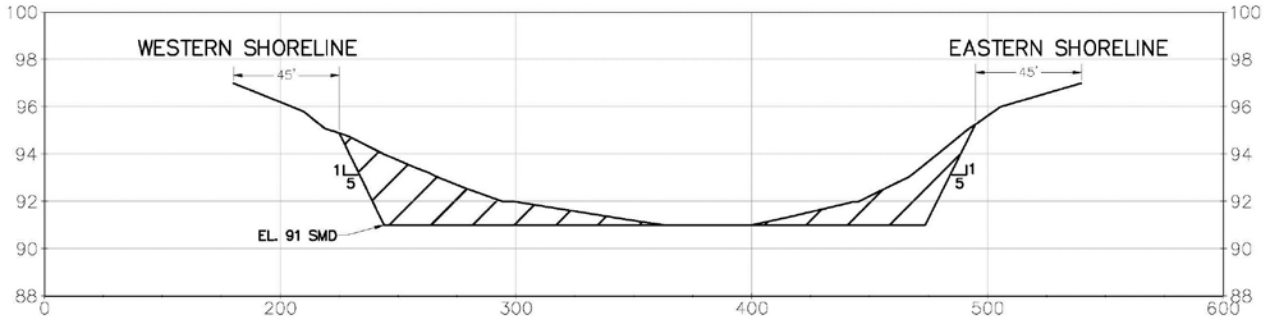
4. Project Design Criteria

Lost capacity and water depth within Marina Lagoon could be regained by performing maintenance dredging. The following conditions were considered in developing the dredging template for the maintenance dredging event:

- Dredging depths should be no deeper than the original dredged template. A deeper dredging template would result in the dredge encountering unknown soil conditions and/or rock beneath the shoaled sediment.
- Since the initial dredging event, structures such as docks and boat ramps as well as shoreline protection have been placed along the shoreline and must be avoided.
- The property easement of which the original dredged template was based is no longer operational. A new limit of dredging should be established.

Based on these requirements, the dredging template shown in Figure 4-1 was developed. The dredging cut is initiated at 45 feet inward from the summer high water line, as surveyed by Meridian in June/July 2017. This 45 foot buffer is meant to provide sufficient clearance for the docks, ramps, piles and shore protection along the shoreline. There are areas, especially along the eastern shoreline and at the public launch ramp near Aquatic Beach and Park, where structures would encroach into this 45 foot buffer. These few areas will be delineated and avoided prior to dredging.

FIGURE 4-1: TYPICAL SECTION (NTS)



4.1. Dredged Material Volumes

The template shown in Figure 4-1 will result in approximately 275,000 cubic yards of material to be dredged from the Lagoon. Figure 4-2 shows the distribution of dredged volume throughout the channel.

As shown in Figure 4-2, the majority of the material will be dredged from the southern reaches of Lagoon where the required depth-of-cut range between 2 and 6 feet. The northern portion of the Lagoon has bottom elevations at or below the dredging template shown in Figure 4-1. The middle of the Lagoon requires dredging cuts of between 0 and 2 feet.

Table 4-1 provides the breakdown of dredged areas and volumes within the Lagoon.

TABLE 4-1: DREDGED VOLUMES DISTRIBUTION

Cut Depth (feet)		Area (acres)	Volume (CY)
Min	Max		
No Cut		42.0	37,338
0	1	59.5	48,028
1	2	45.3	109,670
2	3	20.0	80,797
3	4	3.4	18,939
4	5	1.4	10,305
5	6	0.5	4,559
Total to be Dredged:		130.1	272,298

4.2. 'With Project' Capacity and Depth

Implementation of the template shown in Figure 4-1 would increase the capacity and the navigable water depths within the Lagoon. Table 4-2 depicts the increase in capacity the dredging project would produce. The "With Project" Capacity is less than the original capacity because of the applied 45 foot offset in order to avoid the docks, ramps, and shore protection.

TABLE 4-2: "WITH PROJECT" CAPACITY

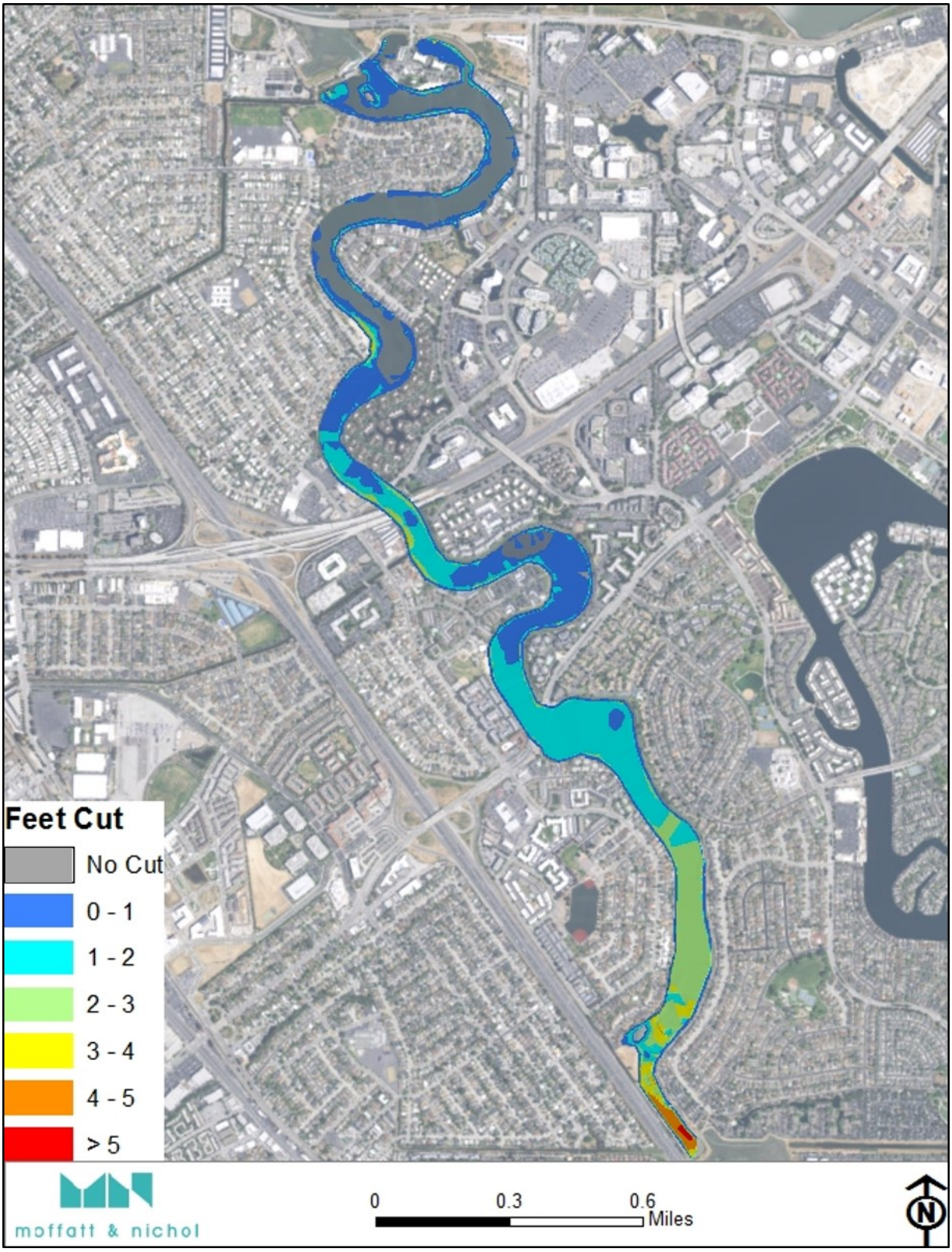
Template	Summer Capacity (to 97')		Winter Capacity (to 95')		Storm Water Retention	
	CY	AF	CY	AF	CY	AF
Original Template	1,693,590	1,050	1,096,806	680	596,784	370
2017 Survey	1,286,458	797	753,082	467	533,376	331
With Project	1,558,275	966	984,413	610	573,862	356

Similarly, the area with navigable water depths will change as shown in Table 4-3.

TABLE 4-3: "WITH PROJECT" AREAS WITH WATER DEPTHS > 6 FEET

Template	Area (acres)	Percentage Change
Original	160	-
2017	37	-77%
With Project	155	+76%

FIGURE 4-2: DREDGE CUT REQUIRED TO REACH ORIGINAL DEPTH



4.3. Sediment Suitability

Analytical chemistry testing was performed on the five composite samples described in Section 2.3 to assess the suitability of the material for a wide range of disposal options. Disposal options included in-water placement (within the lagoon or in the Bay), beneficial reuse in a wetlands environment, and disposal in an upland environment.

Sediment sampling and testing was conducted per San Francisco Bay standards and protocols put forth the Dredged Material Management Office (DMMO), discussed in Section 7. Sample concentrations from the testing program were compared against San Francisco Bay background levels (to assess suitability for in-water disposal) as well as established standards for reuse of material in a wetlands or upland environment (to assess beneficial reuse potential). Wetland beneficial reuse standards typically classify acceptable material into two categories, 'Foundation' and 'Cover'. Higher concentrations of certain analytes are permitted for the Foundation category because this zone is typically not exposed to the environment and will, therefore, not have any direct interface with tides, vegetation, wildlife, etc. The Cover category refers to material that is in direct contact with the environment, and allowable concentrations of analytes are lower than for Foundation material. More information on sampling and testing is given in the *Sediment Testing and Analysis Plan (Pacific EcoRisk 2017a)*.

The analytical chemistry testing indicated that several of the constituents which were analyzed exceeded regulatory thresholds. The samples showed exceedances in concentration of certain metals, polychlorinated biphenyls (PCB), polycyclic aromatic hydrocarbons (PAH), and Dichlorodiphenyltrichloroethane (DDT). A summary of analytes that exceeded thresholds is provided in Table 4-4. Toxicity was not tested for during this exploratory characterization phase.

The presence and concentrations of the contaminants can be found in increasing quantities moving north along the Lagoon, with highest contamination at the northern reach. Results indicate that the material proposed to be dredged cannot be placed unconfined in the lagoon or in SF Bay, nor can it be used for beneficial reuse in wetlands because every composite sample contains levels of Chlordane above the screening values. Upland disposal of this material would also be restricted because of the potential for leaching into the ground and for storm water runoff exceedances; it would require a bottom liner as well as a cap for separation. Therefore, the only viable option for offsite disposal is taking the material to a landfill. Additional testing would be required for disposal at a landfill, which is specific to each landfill.

Testing of sample elutriates (dissolved form of the analytes) was also conducted, to compare the concentration of analytes in the return water for the in-Lagoon disposal or high-speed dewatering options (discussed in Section 5) to receiving water criteria. The results of the tests show elevated levels of dissolved copper that are above the allowable San Francisco Bay bioaccumulation levels. This implies that if the dredged material is disposed within the Lagoon, the return water from the hydraulically transported slurry will be above trigger levels for San Francisco Bay waters. However, since the receiving water body would be the Lagoon, it will necessitate further coordination with regulatory agencies to assess the potential for in-Lagoon disposal. More information is provided in the Sediment Sampling and Analysis Report *(Pacific EcoRisk 2017b)*.

TABLE 4-4: MATERIAL CONTAMINANTS CONCENTRATIONS

Analyte	Sample ID					Bay Background[1]	Wetland Screening Criteria[2]	
	ML-DU5-Comp	ML-DU4-Comp	ML-DU3-Comp	ML-DU2-Comp	ML-DU1-Comp	<100% fines	Cover	Foundation
Metals (mg/kg, dry wt)								
Cadmium	0.645[A]	1.00[A]	1.15[A]	1.47[A]	2.31[A]	0.33	0.33	9.6
Copper	54.7	67.9	59.1	84.3[A]	109[A]	68.1	68.1	270
Lead	36	73.2[A]	99.2[A]	163[A]	193[A]	43.2	43.2	218
Mercury	0.292	0.502[A]	0.341	0.334	0.523[A]	0.43 (0.47[a])	0.43	1.3
Nickel	99.6	120[A]	97.1	112	137[A]	112	112	200
Selenium	0.418	0.676[A]	0.982[A]	1.46[A]	0.955[A]	0.64	0.64	1.4
Silver	0.495	0.54	0.384	0.581[A]	0.716[A]	0.58	0.58	3.7
Zinc	170[A]	205[A]	205[A]	281[A]	395[A]	158	158	410
PCBs (µg/kg, dry wt)								
∑ detected PCBs	11.26	24.23[A, B]	41.4[A, B]	60.5[A, B]	81.9[A, B]	21.6, 18[a], 29.6[b]	22.7	180
PAHs (µg/kg, dry wt)								
∑ detected PAHs	2738	2517	3,833[A]	3326	3,892[A]	3,390 (4,500[a])	3390	44792
Organochlorine Pesticides (µg/kg, dry wt)								
Chlordane	20[A, C, J]	14[A, C, J]	71[A, B, C]	41[A, B, C]	95[A, B, C]	1.1 (37[a])	2.3	4.8
Dieldrin	<0.91	<1.1	<0.98	<1.0	2.0[A, B]	0.44 (1.9[a])	0.72	4.3
∑ detected DDT's	15.5[A, J]	17.0[A, J]	50.2[A, B, J]	49.3[A, J]	62.0[A, B, J]	7.0, (50[a])	7	100

[1] San Francisco Regional Water Quality Control Board (1998) Staff Report: Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments. May 1998.

[2] Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

[a] - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2017]).

[b] - Total PCB concentration SF Bay TMDL threshold (= 99 percentile for San Francisco Bay [SFEI 2017]).

[J] - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

[A] - Values exceeds Bay Background (RWQCB 1998), SF-DODS Database, or MWRP wetland cover screening value.

[B] - Value exceeds SF-Bay Bioaccumulation Trigger, or SF-Bay TMDL Threshold.

[C] - Value exceeds MWRP wetland foundation screening values

TABLE 4-5: MODIFIED ELUTRIATE TEST RESULTS

Analyte	Sample ID					Surface Water Discharge Screening Criteria[a]
	ML-DU1-Comp	ML-DU2-Comp	ML-DU3-Comp	ML-DU4-Comp	ML-DU5-Comp	
Dissolved Arsenic	7.31 J	14.0	19.9	15.7	17.4	69
Dissolved Cadmium	<1.28	<1.28	<1.28	<1.28	<1.28	42
Dissolved Chromium	<4.02	4.13 J	<4.02	4.09	<4.02	1100[b]
Dissolved Copper	11.7 A	12.1 A	11.8 A	11.8 A	11.0 A	9.4[c]
Dissolved Lead	<0.90	<0.90	<0.90	<0.90	<0.90	210
Total Mercury	0.005	0.004	0.003	0.002	0.002	2.1
Dissolved Nickel	21.6	21.2	20.2	20.0	19.8	74
Total Selenium	32.4 A	38.7 A	37.8 A	39.6 A	39.9 A	20[d]
Total Selenium**	<0.2	0.2 J	0.2 J	0.2 J	<0.2	20[d]
Dissolved Silver	<1.1	<1.1	<1.1	<1.1	<1.1	1.9
Dissolved Zinc	12.3 J	21.9 J	23.4 J	24.8 J	21.9 J	90
TSS	23	18	28	28	32	100

a - SFBRWQCB Basin Plan Water Quality Objective 1-hour Average. Source: 40 CFR Part 131.38 (California Toxics Rule or CTR), May 18, 2000, unless otherwise noted.

b - WQO is for Chromium VI; however, it may be met as total Chromium.

c - SFBRWQCB Basin Plan Amendment 2009. Applies to segments of the San Francisco Estuary north of the Hayward Shoals (line connecting Little Coyote Point and the Oakland Airport as shown in attached Figure 7.2.1-1 from the Basin Plan). South of this line, the 4-day continuous and 1-hr maximum objectives are 6.9 µg/L and 10.8 µg/L, respectively.

d - National Toxics Rule (NTR).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds surface water discharge screening value

** - Results of the follow-up test performed on 4/11/2018 to test the level of Selenium.

5. Dredging, Material Transfer, and Disposal Operation Options

There are three components that make up any dredging project: *1) Dredging, 2) Material Transport, a*nd *3) Disposal. Dredging* refers to the equipment and technique used to remove the sediment from the water bottom. With the material removed from the bed, the *Material Transport* component describes the method of transporting the dredged material from the dredging location to the disposal site. Finally, the *Disposal* component describes how the material is placed at the disposal site. The following paragraphs discuss the available options for each component for the dredging of Marina Lagoon.

5.1. Dredging Methodology

Dredging methodologies differ in equipment, technique, and material transportation. For dredging of Marina Lagoon, there exists two dredging options: hydraulic dredging and mechanical dredging. A description and analysis of how each can be used for Marina Lagoon is given in the subsequent paragraphs.

5.1.1. Hydraulic Dredging

Hydraulic Dredging involves the loosening of in-situ material and lifting it into suspension through a pipe system connected to a centrifugal pump. The sediment is pumped as a slurry consisting of approximately 75-85% water and 15-25% solids. The most common form of hydraulic dredging is using a cutterhead dredge, which includes a rotating cutter that excavates material. The material is then transported with a high velocity water flow using the dredge pump into a floating discharge line. Hydraulic dredge pumps can typically transport material for 8,000 to 10,000 feet. If the discharge location is located farther, booster pumps can be added along the discharge pipeline. Production rates for a small hydraulic dredge (as would be required for Marina Lagoon due to draft restrictions) is usually approximately 200-300 cubic yards/hour. An advantage to hydraulic dredging is that dredging only stops to move the dredge, resulting in a more time and cost efficient operation. Additionally, dredging accuracy is typically increased with hydraulic dredging. Concerns surrounding hydraulic dredging are due to fish, other water species, or debris potentially becoming entrained in the suction apparatus as well as water quality concerns from turbidity in the vicinity of the cutterhead.

The following options exist for the Material Transfer of hydraulically dredged material:

5.1.1.1 Pump Directly to Disposal Site

If the disposal site is located in close proximity to the hydraulic dredge, the slurry can be pumped directly into the site and decanted using water control structures. This option allows for the material to forgo being 'rehandled', or transported more than once. Containment structures would have to be constructed to contain the slurry until the water is decanted. This is typically the most cost effective option since the material is placed in its final destination directly after dredging. However, this option requires that the discharge pipeline have an unobstructed path to the disposal site, which, in highly developed areas such as the City of San Mateo and Foster City, may not be possible. It also required that the disposal site be in close proximity to the dredging area. Finally, since the material is transported as a slurry, there must be containment dikes constructed around the perimeter of the disposal site to contain the material. These dikes must be built with at least a 2 foot freeboard, which

is defined as the distance between the top of the material placed within the disposal site and the levee crest elevation. Water control structures are also necessary to direct the water out of the disposal site.

5.1.1.2 Conventional Dewatering for Later Transport

If the disposal site of the material cannot be reached via discharge pipeline, an alternative is to create a settling pond where the material will be pumped and left to dewater. This option will also require containment dikes to contain the slurry and water control structures to guide the water out of the settling pond. The material would then be left to dry, with dozers turning the material periodically. The material will be left in the settling pond for months, or even years, until it has dried enough for the crew to return and loaded it into trucks for transport to the final disposal site.

5.1.1.3 High-Speed Dewatering System

A High-Speed Dewatering System receives slurry pumped from a hydraulic dredge into a dewatering unit that is capable of dewatering the sediment at the time of dredging. The end result is sediment that is ready for transport by trucks to its final disposal site and clean return water. The system utilizes a screen for coarse debris removal, a de-sanding unit for separation of sand, a flocculent control system which injects a polymer into the slurry to achieve flocculation, and fines recovery unit which allows the water to drain away from the flocculated, fine-grain sediment. Advantages of the dewatering unit include a quick dewatering system that produces transport-ready sediment significantly sooner than conventional dewatering, resulting in a faster dredging operation. After the material is dried in the dewatering unit, it is then either stockpiled for a few days to dry more or loaded directly into trucks and driven to the final disposal site.

A benefit of this system is that it requires much less space than would a settling pond, beneficial for highly urbanized areas, and the staging area requires minimal improvements since no dikes or water control structures are necessary. A disadvantage of the system is that it operates best with a constant stream of influent solids, therefore it is most efficient with a continuous operation. Because of the many homes surrounding the Lagoon, operating hours may be limited to daytime work and weekend work may be restricted. Another disadvantage is that mobilization and operating costs tend to be higher for this system than more traditional methods.

5.1.2. Mechanical Dredging

Mechanical dredging involves excavating material using a bucket connected to a clamshell dredge or small excavator mounted on a shallow draft barge. The material is dug from the bottom and placed on small scows, shallow draft barges, or a nearby site on land. The placement location must be within the length of the boom, usually no more than 120 feet away. Bucket sizes for removal of mud typically range from 10 to 54 cubic yards. Depending on the bucket size used, production rates for mechanical dredging range from approximately 350 to 800 cubic yards/hour. However, since mechanical dredges often place material on scows or barges that need to be transported and unloaded elsewhere, dredging is not continuous. Production rates, therefore, are dependent on the size and number of scows and barges used as well as the distance to the offloading site, but are generally slower than hydraulic dredging. Advantages of mechanical dredging include less water retention during dredging, ability to handle debris within dredged material, and maintaining soil benches so as not to compromise the integrity of bulkheads and other structures. Water quality issues also arise near the excavation site, but use of a removable silt curtain can contain the suspended solids.

Mechanically dredged material will need to be rehandled. Disposal options for mechanically dredged material include:

5.1.2.1 Offloaded from Scow to Disposal Site

If the final disposal site is in close proximity to the Lagoon, the material can be dredged and loaded onto scows or shallow draft barges. The scows or barges can then be transported by tugs to the disposal site where it will be offloaded using a crane. Containment dikes and water control structures would be necessary within the disposal site. An advantage of this method is that material will only need to be rehandled once between dredging and disposal. Disadvantages include a slow operating time since the scows will need to travel to the disposal site to be offloaded.

5.1.2.2 Offloaded into Rehandling Site and Dewatered, and Transport to End Use Site

The next option would also involve the dredged material being loaded onto scows or shall draft barges and pushed by tugs to a re-handling area. There, the material would be offloaded using a crane. The water would be directed to flow through filters to removed sediment before flowing back into the Lagoon. Once the material is stockpiled, cement or fly ash can be added to expedite the dewatering process. After sufficient dewatering, the sediment will be dry enough to be loaded onto trucks and transported to its final disposal site. A disadvantage to this alternative is that the material will be handled twice, once from the dredging site to the rehandling area, and then again via trucks from there to its final location. Each handling event will require more time, labor and equipment which will translate into a higher cost for dredging the material.

5.1.3. Mechanical Excavation 'In-the-Dry'

Mechanical excavation 'in-the-dry' refers to lowering the lagoon water level, building a haul road to allow for equipment to transverse the bottom, and utilizing a low-pressure excavator to remove the material. Since there are multiple storm drains, culverts and flow inlets located located along the perimeter of the Lagoon, it is not feasible to remove all water from the Lagoon. Therefore, a 'road' or elevated pathway would need to be constructed within the limits of the Lagoon to allow the mechanical excavator and trucks to reach the portions of the Lagoon to be dredged.

A portion of the operation could be conducted via long-reach excavators from the shoreline, but the road within the Lagoon would be required for the wider regions of the Lagoon. This technique has the advantage of producing nearly dry material immediately after dredging. Additionally, dredging precision is the highest for this option.

Material excavated with this option would be transported (see below) to a landfill via dump trucks.

5.1.3.1 Hauling Dredged Material by Truck

The only way to transfer dredged material from the lagoon with this option is to load into trucks and haul it to the disposal site or the re-handling area. For excavation done from the shoreline, the material would be stockpiled and loaded onto trucks for hauling. The trucks used for this portion of the work can carry about 12 cubic yards of material per load.

For excavators traversing the lagoon bottom, special low ground pressure trucks would transfer approximately 4-6 cubic yards of material per load to the re-handling area. It will require a large number of trucks to keep up with dredging production, which typically translates to higher costs.

6. Disposal Site Options

Multiple sites were initially identified for potential disposal of dredged material from Marina Lagoon. Options investigated include upland disposal sites, landfills, beneficial reuse areas, and in-lagoon disposal.

Ultimately, the results of the sediment testing dictate that the only two disposal options for the material are offsite landfill disposal or in-lagoon disposal. The in-Lagoon option will result in a small loss of recreational area but it provides a feasible and affordable placement option.

6.1. In-Lagoon Disposal

Potential areas identified within the Lagoon to deposit the dredged material are presented below:

- *Bird Island* – Bird Island is located within Marina Lagoon, approximately 225 feet south of the pump station and 250 feet west of Mariner's Island. The island is currently approximately 15,000 sq. feet (0.3 acres). It is not shown on the original dredging template (Figure 3-1), therefore, it is believed that the Island was created some time after the original dredging was performed. Presently, it is the location of Lagoon Island Park and serves for recreation and preservation of natural resources. Material could be placed here to increase the size of the Island for recreational purpose.
- *Creating a 'Wetland' along the Foster City Levee* – In this scenario, material would be dredged from within the center of the Lagoon and placed along the Foster City levee. A steel sheet pile wall would be built to contain the material. Since the dredged material contains contaminants above the San Francisco Bay trigger values, the material would be covered with an impermeable liner for separation and topped with clean material so as to completely 'cover' the dredged material. Marsh vegetation and wildlife would be allowed to inhabit the area and recreational traffic would be limited.
- *'Rabbit Ears' Surrounding Mariner's Island* – The benefit on placing material within the Rabbit Ear's is that very little steel sheet pile would be necessary to close off this area from the rest of the Lagoon. However, this area, similarly to Bird Island, is far from the majority of the dredging, which will require booster pumps or longer sail distances to reach. Additionally, it would remove the waterfront from the property owners living within Mariner's Island.
- *Creating an Upland Area near Laguna Vista Community* – The Laguna Vista Community is located along a bend in the southern reach of the Lagoon. The area just south of the community, enclosed by Hwy 101 and the walking trail, is an approximate 1.5 acre area of open space. Filling and capping the area directly next to it to create a larger area of open space is proposed as a potential in-lagoon disposal site. Advantaged of utilizing this area is the close proximity to the majority of the dredging. Disadvantages include the limited amount of capacity and the loss of waterfront property for a portion of the Laguna Vista Community.

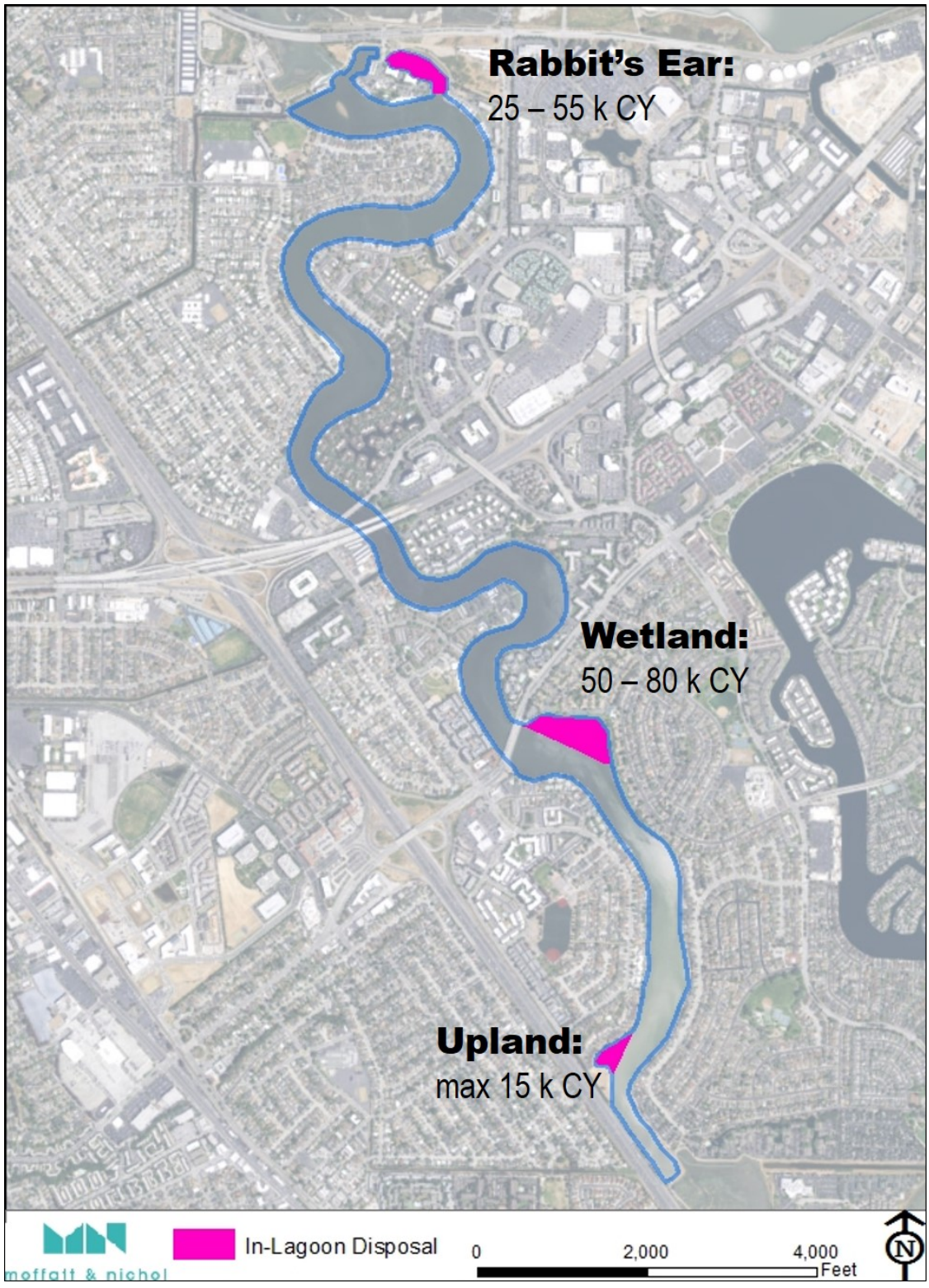
After further evaluation and discussions with the City, only the Fringe Marsh, eastern 'Rabbit Ear', and the area near Laguna Vista remained as potential in-Lagoon disposal options. The locations of these areas as well as potential volume capacity is presented in Figure 6-1. The potential volume capacity is based on the elevation to which the infill is placed. For the Rabbit's Ear, potential fill elevations range from 97 feet SMD to 103 feet SMD. The volumes depicted are for fill elevations of

97 feet SMD and 98 feet SMD as building higher than this could impact the Foster City Levee. The maximum disposal at the southern upland area near Laguna Vista is for a fill elevation similar to that of the surrounding areas, approximated as 104 feet SMD.

6.2. Off-Site Disposal

The results of the sediment testing and analysis imply that the material is only suitable for disposal at a landfill. There are potential upland uses if that material is properly contained and capped, however, no such uses are known in close proximity to the project at this time. For this exercise, it is assumed the material is taken to Ox Mountain Sanitary Landfill in Half Moon Bay, approximately 12 miles from the project area.

FIGURE 6-1: POTENTIAL IN-LAGOON DISPOSAL AREAS AND VOLUMES



7. Regulatory Considerations

Dredging and disposal within the San Francisco Bay Area is regulated by the Dredged Material Management Office (DMMO), a joint program between the San Francisco Bay Conservation and Development Commission (BCDC), San Francisco Bay Regional Water Quality Control Board (RWQCB), State Lands Commission (SLC), the San Francisco District U.S. Army Corps of Engineers (USACE), and the U.S. Environmental Protection Agency (EPA). Additionally, consultation with the California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS) is performed through the DMMO process. This interagency group was created to streamline the process of obtaining authorization for dredging and disposal projects from each member agency.

Additionally, dredging and disposal projects are regulated under the California Environmental Quality Act (CEQA), which requires that state and local agencies identify the significant environmental impacts and, if feasible, avoid or mitigate those impacts. The anticipated process of obtaining these authorizations as well as the potential implications of these regulatory considerations are discussed in the subsequent paragraphs.

7.1. Regulatory Considerations for Dredging

All dredging activity within the San Francisco Bay Area must undergo the DMMO process. The first step of the process involves developing a Sediment Analysis Plan (SAP) to be approved by the DMMO committee. The SAP will outline the proposed sampling and testing of the sediment to be dredged. The extent of sampling and testing will be based on factors such as area and volume quantity as well as the proposed disposal site. This plan must be approved by the DMMO prior to initiating the work. Once the plan has been approved, the sampling and testing may be conducted and summarized in the Sediment Analysis Results (SAR) Report. Depending on whether or not there are significant findings in the sediment testing, the DMMO will approve the report, request additional testing, or deny the request for use of a particular disposal site or methodology. In addition to the sediment characterization and analysis, the following information must be submitted to the DMMO for authorization:

1. Dredged Volume Calculations;
2. Project Drawings and Maps;
3. Proof of Legal Interest;
4. Statement of Consistency;
5. Environmental Document (CEQA Notice of Exemption);
6. Organizational Document;
7. Small Dredger Programmatic Alternatives Analysis (SPDAA);
8. List of Adjacent Landowners;
9. Location of State Lands Parcels within Project Footprint (if any).

Because the template of the proposed dredging is within the template originally dredged, this dredging event would be considered 'maintenance' dredging. Since this area was permitted for dredging before, the DMMO would additionally request a copy of all past permits issued for the previous dredging event.

Additionally, this project would fall under the CEQA Categorical Exemption § 15304 for Minor Alterations of Land. Therefore, for the dredging portion of this work, no additional CEQA documentation will be required.

The dredging work will also need to obtain a Lake and Streambed Alteration Agreement (LSA) from CDFW which requires a project description, project maps and drawings, and information on the effects on sensitive species. A fee is also associated with this application which is determined based on the cost of the project and project life.

7.2. Regulatory Considerations for Disposal

Disposal sites are typically included in the DMMO and LSA applications as described in Section 7.1. However, the location of the disposal site will influence the CEQA documentation necessary. If the material is taken to a landfill, no permits for disposal will be necessary.

8. Alternatives Analysis

An alternatives analysis was conducted to examine different options for the City to meet its objectives of improving water quality, stormwater retention capacity, and recreational use of the Lagoon. The alternatives encompass a range of dredging volumes, dredging methods, transport and processing options, and disposal locations. Criteria used to formulate alternatives consisted of the following:

a) Prioritize dredging of areas where deeper water depths would benefit navigation and water quality;

b) Consider land ownership, presence of docks, and material quality to identify disposal sites;

c) To determine minimum dredging volume, consider the high mobilization costs that are typical of such an operation and spread the costs over a large enough volume;

d) Assume dredging would be performed in the summer season when the water level is high (to allow floating equipment to operate);

e) Consider production rates of dredging such that work can be accomplished in one summer season (except for the full lagoon alternative, which will require two seasons);

f) Consider the high costs of double-handling dredged material to take it to an offsite landfill, and maximize in-lagoon disposal.

The goal of the analysis presented in this section was to identify potential 'projects' that can be implemented by the City, which achieves the primary objectives of increasing water depths within Marina Lagoon. The following alternatives have been evaluated:

TABLE 8-1: PROJECT ALTERNATIVES EVALUATED

Alternative	Name	Description	Volume Removed
Alternative 1	No Action	Allow sedimentation to continue within the Lagoon	-
Alternative 2	**Large Project**	Entire Lagoon is dredged to 91 SMD	275,000 CY
Alternative 3	**Medium Project**	Only the problem areas that are of immediate concern are dredged	100,000 CY
Alternative 4	**Small Project**	Only the area south of Lakeshore Park, near the intakes from Belmont Slough, is dredged	77,500 CY
Alternative 5	**Scalable Project**	Portions of the lagoon are incrementally dredged over several years funding, and to limit environmental impacts associated with a large dredging project	Up to 275,000 CY

For each of these project alternatives, dredging methodology, material transfer, and disposal location and operations, as described in Sections 5 and 6, were evaluated. Details of construction activity were

assumed to determine high level cost estimates for implementation of each project alternative and dredging and disposal methodology combination. Each alternative was compared based on performance criteria which includes stormwater retention capacity, water depth, and reduction of treatment area.

8.1. Alternative 1: No Action

This alternative examines the benefits and consequences of taking 'No Action' to remove the sedimentation that has occurred within the Lagoon. Sedimentation has resulted in a loss of approximately 30 acre-feet of stormwater retention capacity and 77% of the recreational areas with water depths at or greater than 6 feet since the original construction in 1965. The decreased water depths have also resulted in poorer water quality, with approximately 70 acres of the original 172 has less than 3 feet of water depth during the winter months. This corresponds to approximately 41% of the Lagoon no longer having the depths to achieve good water quality.

Sedimentation of the Lagoon is expected to continue. If 'No Action' is taken, then the Lagoon will continue to shoal at an approximate rate of 0.25 inches/year. This corresponds to approximately 5,781 cubic yards of sediment entering the Lagoon. Based on this rate and assuming the material is dispersed evenly within the Lagoon, the entire Lagoon will experience loss of water depths at approximately 1 foot every 48 years.

Continued shoaling will lower the Lagoons stormwater retention capacity. Additionally, sedimentation will decrease recreational depths and increase areas needing water quality treatment further. Similarly to the southern-most reach of the Lagoon, more areas will have to be cordoned off from recreational activity due to shallow depths and more area will need to be treated annually. Indirect effects of this could lead to the Lagoon being considered a less desirable place to live and spend time around.

Benefits of the 'No Action' Alternative 1 would be no financial burden on the City of San Mateo or the residents. Recreation would not need to be suspended for any period of time for construction.

8.2. Alternative 2: Large Project – Dredge Entire Lagoon to 91'

Alternative 2 restores the Lagoon to similar conditions as the original design template. This alternative includes dredging the entire Lagoon to its design depth of 91 SMD, which requires the largest footprint, largest dredged material volume, largest dredging area, and provides the most benefit to the City. The template proposed for this alternative is slightly different from that originally constructed. An offset of 45 feet from the summer high water line (97 SMD) was added so that no dredging would occur in the vicinity of the dock piles or boat ramps built by adjacent land owners.

This alternative, shown in , has a total dredged material volume of 275,000 cubic yards and a dredging footprint of 131 acres. Reduction of treatment areas, stormwater retention capacity, and water depth for recreation will all benefit from this alternative.

8.2.1. Dredging and Disposal Options

This volume of sediment would require a 10-acre area to be filled to approximately 17 feet. Because this area is not available in close proximity to the Lagoon, this alternative examines hydraulically dredging and pumping into a High-Speed Dewatering System before trucking the material to a landfill as the only available dredging and disposal option. Table 8-2 presents the cost estimate for this

alternative. Due to the large volume of dredging and trucking, the project duration is two summer seasons.

TABLE 8-2: COST ESTIMATE FOR ALTERNATIVE 2

(275,000 CY, hydraulic dredging + high-speed dewatering + landfill disposal)

Item	Description	Quantity	Units	Unit Price	Bid Total
1	Mobilization & Demobilization	2*	Lump Sum	$1,700,00.00	$3,400,000.00
2	Dredge and Dry Material	275,000	Cubic Yards	$65.00	$17,875,000
3	Load, Haul, Dispose of Material	275,000	Cubic Yards	$77.00 – $230.00**	$21,175,000 – $63,250,000
				Total Bid:	**$42,450,000 – $84,525,000**
				Project Duration:	**Two Summers**

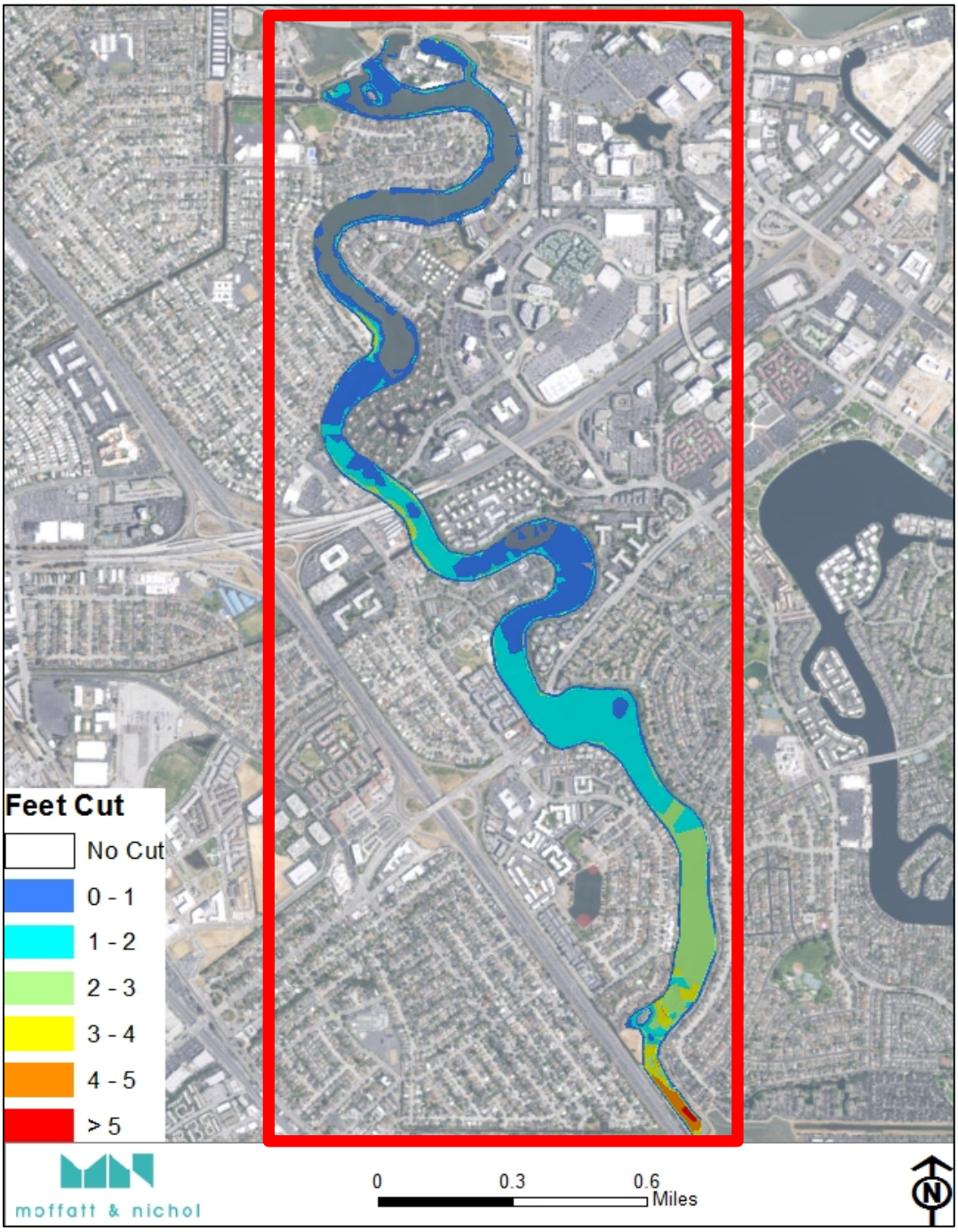
* Total cost based on 2 mobilization and demobilization events since work will be done in 2 summer seasons.

** Minimum unit price based on acceptance of material at Ox Mountain Sanitary Landfill. Maximum price based on railing material to alternative landfill.

A dredging and drying production rate of 100 CY/hr was assumed for an 8 hour work day. It was also assumed that loading and hauling the material could operate at the same speed as the production rate. The unit cost of $65 per cubic yard incorporates the additional operation to clarify the return water from the Dewatering Unit given the contaminants found in the material. The Load, Haul, and Dispose of Material unit cost of $77.00 per cubic yard includes the increased tipping fee associated with Ox Mountain Landfill when accepting contaminated material. Since it is unknown at the time of this study if the material is acceptable for disposal at Ox Mountain, a unit cost of $230.00 per cubic yard was used as the maximum estimated cost per cubic yard if the material would have to be railed or hauled to a distant landfill. To determine acceptance of material, Ox Mountain will need to be provided with the sediment chemistry conducted for this project. Additionally, they may require additional tests to assess the leaching potential of the material.

In-Lagoon placement of material is not feasible for this alternative given the large volume of sediment to be removed. Mechanical dredging cannot be used in conjunction with a high-speed dewatering system since the dewatering system requires a continuous flow of slurry into the system. Mechanically dredging the entire Lagoon in-the-dry is also not feasible given that the construction would take years to complete.

FIGURE 8-1: ALTERNATIVE 2 DREDGING AREA



8.3. Alternative 3: Medium Project – Dredge 'Problem Areas' and Place In-Lagoon

Alternative 3 is proposed to decrease the size and scope of the project. Many areas within the Lagoon have been identified as needing water quality treatment and having insufficient water depths to meet the needs of the City and Lagoon users. Therefore, Alternative 3 was developed to address just these areas.

The alternative combines different areas and dredged templates to achieve a dredged material volume of approximately 100,000 cubic yards. This quantity allows consideration of different dredging methodology and options for disposal locations. The areas that are considered as problematic in the Lagoon, shown in Figure 8-2, and the proposed templates for dredging them are:

- Area South of Lakeshore Park – Dredge Area to 92 feet SMD;
- Area near Pump Station – Dredge Area to 91 feet SMD;
- Area under Hwy 92 Bridge – Dredge Area to 91 feet SMD

Though not as significant as Alternative 2, this project would provide both reduction in treatment areas and recreational depth benefits. Depths in the southern reaches of the Lagoon would be increased to 5 feet during the summer and 3 feet during the winter months. The area under the Hwy 92 bridge would be increased to 6 feet in the summer and 4 feet in winter. The deeper water depths near Lakeshore Park would reduce the need for water quality treatment in those areas.

The volume of material removed for this alternatives is approximately 102,400 CY, with 77,500 CY being removed south of Lakeshore Park, 5,100 CY dredged near the pump station, and 19,800 CY dredged from under the Hwy 92 Bridge. The dredging footprint is approximately 83 acres.

8.3.1. Dredging and Disposal Options

For disposal of the 100,000 CY of material, a 10-acre site would require fill to approximately 6 feet. This area is available within the Lagoon. At least two of the In-Lagoon disposal areas described in Section 6.1 would be utilized for this alternative. It is anticipated that the most likely areas would be the 'Rabbit's Ear' disposal site and the 'Wetland' along the eastern shoreline. Two methods for dredging and disposal have been evaluated as part of this alternative.

8.3.1.1. Alternative 3A: Hydraulically Dredge and Pump to Disposal

The first alternative involves using a hydraulic dredge and pumping the material to the disposal site. Since pumping long distances (usually greater than one mile) requires the use of booster pumps, it was assumed that the material dredged near the pump station and under the Hwy 92 bridge would be pumped to the Rabbit's Ear disposal site. The material from the southern reach of the Lagoon would be pumped to the Wetland disposal site. Alternatively, if the area near the pump station is not dredged, the material dredged from the Hwy 92 Bridge crossing and the southern reach of the Lagoon could be placed within the Wetland disposal site and the 'Upland' area. No booster pumps would be needed for this alternative.

The estimated construction costs for this alternative is presented in Table 8-3. A steel sheetpile wall is required to contain the material within the disposal site. Because of the contamination of the material, the material within the disposal site must be capped with a layer of clean soil. Crews and equipment are assumed to operate for 8 hours per day.

TABLE 8-3: COST ESTIMATE FOR ALTERNATIVE 3A

(100,000 CY, hydraulic dredging + conventional dewatering + in-Lagoon disposal)

Item	Description	Quantity	Units	Unit Price	Bid Total
1	Mobilization & Demobilization	1	Lump Sum	$448,000.00	$448,000
2	Furnish and Install Containment Structures	89,400	Square Foot	$55.00	$4,917,000
3	Dredge & Pump Material to Disposal	100,000	Cubic Yards	$41.00	$4,100,000
				Total Bid:	**$9,465,000**
				Project Duration:	**One Summer**

8.3.1.2. Alternative 3B: Mechanically Dredge and Transport Material in Barges

Another option for dredging the Lagoon is to use a mechanical dredge mounted on a flexi-float and shallow draft barges to transport the material to the In-Lagoon disposal sites. Dredging would begin in deeper water so that the dredge could dig the appropriate draft for the barges when working in the shallower regions. The barges would then be transported along the Lagoon pushed by a tug to the designated disposal site, where another mechanical dredge mounted on a barge would be positioned to offload the material from the barge into the disposal site.

The estimated construction costs for this alternative are presented in Table 8-4.

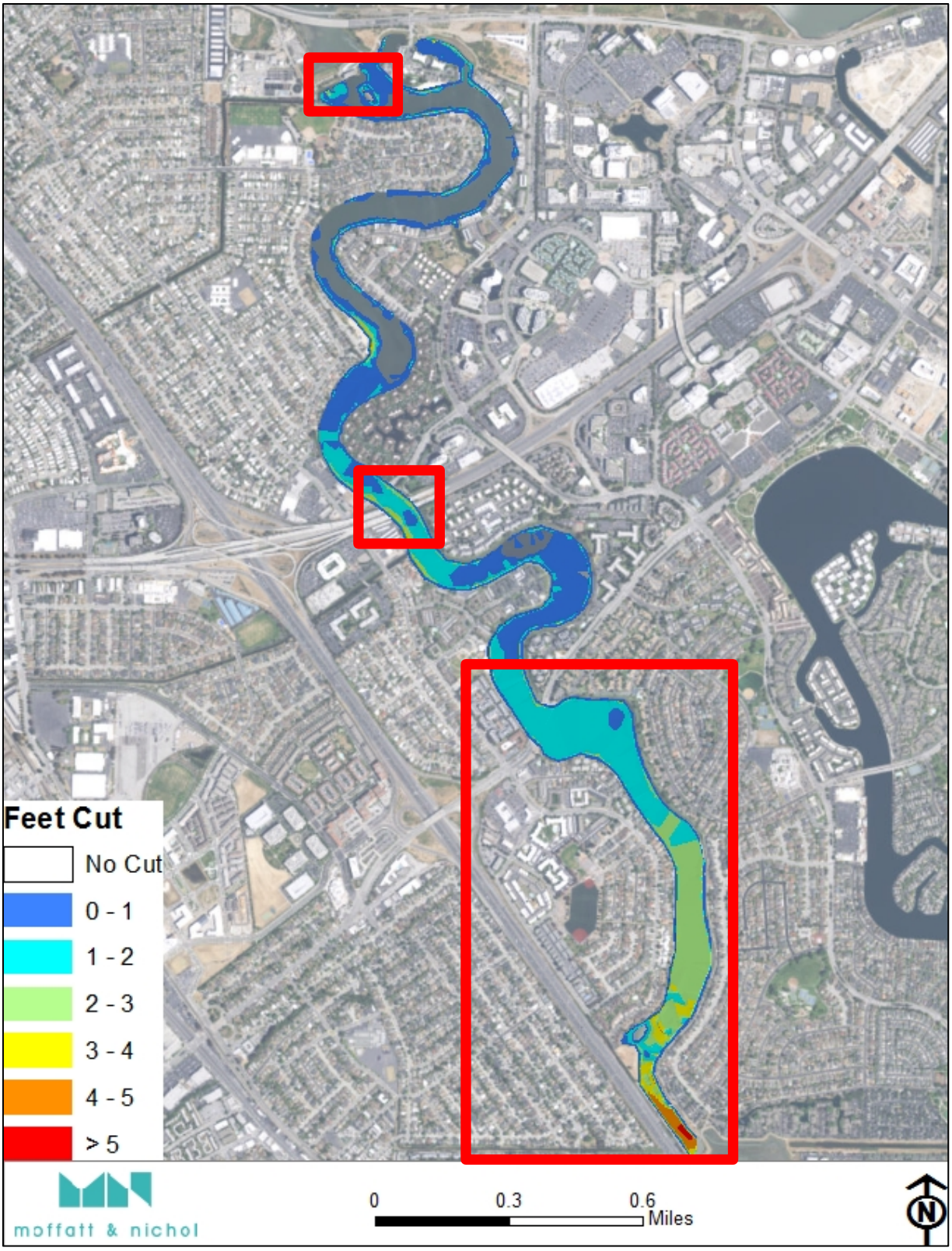
TABLE 8-4: COST ESTIMATE FOR ALTERNATIVE 3B

(100,000 CY, mechanical dredging + conventional dewatering + in-Lagoon disposal)

Item	Description	Quantity	Units	Unit Price	Bid Total
1	Mobilization & Demobilization	1	Lump Sum	$448,000.00	$448,000
2	Furnish and Install Containment Structures	89,400	Square Foot	$55.00	$4,917,000
3	Dredge, Haul, and Unload	100,000	Cubic Yards	$43.00	$4,300,000
				Total Bid:	**$9,665,000**
				Project Duration:	**One Summer**

Assumptions for this estimate are similar to those for Alternative 3A.

FIGURE 8-2: ALTERNATIVE 3 DREDGING AREA



8.4. Alternative 4: Dredge Area South of Lakeshore Park to 92'

Alternative 4 proposes only dredging the southern reach of the Lagoon to a bottom depth of 92 feet SMD. This alternative not only has the lowest volume quantity but also concentrates the work to a small, localized footprint. Since dredging costs quickly escalate when material must be pumped or transported by barge long distances, this alternative is designed to reduce costs by keeping the work in one area within the Lagoon.

This alternative, shown in Figure 8-3, will provide recreational benefits and reduce treatment areas in the southern reach of the Lagoon, where the majority of the siltation has occurred. The volume of dredged material to remove from this reach is approximately 77,500 CY with a footprint of 67 acres.

8.4.1. Dredging and Disposal Options

Disposal of 77,500 CY of material would require a 10-acre site to be filled with approximately 5 feet of dredged material. Because this area is not available, the following sections discuss the dredging and disposal of the material utilizing three potential methodologies and available disposal sites.

8.4.1.1. Alternative 4A: Mechanically Excavate 'Dry' Lagoon, Rehandling, Landfill Disposal

Unlike the other project alternatives, Alternative 4 has all the dredging occurring in one local area. This makes mechanically excavating the Lagoon 'in-the-dry' a feasible option. If the water was initially pumped out of the Lagoon, a road for which an excavator and trucks to haul off the material could be constructed along the bottom of the Lagoon. It is anticipated that the road would be constructed on one side of the Lagoon while the excavator removed material from the other side. A filter fabric would be placed along the bottom of the Lagoon to prevent the vehicles from getting stuck in the soft mud. The cost estimated to perform this alternative is presented in Table 8-5:

TABLE 8-5: COST ESTIMATE FOR ALTERNATIVE 4A

(77,500 CY, mechanical dredging + conventional dewatering + landfill disposal)

Item	Description	Quantity	Units	Unit Price	Bid Total
1	Mobilization & Demobilization	1	Lump Sum	$952,000.00	$ 952,000
2	Dredge, Haul and Unload	77,500	Cubic Yards	$90.00	$ 6,975,000
3	Load, Haul, Dispose of Material	77,500	Cubic Yards	$77.00 - $230.00*	$ 1,890,000 – $17,670,000
				Total Bid:	**$13,875,000 – $25,597,000**
				Project Duration:	**One Summer**

* Minimum unit price based on acceptance of material at Ox Mountain Sanitary Landfill. Maximum price based on railing material to alternative landfill.

Trucks would drive up to the dredge and be loaded. However, given that the material would still be too wet for transport to the landfill, the material would then be taken to another location where it

would be left for a short time to dry before being loaded into the trucks for final transport to the landfill. Since the material requires approximately two days of drying, it was assumed that approximately one third of an acre would be required if the material was stacked to four feet high. This would require approximately four low ground pressure vehicles making four trips an hour from the dredge to the drying area. The approximate 1.5 acre area south of Laguna Vista Community could be utilized for this drying area.

8.4.1.2. Alternative 4B: Hydraulically Dredge and Dewater with a High Speed Dewatering System, Landfill Disposal

Similar to Alternative 2, this reach of Lagoon would be hydraulically dredged and the material pumped to a High-Speed Dewatering System to dry before hauling to a landfill. The dewatering unit would be staged in the area enclosed by the Bay Trail and Hwy 101 (south of Laguna Vista Community) so as to minimize pumping distance. Conversation with high-speed dewatering system contractors indicated that the unit requires approximately 1 acre for staging. If the 1.5 acre area south of Laguna Vista Community is used as the staging area, this would leave approximately ½ an acre for storage and loading of the material onto the truck and driven to the landfill. The schedule assumes an average production rate of 100 cy/hour and 40 truck trips per day. The cost estimate for this alternative is presented in Table 8-6.

TABLE 8-6: COST ESTIMATE FOR ALTERNATIVE 4B

(77,500 CY, hydraulic dredging + high speed dewatering + landfill disposal)

Item	Description	Quantity	Units	Unit Price	Bid Total
1	Mobilization & Demobilization	1	Lump Sum	$1,585,000.00	$1,585,000
2	Dredge, Haul and Unload	77,500	Cubic Yards	$65.00	$5,037,500
3	Load, Haul, Dispose of Material	77,500	Cubic Yards	$77.00 – $230.00*	$5,890,000 – $17,670,000
				Total Bid:	**$ 12,512,500 – $24,292,500**
				Project Duration:	**One Summer**

* Minimum unit price based on acceptance of material at Ox Mountain Sanitary Landfill. Maximum price based on railing material to alternative landfill.

8.4.1.3. Alternative 4C: Hydraulically Dredge and Place in the Lagoon

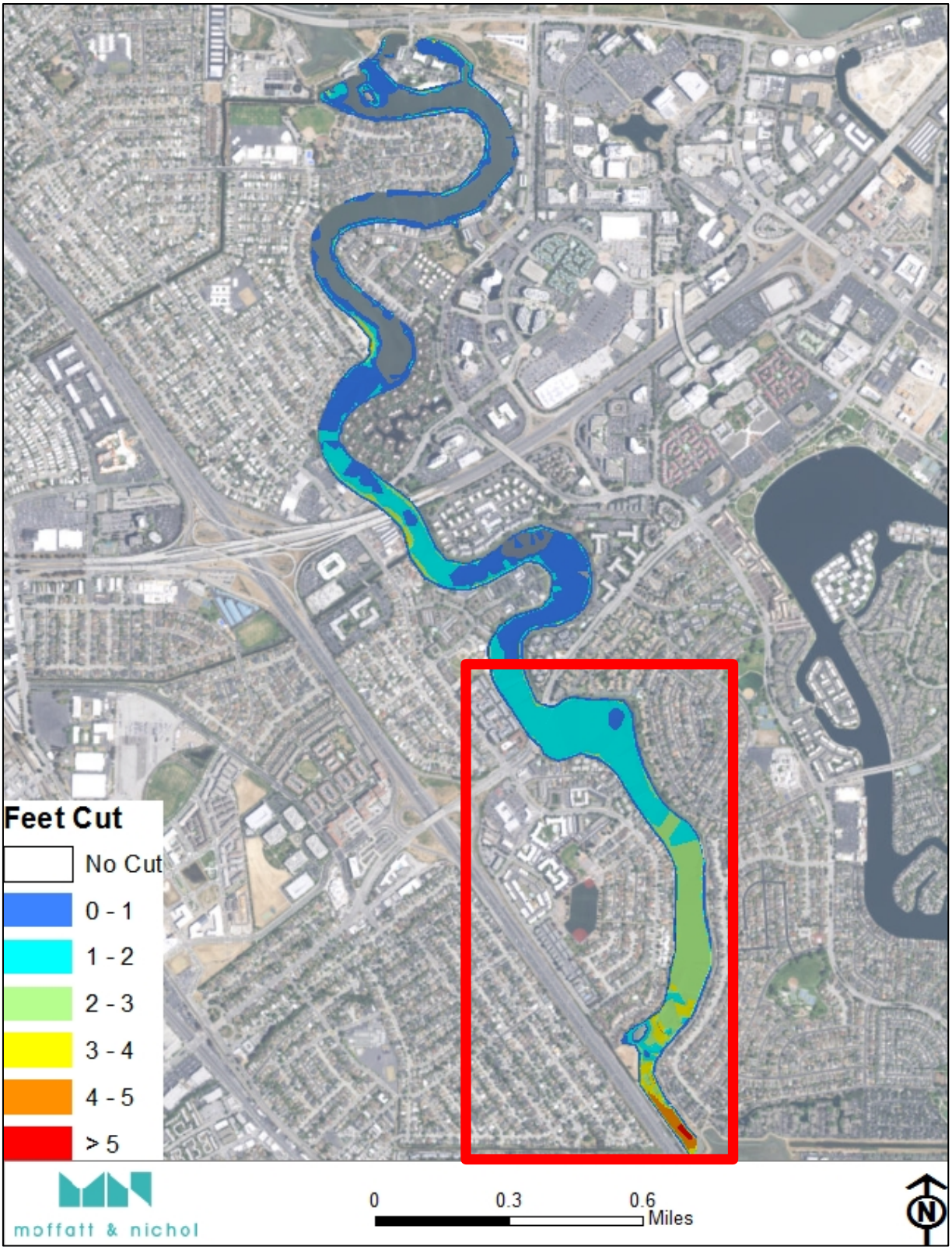
Since this alternative is a subset of Alternative 3, hydraulically dredging and placing the material within the Lagoon is also a viable option. Construction activities would be similar to those described in Alternative 3A. The cost estimate for this alternative is presented in Table 8-7.

TABLE 8-7: COST ESTIMATE FOR ALTERNATIVE 4C

(77,500 CY, hydraulic dredging + conventional dewatering + in-Lagoon disposal)

Item	Description	Quantity	Units	Unit Price	Bid Total
1	Mobilization & Demobilization	1	Lump Sum	$448,000.00	$448,000
2	Furnish and Install Containment Structures	89,400	Square Foot	$55.00	$4,917,000
3	Dredge & Pump Material to Disposal	77,500	Cubic Yards	$42.00	$3,255,000
				Total Bid:	**$8,620,000**
				Project Duration:	**One Summer**

FIGURE 8-3: ALTERNATIVE 4 DREDGING AREA



8.5. Alternative 5: Dredge Material and Place in Rehandling Site within the Lagoon

Alternative 5 was developed as a multi-year approach to achieve the objectives of the project. Over the course of several years, the Lagoon would be dredged and material placed within 'Rehandling' sites. Once in the rehandling site, the material would be left to dry until it can be loaded and hauled to a landfill at a later date.

The benefits, along with the project size and total costs, is scalable. It is estimated that the maximum dredged material in one year would be approximately 55,000 yd^3. This option may not decrease total project cost, however, it would eliminate a very large initial cost. Additionally, the areas used for rehandling could be reconnected to the Lagoon system once the dredging is over or they could serve as future disposal/rehandling sites for maintenance events.

8.5.1. Dredging and Disposal Options

Dredging and disposal options for this alternative are similar to those of Alternative 3.

8.5.1.1. Alternative 5A: Hydraulically Dredge and Place for Rehandling within the Lagoon

This option would function similarly to the Alternative 3A. However, once the material has been given an opportunity to dry (approximately one year), it would be dug again and placed in trucks for disposal offsite. The City could alternate each year between dredging and hauling the material, thereby phasing the project over many years until the desired template is reached.

Costs for this alternative can be estimated based on the item costs developed for Alternatives 3A and 3C.

8.5.1.2. Alternative 5B: Mechanically Dredge and Place for Rehandling within the Lagoon

All dredging operation for this option would be conducted similarly to the Alternative 3B described in Section 8.3.1.2. Since mechanically dredged material is usually much dryer than hydraulically dredged material, which must be mixed with water into a slurry for pumping, it will not require the amount of time to dry as would be necessary for the hydraulically dredged material. Therefore, rehandling and transport to its final destination can occur sooner for this option.

Costs for this alternative can be estimated based on the item costs developed for Alternatives 3B and 4B.

Mechanically excavating the Lagoon in-the-dry was not investigated for this alternative because the cost and regulatory considerations of pumping out the Lagoon and building a road multiple times over the course of several years would make this option infeasible. Additionally, the large mobilization and demobilization cost of the High-Speed Dewatering System would not be viable to incur several times over the course of many years.

8.6. Alternatives Comparison

The following alternatives matrix compares the alternatives and dredging and disposal options based on three performance criteria, which determine how well each project reaches the objectives of the City and is used to gauge how well the alternative performs. Table 8-8 summarizes how each alternative compares for reduction in treatment area, recreational depth, and stormwater retention

capacity. The values presented for each alternatives depict the improvement in acres or acre-feet that can be anticipated with implementation of the alternative.

The table shows that each alternative either meets or exceeds the performance criteria for water quality and recreational depth. Alternative 2 provides the greatest water quality, recreational depth benefits, and stormwater retention capacity, however, at a significant increase in project cost. Since stormwater retention capacity has not been significantly affected by the sedimentation that has occurred with the Lagoon, Alternative 2 will only slightly improve stormwater retention capacity. For Alternatives 3a and 3b, a small amount of stormwater retention capacity will be lost due to in-lagoon disposal. For Alternative 4a and 4b, the location and limits of dredging are small enough that it does not result in any stormwater retention capacity benefit. For Alternative 4c, a small amount of stormwater retention capacity will be lost due to in-lagoon disposal.

Alternative 2 has the largest construction cost for the project. Hauling the sediment to a landfill will present less permitting challenges but uses of the Lagoon will be disrupted for a period of two summer seasons, and there will be a significant amount of truck trips through City streets over those two seasons. The significant costs associated with this alternative may deem it impractical.

Alternative 3 provides cost savings by disposing the material very close to the dredging area. Permitting issues may arise given the contamination of the material. Additionally, the residents along the Lagoon may object to the loss of Lagoon area and waterfront property.

Alternative 4a and 4b would present fewer environmental and landowner concerns as the material will be hauled away. However, this typically accompanies an increase in price. Disposal in-lagoon for 4c will present similar challenges as Alternative 3.

Since Alternative 5 is a scalable project, there are not enough details defined to quantify the benefits to reduction in treatment area, recreation depth or stormwater retention capacity. However, since rehandling will take place in the rehandling sites, both the environmental concerns and public perception challenges are anticipated to be similar to Alternatives 3 and 4c. Unit cost are anticipated to be increased for the entire completion of the project since phasing the work will require multiple mobilization and demobilization events, however, this increased cost will be distributed over the course of several years.

TABLE 8-8: ALTERNATIVES MATRIX

Project				Performance Criteria		
Alternative	Dredging Method	Transport Method	Disposal Site	Water Quality Improvement	Recreation Benefits	Stormwater Retention
Alternative 1: No Action Volume - 0 CY	N/A	N/A	N/A	No Change	No Change	No Change
Alternative 2: Large Project Volume - 275,000 CY	Hydraulically Dredge	Dewatering System and Hauling	Landfill	71 Acres	118 Acres	50 Acre-Ft
Alternative 3: Medium Project Volume - 100,000 CY	3.a) Hydraulically Dredge	Pumping to Disposal	In-Lagoon	67 Acres	83 Acres	-20 Acre-Ft
	3.b) Mechanically Dredge	Barge Transport to Disposal	In-Lagoon	67 Acres	83 Acres	-20 Acre-Ft
Alternative 4: Small Project Volume - 77,500 CY	4.a) Mechanically Dredge 'Dry' Lake	Hauling to Disposal	Landfill	25 Acres	45 Acres	No Change
	4.b) Hydraulically Dredge	Dewatering System and Hauling	Landfill	25 Acres	45 Acres	No Change
	4.c) Hydraulically Dredge	Pumping to Disposal	In-Lagoon	25 Acres	45 Acres	-20 Acre-Ft
Alternative 5: Phased Project Scalable	5.a) Hydraulically Dredge & Rehandle	Pump to Storage; Haul to Disposal	Storage In-Lagoon; Disposal in Landfill	*Scalable*		
	5.b) Mechanically Dredge & Rehandle	Barge Transport to Storage; Haul to Disposal	Storage In-Lagoon; Disposal in Landfill	*Scalable*		

9. Summary and Conclusions

The sediment analysis resulted in only two viable disposal options for the material dredged from Marina Lagoon – in-Lagoon disposal or hauling the material to a landfill. The benefits of in-Lagoon placement include disposing of the material in close proximity to the dredging site, which reduces transportation cost, does not require material drying prior to disposal, and allows for lesser re-handling of the material, which also translates to lower costs. The material may be dredged either hydraulically or mechanically for this disposal option. Some consequences for disposal of material within the Lagoon are a slight decrease in stormwater retention capacity, potential negative public perception due to loss of water bottom and shoreline, and the construction of permanent structures within the Lagoon to contain the material in the designated disposal areas.

If the material is to be removed from the Lagoon, the only current option for disposal is a landfill. This disposal option will likely result in fewer environmental impacts which will facilitate obtaining regulatory permits, provide an increase in stormwater retention capacity (albeit small), water quality benefits associated with deeper water depths, and no loss of lagoon areas for recreation. However, the material needs to be dewatered and loaded onto trucks for landfill disposal, which will entail approximately 40-50 trucks/day through City streets in the summer season. Since the Lagoon is located in a highly-urbanized area with no available parcels of land large enough to accommodate conventional dewatering, a high-speed dewatering system will be necessary for drying of the material. Though the high-speed dewatering system requires less space than conventional dewatering, it will still require 1-2 acres of land for staging of the equipment along with queuing and loading of trucks. The use of the high-speed dewatering system is substantially more expensive than conventional dewatering and requires a hydraulic connection to the Lagoon for return of treated effluent.

Given these high costs for all alternatives, it may be prudent for the City to focus their efforts on strategic dredging of areas where water quality concerns due to shallow depths are high. This could be, for example, a small amount of dredging prior to water quality treatments performed each year. If this is coupled with operational changes in lagoon water management, where pumps are operated more frequently to reduce the residence time of the lagoon waters, it is possible that some of the water quality concerns could be mitigated.

10. References

1. CA Department of Boating and Waterways (1991). *Layout and Design Guidelines for Small Craft Berthing Facilities*.

2. Moffatt & Nichol (1998). *Marina Lagoon Preliminary Dredging Assessment*. Prepared for the Department of Public Works, City of San Mateo.

3. Moffatt & Nichol (2015). *South Bay Salt Pond Restoration Project – Beneficial Reuse Feasibility Study*. Prepared for the Coastal Conservancy. January 2015.

APPENDIX A
Dredging Plan Cross Sections

NOTES:

1. FOR DETAILED INFORMATION NOT SHOWN ON THIS DRAWING, SEE XX.
2. CROSS SECTIONS ARE SHOWN LOOKING TOWARDS INCREASING STATION.

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JAF/AJ	AJ	XX

JOB NO. 9825

Plans Reviewed and Approved by: /s/, City Engineer

MARINA LAGOON DREDGING ASSESSMENT

MARINA LAGOON CROSS SECTIONS

DATE 09/14/17

SHEET 1 OF 8

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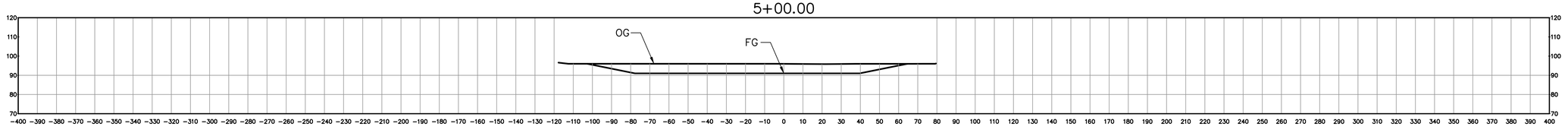

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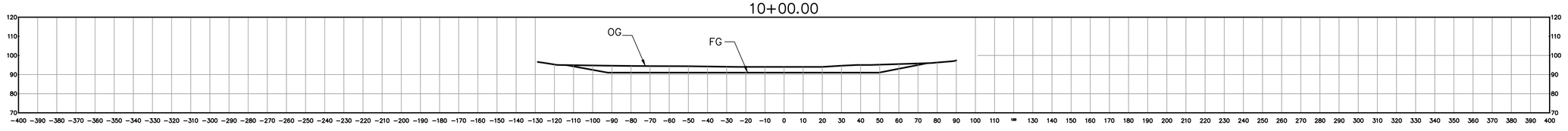

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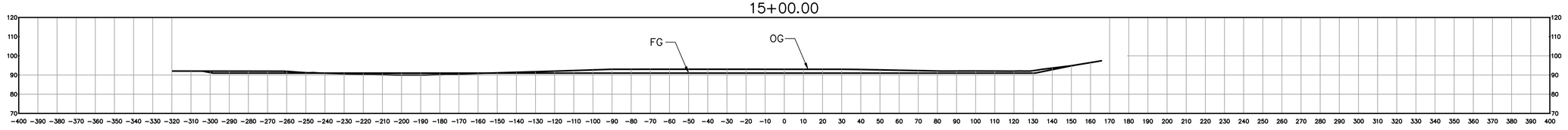

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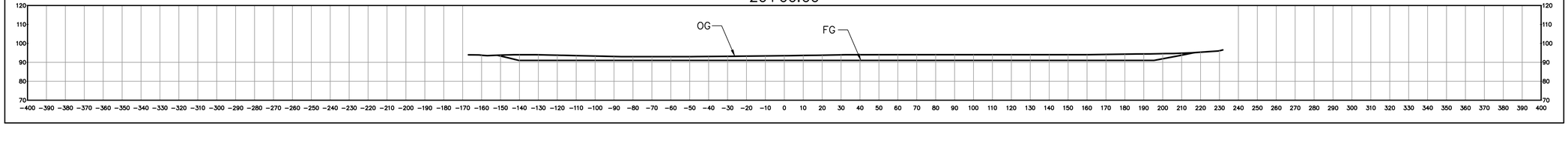

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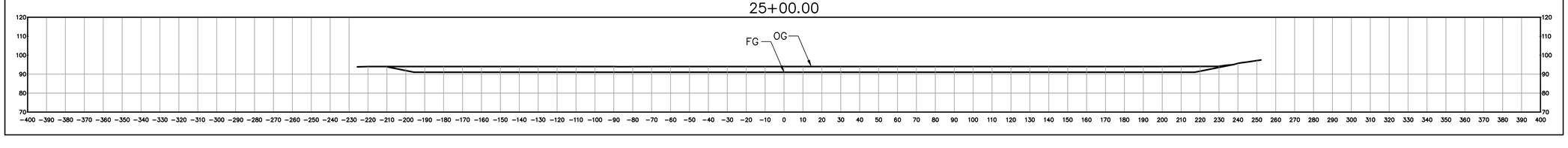

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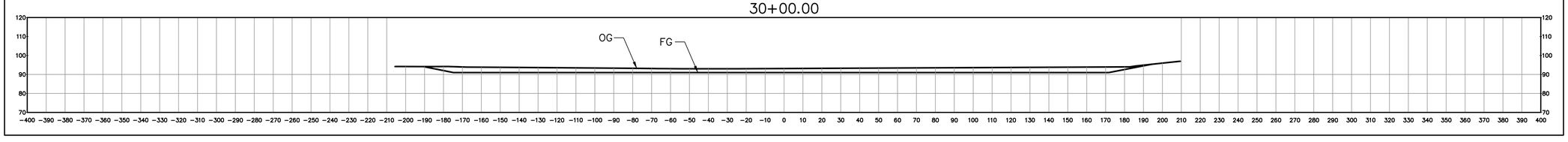

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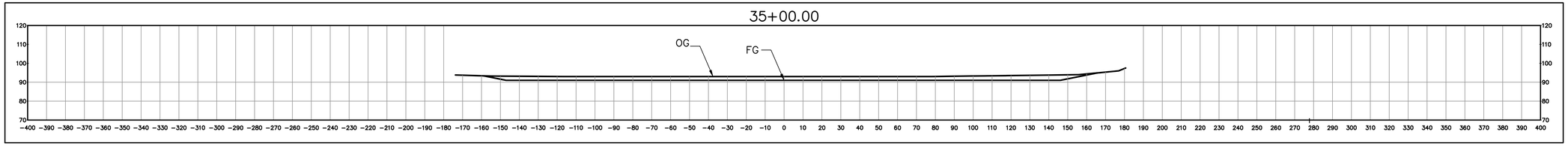
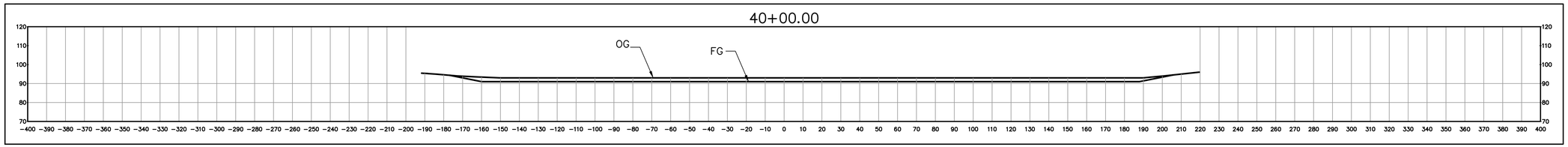
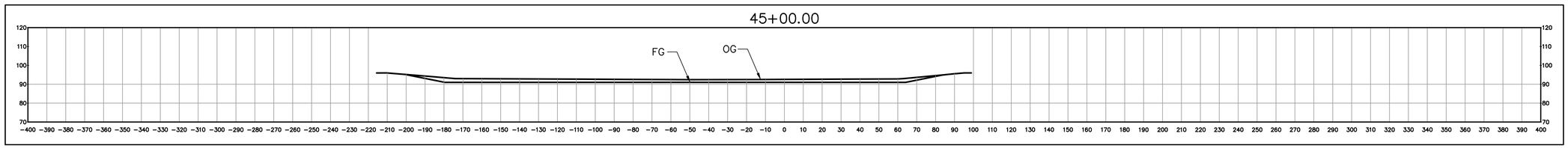
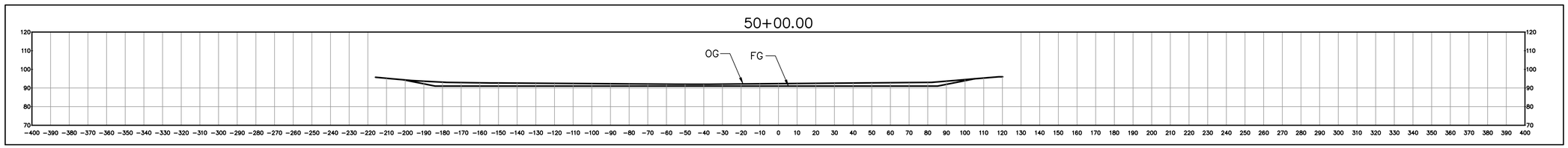
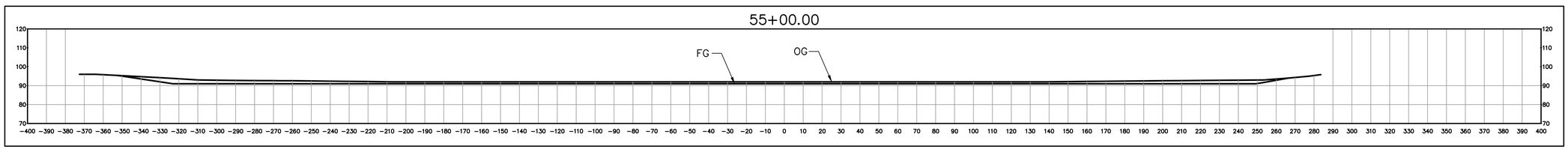
02

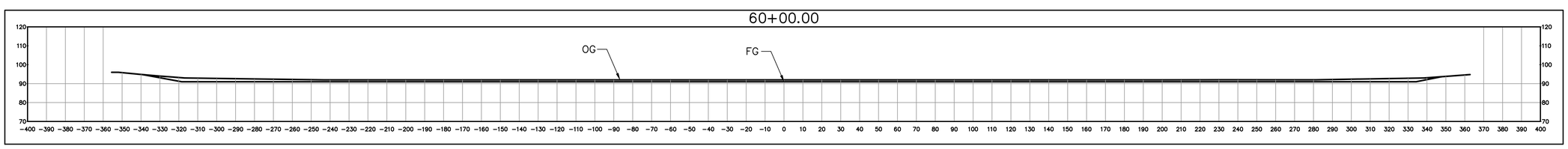












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MARINA LAGOON DREDGING ASSESSMENT

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MARINA LAGOON CROSS SECTIONS

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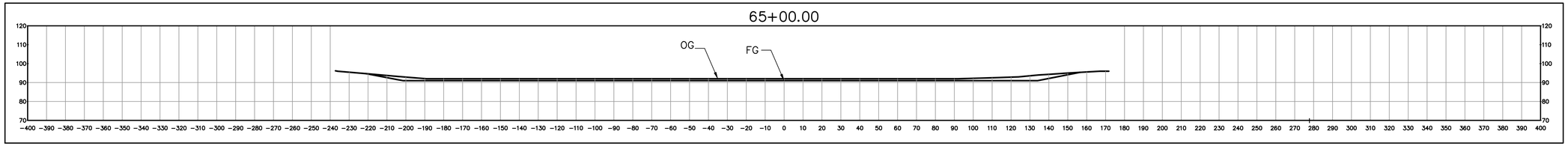

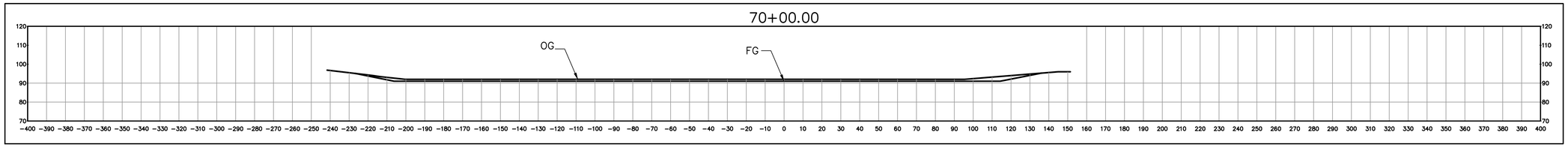

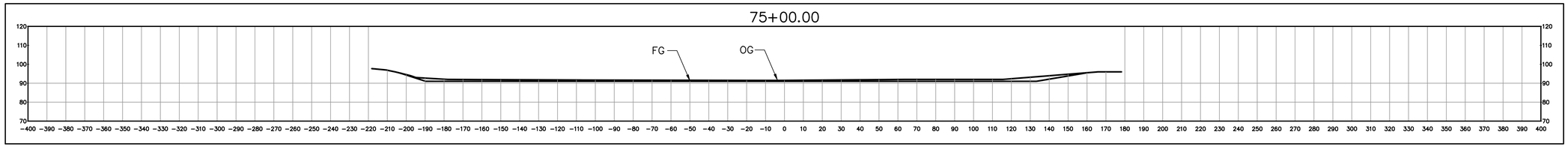

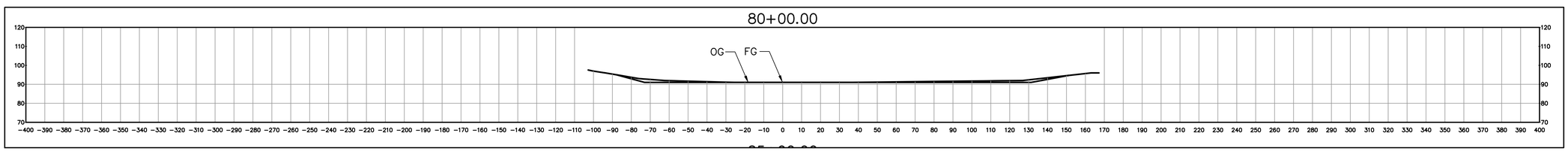

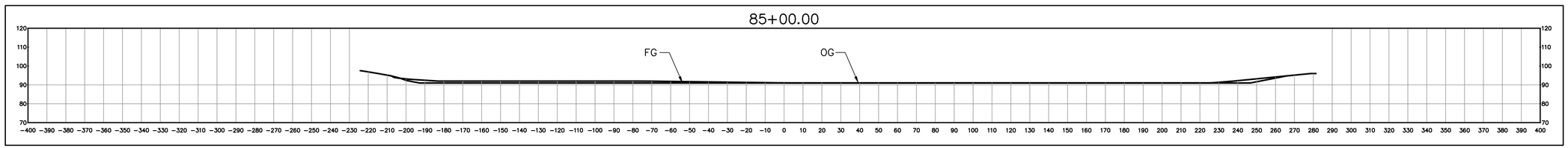

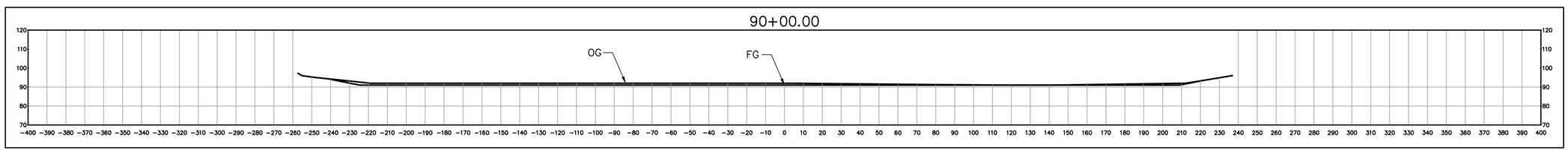

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LEGEND:

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REVISION	DESCRIPTION	BY	DATE

moffatt & nichol
2185 N. California Blvd., Suite 500
Walnut Creek, CA 94596

DSGN	DR	CHK
JAF/AJ	AJ	XX

JOB NO. 9825

Plans Reviewed and Approved by: /s/, City Engineer

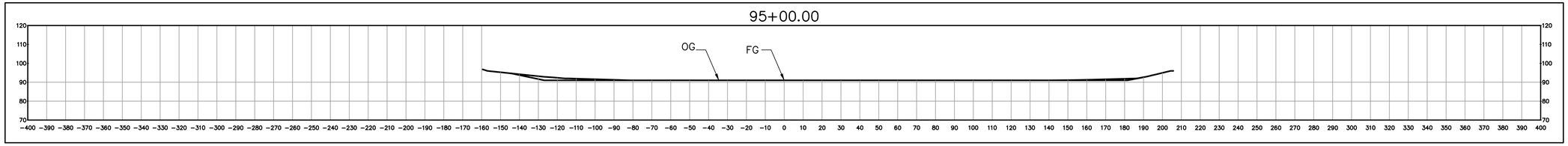
MARINA LAGOON DREDGING ASSESSMENT

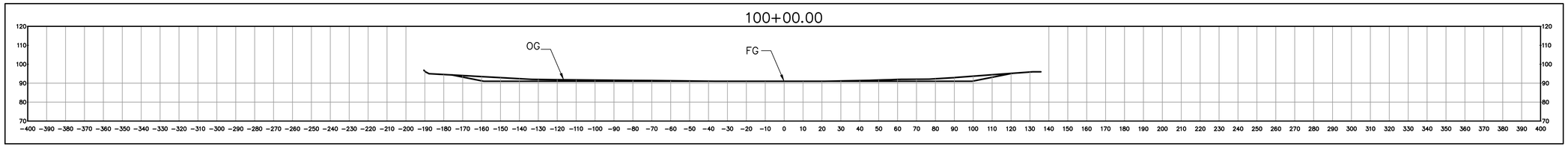
MARINA LAGOON CROSS SECTIONS

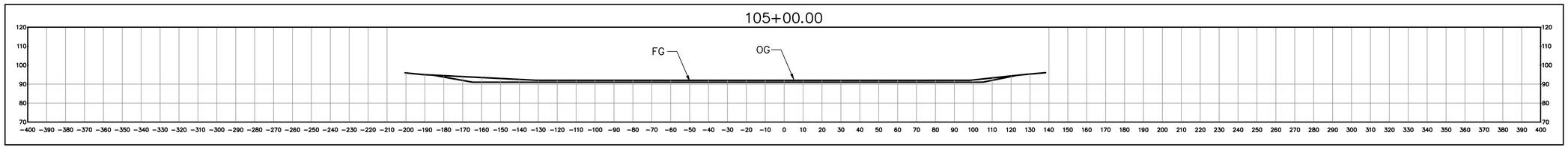
DATE 09/14/17

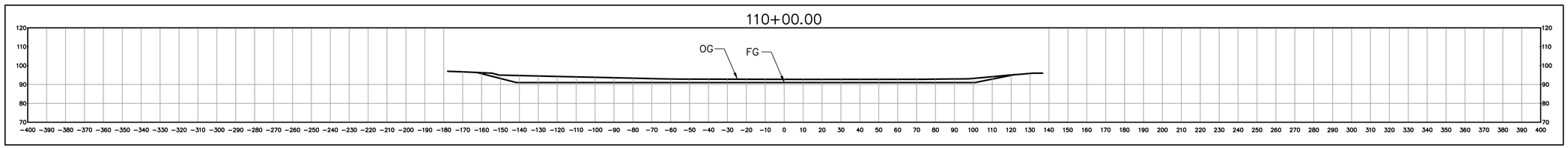
SHEET 4 OF 8

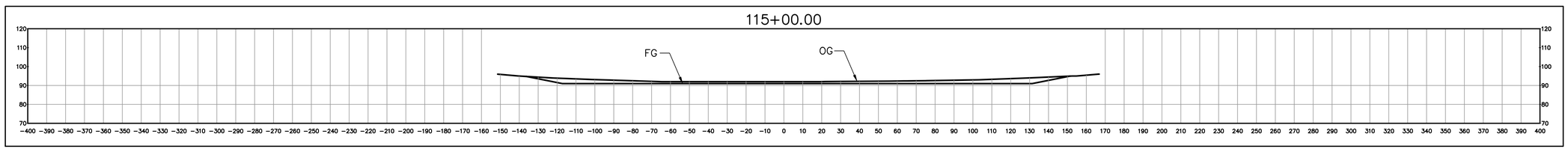
04

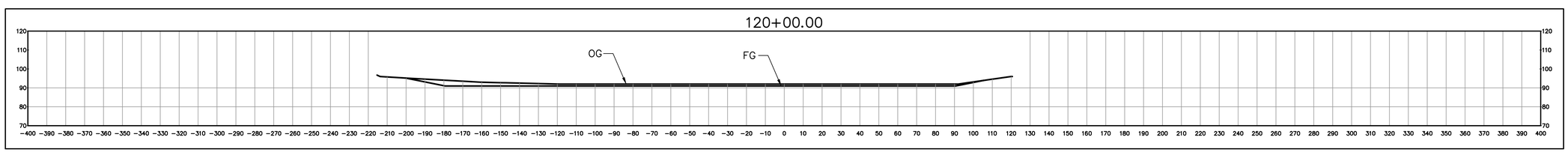












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JAF/AJ	AJ	XX

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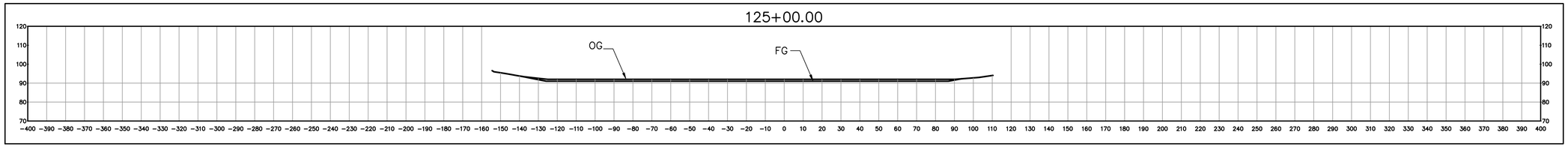
MARINA LAGOON DREDGING ASSESSMENT

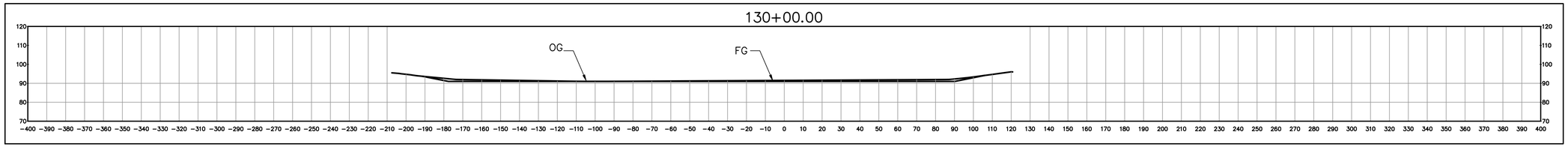
DATE 09/14/17

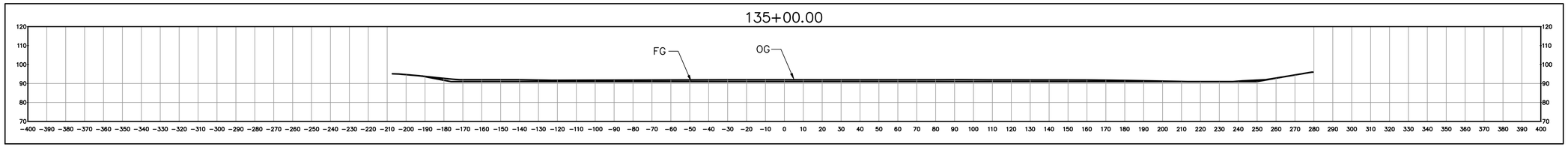
SHEET 5 OF 8

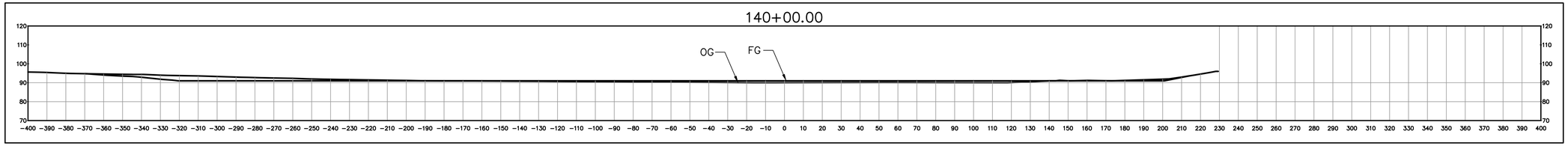
MARINA LAGOON CROSS SECTIONS

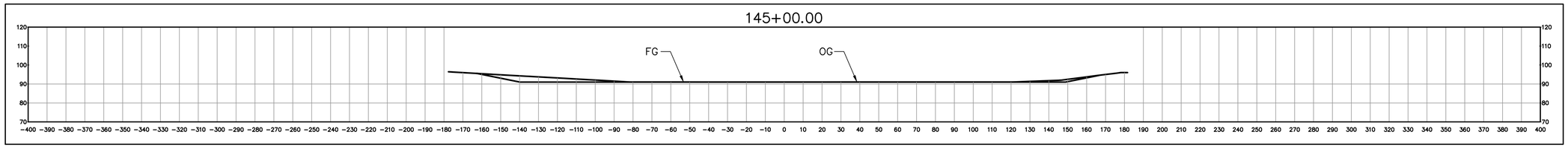
05

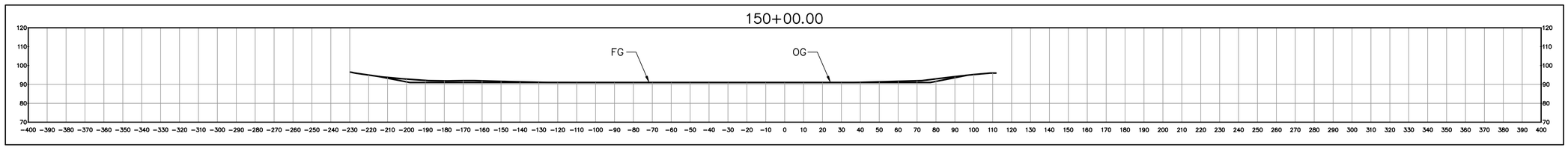












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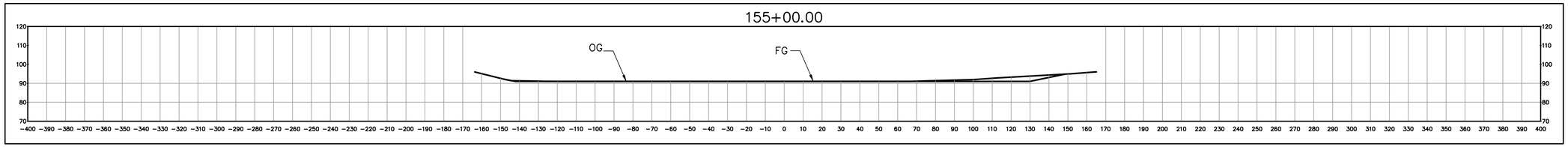
MARINA LAGOON DREDGING ASSESSMENT

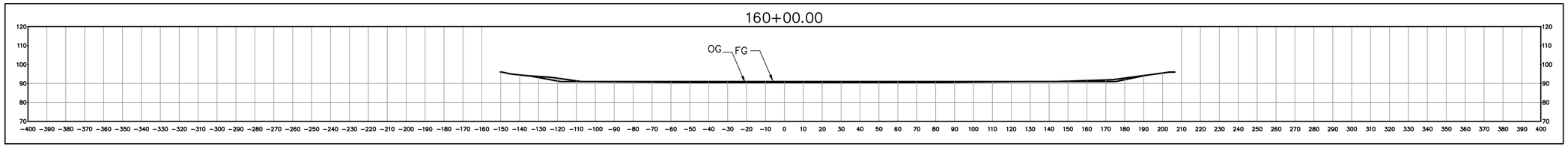
MARINA LAGOON CROSS SECTIONS

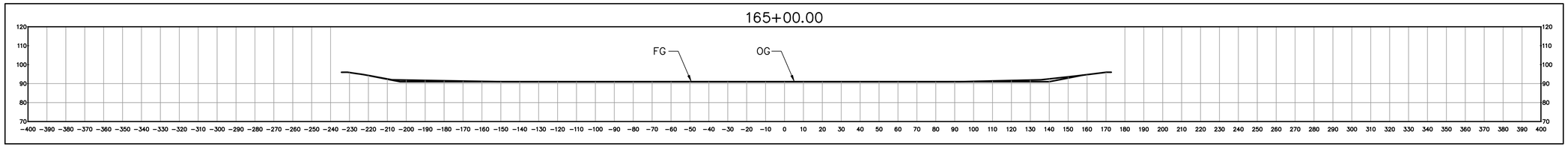
DATE 09/14/17

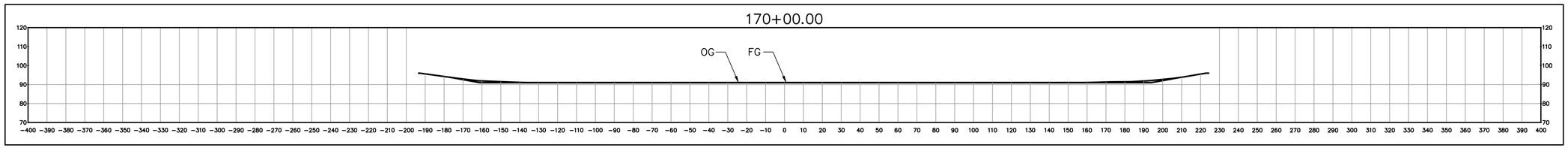
SHEET 6 OF 9

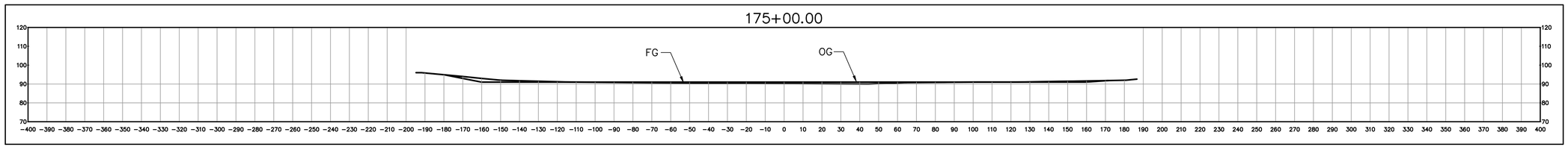
06

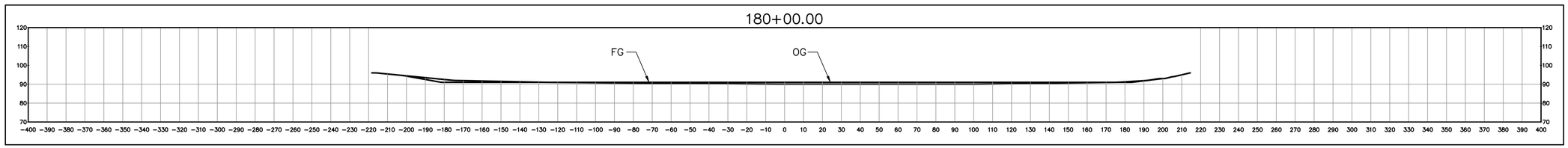












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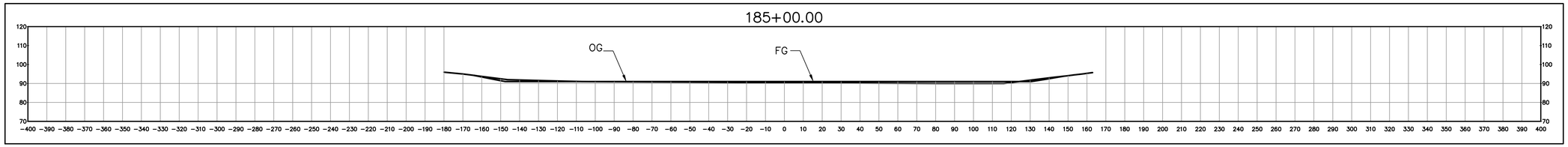
MARINA LAGOON DREDGING ASSESSMENT

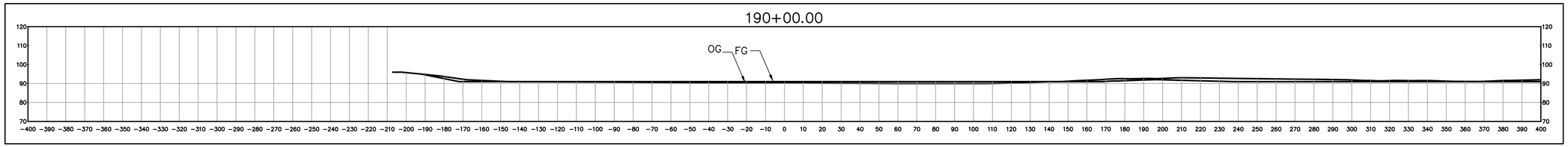
MARINA LAGOON CROSS SECTIONS

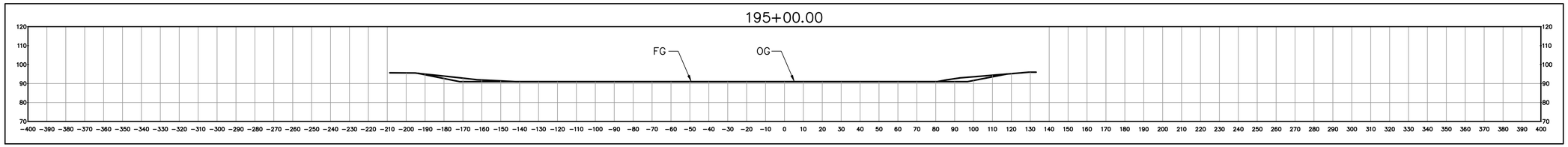
DATE 09/14/17

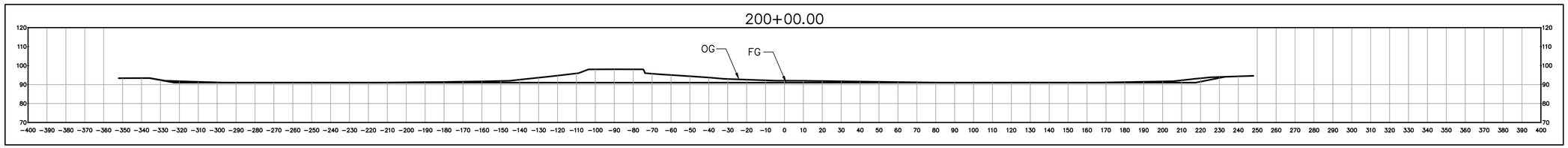
SHEET 7 OF 8

07









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MARINA LAGOON DREDGING ASSESSMENT

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SHEET 8 OF 8

MARINA LAGOON CROSS SECTIONS

08

Regional General Permit

(USACE, 2022)

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

Regulatory Division

SUBJECT: File Number 2000-257530S

Ms. Sarah Scheidt
The City of San Mateo
330 West 20th Street
San Mateo, California 94403
sscheidt@cityofsanmateo.org

Dear Ms. Scheidt:

Enclosed is an electronic copy of a Department of the Army, Regional General Permit (RGP7) to carry out routine maintenance activities in Marina Lagoon, City of San Mateo, San Mateo County, California.

You are advised that the Corps has established an Administrative Appeal Process, as described in our regulations at 33 C.F.R. pt. 331 (65 Fed. Reg. 16486 (March 28, 2000)) and outlined in the enclosed flowchart and Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) form. The following two options are available to you in your evaluation of the enclosed permit:

1. You may sign and date the permit on the line designated for "Permittee". Your signature on the permit indicates that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions. You must return the permit to this office for final authorization. We will then forward a copy of the fully executed permit for your records, at which time you will be authorized to commence work.

2. You may decline to sign the permit because you object to certain terms and conditions, and you may request that the permit be modified. If you decline the permit, you must return the permit to the District Engineer and may not proceed with your project until notified by the District Engineer. You must outline your objections to the terms and conditions of the permit by completing Section II of the NAO-RFA form. Your objections must be received by the District Engineer within 60 days of the date of this letter or you will forfeit your right to request changes to the terms and conditions of the permit.

   Upon receipt of the completed NAO-RFA form, the District Engineer will evaluate your objections, and may: a) modify the permit to address all of your objections, b)

modify the permit to address some of your objections, or c) not modify the permit, having determined that the permit should be issued as previously written. In any of these three cases, the District Engineer will send you a final permit for your reconsideration, as well as a second NAO-RFA form. Should you decline the final proffered permit, you can appeal the declined permit by submitting the completed NAO-RFA form to the Division Engineer. The NAO-RFA form must be received by the Division Engineer within 60 days of the date of the second transmittal letter, or you will forfeit your right to pursue an appeal.

If you fail to sign and return a copy of this permit or fail to request a modification of the permit within 60 days from the date of this letter, your permit application may be withdrawn pursuant to our regulations at 33 C.F.R. § 325.2(d)(5).

You may refer any questions on this matter to Michael Orellana by telephone at (415) 503-6769 or by e-mail at michael.s.orellana@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

Sincerely,

Sarah S. Firestone

Sarah Firestone, Ph.D.
Acting South Branch Chief
Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

DEPARTMENT OF THE ARMY PERMIT

PERMITTEE: Ms. Sarah Scheidt, City of San Mateo

PERMIT NO.: 2000-257530S, RGP7

ISSUING OFFICE: San Francisco District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below:

PROJECT DESCRIPTION: This Department the Army permit authorizes the City of San Mateo to conduct routine maintenance activities resulting in the placement of fill and work within Marina Lagoon in the City of San Mateo, San Mateo County, California.

Following are the activities authorized by this permit:

1) Construction, maintenance, and improvement of public and private individual boat docks and ramps and pile supported boardwalks on both banks of Marina Lagoon within the City limits of San Mateo. There will be up to 5 newly constructed docks per year, for a total of 25 new docks over the span of the 5-year permit. A typical dock on the lagoon is approximately 25 feet in width, occupying the full extent of the parcel, and up to the maximum allowable length of 25 feet from the shoreline, requiring at least 6-8 support piles having a typical pile diameter of 12 inches, and therefore, the total amount of new dock structures will be approximately 34.90 cubic yards of fill within less than 0.01 acre of Corps jurisdiction over 5 years.

2) Maintenance and improvement of existing stormwater outfalls and the O'Neill Slough tide gate inlet, and activities related to the construction of storm water outfalls. This will include yearly sediment and debris removal to maintain lagoon flows and inlet capacity. Accumulated and captured material will be removed with mechanical equipment and hand labor from O'Neill Slough tide gate inlet, stormwater outfalls (59 total), and at the southern litter boom as needed. Up to 250 cubic yards of sediment will be removed over the span of the 5-year permit. This permit does not authorize the expansion of hardscape associated with outfall improvement or maintenance within waters of the U.S.

3) Construction, maintenance, and improvement of bank protection including riprap, bulkheads, paving on banks, and cuts and fills. To the maximum extent practicable, any new or additional bank stabilization shall incorporate structures or modifications beneficial to fish and wildlife. Each year, up to 200 linear feet of bank slope repair and 50 linear feet of new bank protection may be permitted under this RGP (10 feet maximum width and 250 feet maximum length). Bank protection work would be limited to 0.06 acre of disturbance in any given year. Bank and Shoreline protection shall occur as needed at any time of year. The total amount of fill permitted below the summer high water line over the course of 5 years is 116 cubic yards.

4) Construction, maintenance, and installation of new fences along established property lines will occur on an annual basis. Several private shoreline parcels have fences protruding into the Lagoon below the summer high water level. Fence repair and installation will occur as needed at any time of year. Up to 40 linear feet of new fencing will be constructed per year. Existing fences shall not extend more than 6 feet into the Lagoon beyond the summer high water level. No new fences shall be constructed below the point on the shoreline intersected by

the plane of the summer high water level. The total amount of fill associated with fence structures placed within Corps jurisdiction will be less than 1 cubic yard over the course of 5 years.

5) Maintenance, including sand replenishment, at the existing beaches at Lakeshore Park and Aquatic Park. Sand replenishment is estimated to occur once per year. Sand replenishment at both park locations will result in less than 0.001 acre of temporary impacts above the water line in each year. Up to 100 cubic yards in total of sand sourced from a local provider will be replenished annually at the Lagoon beaches.

6) Sediment Removal/Dredging: Operation of the Marina Lagoon will require periodic maintenance dredging to sustain the desired depth of sediment and flow in front of the 19th Avenue Creek, 16th Avenue Channel, and Laurel Creek inlets. The proposed dredging activities will result in the short-term disturbance of localized sediment. Up to 2,000 cubic yards of sediment will be dredged over the span of the 5-year permit.

7) Removal of nuisance aquatic vegetation. Mechanical harvesters will be used intermittently in the Lagoon throughout the late spring and summer (June through August), to control excessive growth of widgeon grass and filamentous algae to provide safe boating conditions and to maintain water quality and water flow.

All work shall be completed in accordance with the plans and drawings titled "USACE File #2000-257530S, Regional General Permit (RGP 7) for Marina Lagoon, July 1, 2022, 12 Sheets," provided as enclosure 1.

PROJECT LOCATION: Marina Lagoon in the City of San Mateo, San Mateo County, California (Lat: 37.568611, Long: 122.292222).

PERMIT CONDITIONS:

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on June 1, 2027. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. For your convenience, a copy of the water quality certification or waiver is attached. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary

to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

7. You understand and agree that, if future operations by the United States require the removal, relocation or other alteration of the structure or work authorized herein, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, you will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

SPECIAL CONDITIONS:

1. By letter dated, February 25, 2022, the U.S. Fish and Wildlife Service (USFWS) concurred with the determination that the project may affect but is not likely to adversely affect California Ridgway's rail (*Rallus obsoletus obsoletus*) and Salt marsh harvest mouse (*Reithrodontomys raviventris*) and their critical habitat. This concurrence was premised, in part, on the description of the proposed action and conservation measures discussed in enclosure 3. These measures are incorporated as special conditions to this Regional General Permit to ensure unauthorized incidental take of species and loss of critical habitat does not occur.

2. By letter dated, February 7, 2022, the National Marine Fisheries Service (NMFS) concurred with the determination that the project is not likely to adversely affect North American green sturgeon southern DPS (*Acipenser medirostris*) Central California Coast steelhead DPS (*Oncorhynchus mykiss*) and their critical habitat. This concurrence was premised, in part, on the description of the proposed action and conservation measures discussed in enclosure 4. These measures are incorporated as special conditions to this Regional General Permit to ensure unauthorized incidental take of species and loss of critical habitat does not occur.

3. Construction in waters of the U.S. is restricted to the California Department of Fish and Wildlife (CDFW) dry season, or the end of any extension granted by CDFW, the Water Board, and the Corps. The seasonal work period for new dock installation using poured concrete and beach sand replenishment shall be restricted to April 15 to October 31. The seasonal work period for dock repair, bank stabilization, and fence repair and installation shall be restricted to the annual drawdown period from January 15 to February 15, otherwise the work period will be restricted to April 15 to October 31. New dock installation using precast concrete may occur at any time provided that the homeowners follow the requirements of the standard Dock Specification Packet issued by the Applicant. Minor debris removal that does not require excavation, and that is immediately necessary to prevent blocking the inlets, may be conducted at any time. Any work conducted within 700 feet of Joinville Park shall be conducted from September 1 to October 15.

4. The permittee shall fully implement the avoidance and minimization measures as described in enclosure 5 during construction.

5. Prior to the start of each construction season, the permittee shall submit a pre-construction proposal for the year's projects for Corps' approval and authorization under this RGP. At a minimum, the pre-construction proposal shall include:

a. a list of the activities and their locations;
b. the volume, area, and type of temporary fill proposed to be discharged within waters of the U.S.;
c. the volume, area, and type of permanent fill proposed to be discharged within waters of the U.S.;
d. the volume and area of sediment proposed to be dredged from within waters of the U.S.;
e. the amount of new hardscape proposed within waters of the U.S. (as opposed to replacement hardscape); and
f. whether special aquatic sites (e.g., wetlands or eelgrass) would be impacted.

6. The permittee must submit an annual report in accordance with the following procedures: Within sixty days after the conclusion of the construction season, you shall submit an annual report documenting the activities

that occurred. This report shall include a description of the work performed, specifically noting any changes to proposed projects from what was outlined in the pre-construction proposal. The annual report may be submitted as an excel spreadsheet. At a minimum, the annual report shall include the following information for that year:

- A description of activities completed and their location;
- Conservation measures implemented that year;
- The impacts associated with each project category for the preceding year; and
- The total impacts associated with each project category over the life of the RGP.

FURTHER INFORMATION:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403).
(X) Section 404 of the Clean Water Act (33 U.S.C. Section 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. Section 1413).

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate. (See Item 4 above.)

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 C.F.R. § 325.7 or enforcement procedures such as those contained in 33 C.F.R. §§ 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 C.F.R. § 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____

(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ _____

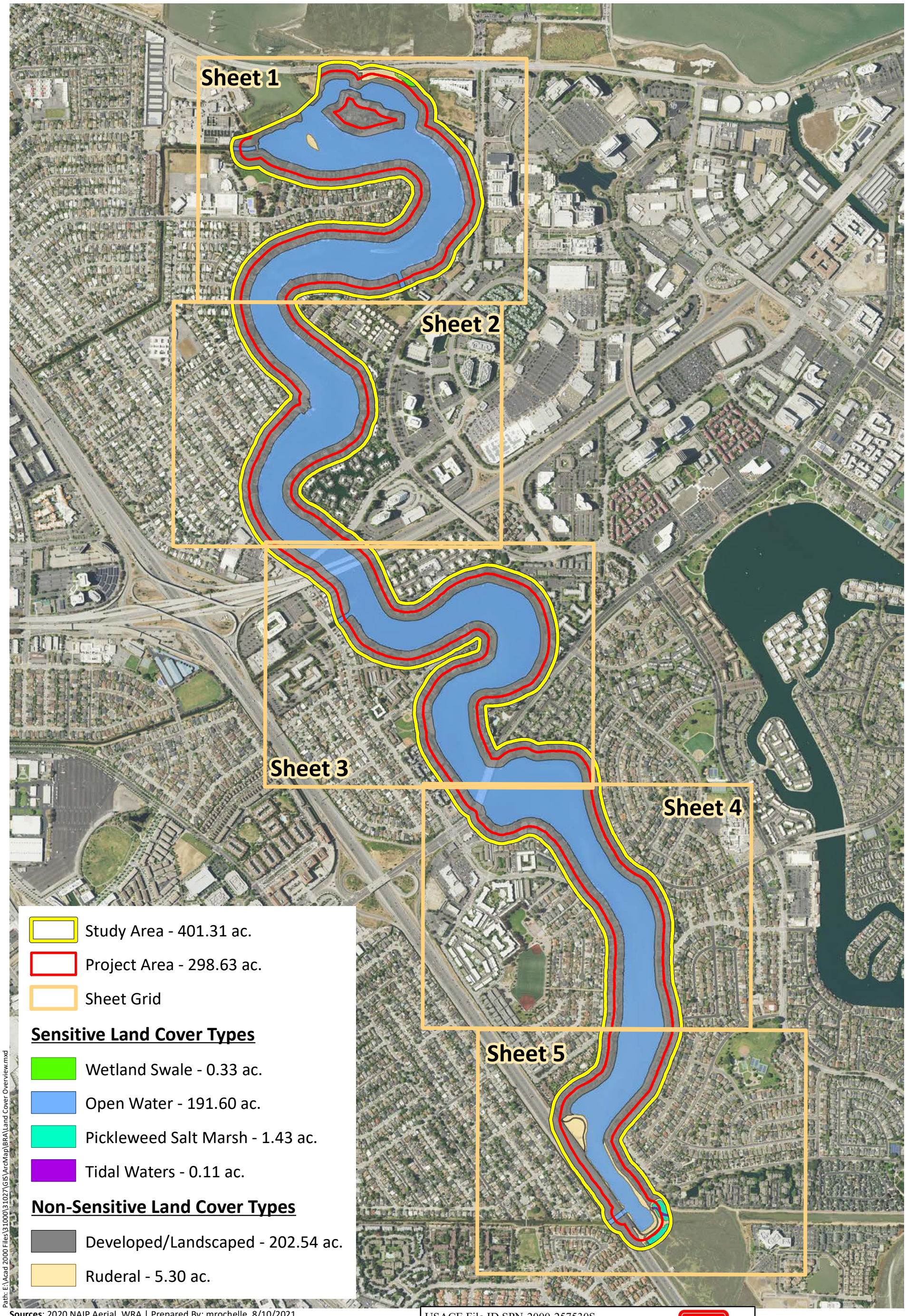
James Mazza (DATE)
Chief, Regulatory Division
San Francisco District

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE) (DATE)

ENCLOSURE 1



Sources: 2020 NAIP Aerial, WRA | Prepared By: mrochelle, 8/10/2021

USACE File ID SPN-2000-257530S
Regional General Permit (RGP 7) for Marina Lagoon
San Mateo, County
July 1, 2022
12 Sheets
Enclosure 1

U.S. Army
Corps of Engineers
San Francisco District
Regulatory Division

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ENVIRONMENTAL CONSULTANTS

Figure 4-1. Natural Communities and Land Cover within the Study Area (Overview)

San Mateo Marina Lagoon
San Mateo County, California

Figure 4-2.
Natural Communities and Land Cover within the Study Area (Sheet 1)

San Mateo Marina Lagoon
San Mateo County, California

Study Area - 401.31 ac.

Project Area - 298.63 ac.

Sensitive Land Cover Types

Wetland Swale - 0.33 ac.

Open Water - 191.60 ac.

Pickleweed Salt Marsh - 1.43 ac.

Tidal Waters - 0.11 ac.

Non-Sensitive Land Cover Types

Developed/Landscaped - 202.54 ac.

Ruderal - 5.30 ac.

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ENVIRONMENTAL CONSULTANTS

Path: E:\Acad 2000 Files\13100\13027\GIS\ArcMap\Land Cover.mxd

Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 6/29/2021

Figure 4-3.
Natural Communities and Land Cover within the Study Area (Sheet 2)

San Mateo Marina Lagoon
San Mateo County, California

Study Area - 401.31 ac.

Project Area - 298.63 ac.

Sensitive Land Cover Types

Wetland Swale - 0.33 ac.

Open Water - 191.60 ac.

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Non-Sensitive Land Cover Types

Developed/Landscaped - 202.54 ac.

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 6/29/2021

Figure 4-4.
Natural Communities and Land Cover within the Study Area (Sheet 3)

San Mateo Marina Lagoon
San Mateo County, California

Study Area - 401.31 ac.

Project Area - 298.63 ac.

Sensitive Land Cover Types

Wetland Swale - 0.33 ac.

Open Water - 191.60 ac.

Pickleweed Salt Marsh - 1.43 ac.

Tidal Waters - 0.11 ac.

Non-Sensitive Land Cover Types

Developed/Landscaped - 202.54 ac.

Ruderal - 5.30 ac.

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 6/29/2021

Figure 4-5.
Natural Communities and Land Cover within the Study Area (Sheet 4)

San Mateo Marina Lagoon
San Mateo County, California

Study Area - 401.31 ac.

Project Area - 298.63 ac.

Sensitive Land Cover Types

Wetland Swale - 0.33 ac.

Open Water - 191.60 ac.

Pickleweed Salt Marsh - 1.43 ac.

Tidal Waters - 0.11 ac.

Non-Sensitive Land Cover Types

Developed/Landscaped - 202.54 ac.

Ruderal - 5.30 ac.

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 6/29/2021

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Figure 4-6.
Natural Communities and Land Cover within the Study Area (Sheet 5)

San Mateo Marina Lagoon
San Mateo County, California

Study Area - 401.31 ac.

Project Area - 298.63 ac.

Sensitive Land Cover Types

Wetland Swale - 0.33 ac.

Open Water - 191.60 ac.

Pickleweed Salt Marsh - 1.43 ac.

Tidal Waters - 0.11 ac.

Non-Sensitive Land Cover Types

Developed/Landscaped - 202.54 ac.

Ruderal - 5.30 ac.

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 6/29/2021

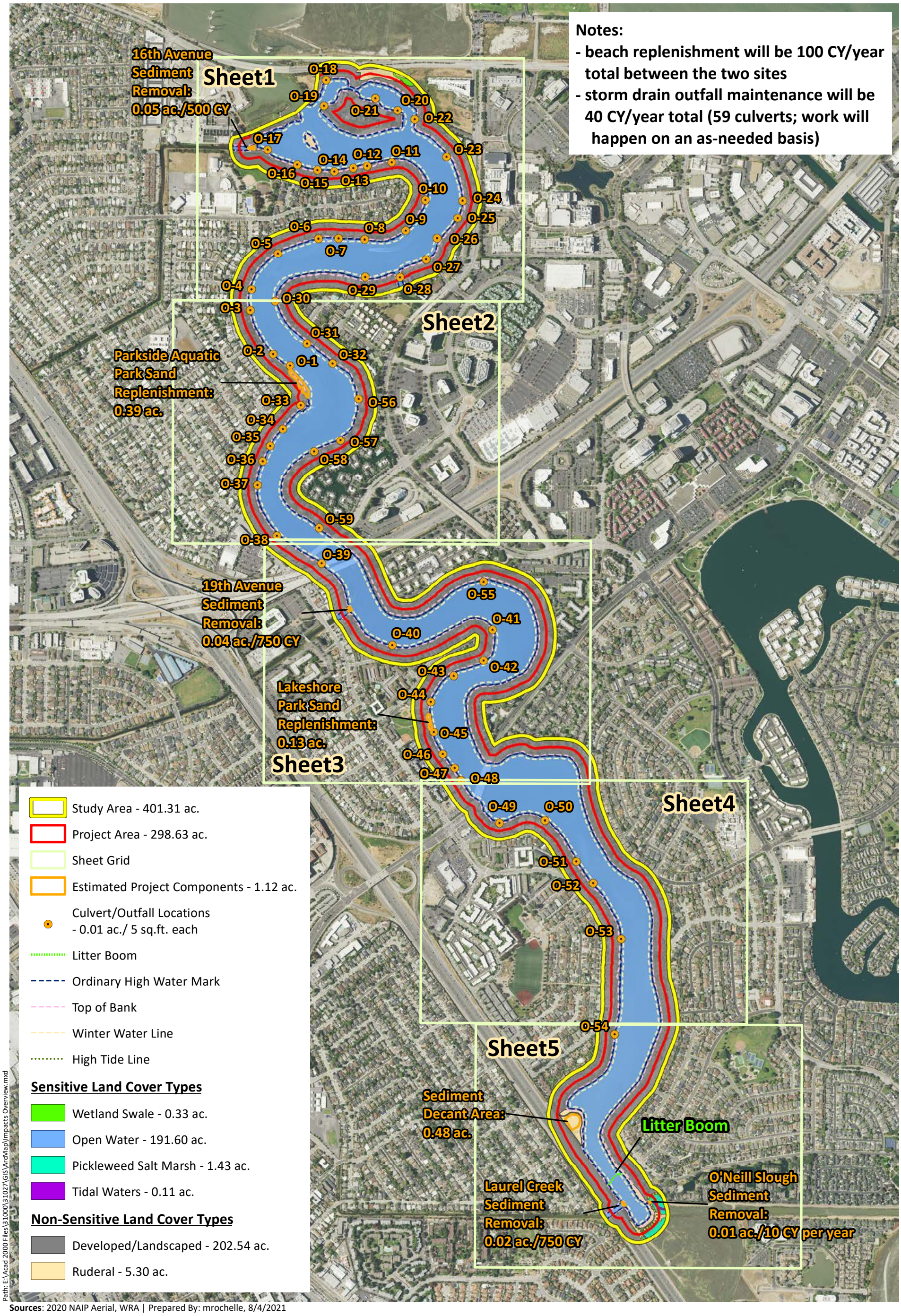

Figure 5-1. Project Impacts (Overview)

San Mateo Marina Lagoon
San Mateo County, California

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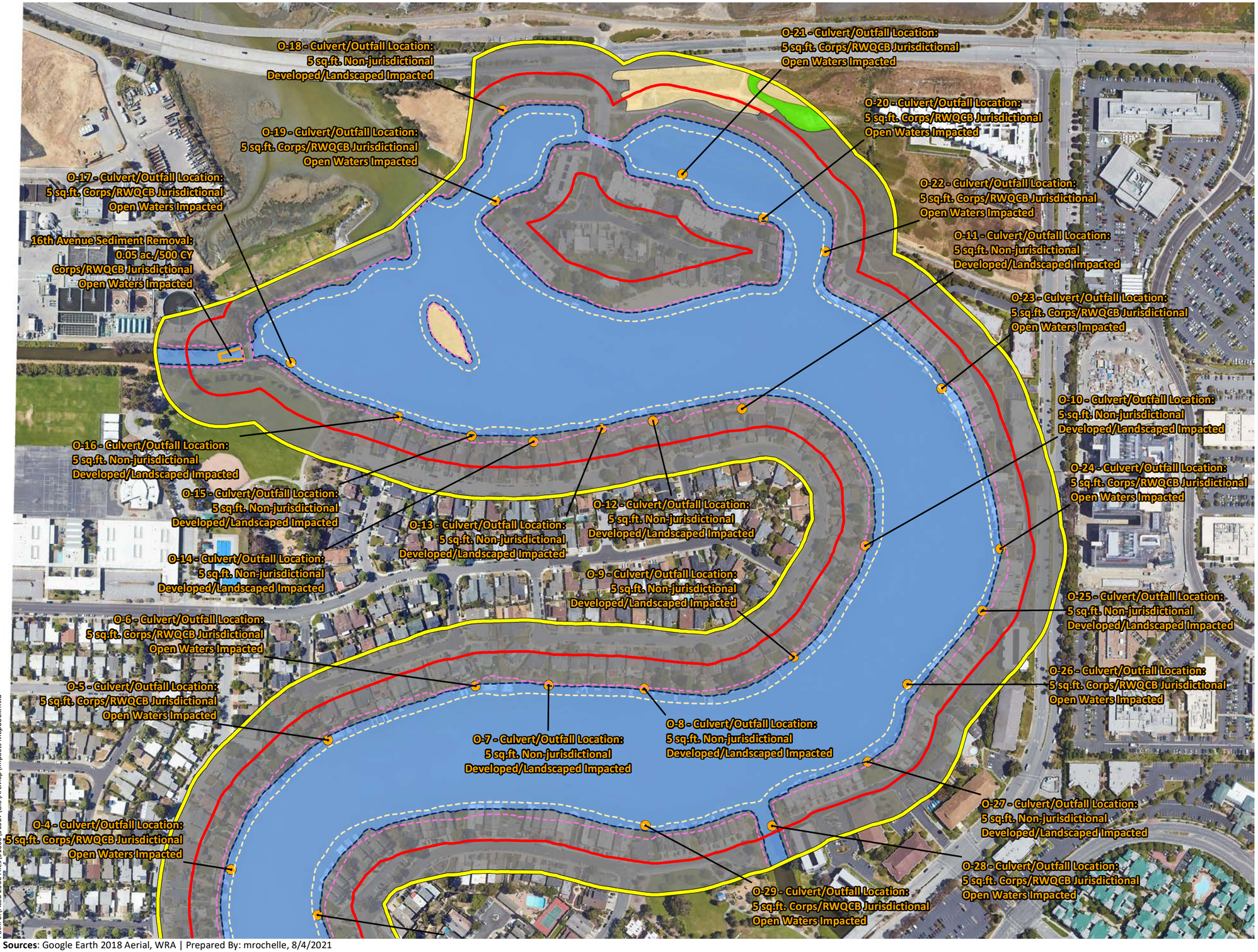

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 8/4/2021

Figure 5-2. Project Impacts (Sheet 1)

San Mateo Marina Lagoon
San Mateo County, California

- Study Area
- Project Area
- Estimated Project Components
- Culvert/Outfall Locations
- Litter Boom
- Ordinary High Water Mark
- Top of Bank
- Winter Water Line
- High Tide Line

Sensitive Land Cover Types

- Wetland Swale
- Open Water
- Pickleweed Salt Marsh
- Tidal Waters

Non-Sensitive Land Cover Types

- Developed/Landscaped
- Ruderal

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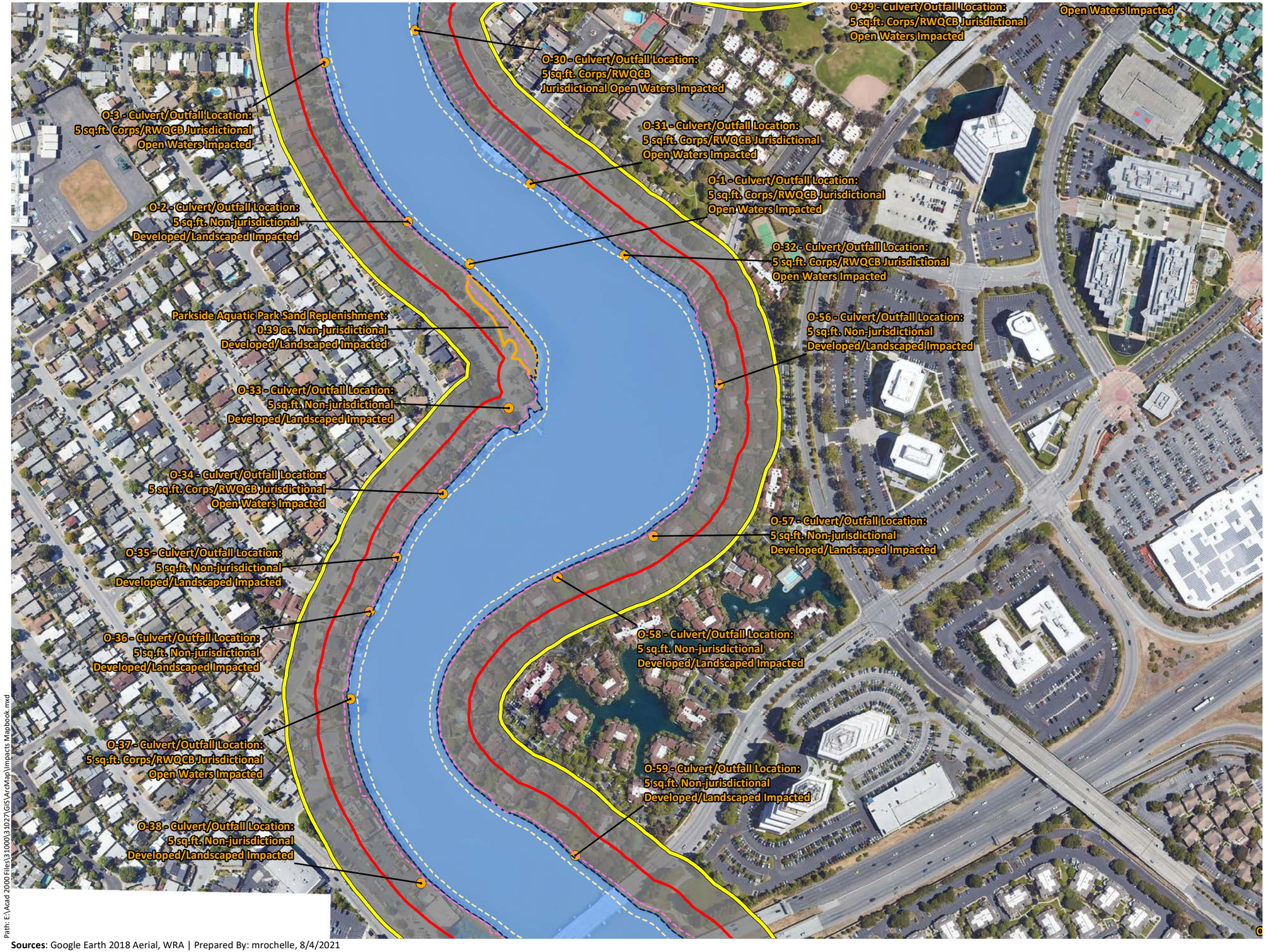
Figure 5-3.
Project Impacts
(Sheet 2)

San Mateo Marina Lagoon
San Mateo County, California



Study Area

Project Area

Estimated Project Components

Culvert/Outfall Locations

Litter Boom

Ordinary High Water Mark

Top of Bank

Winter Water Line

High Tide Line

Sensitive Land Cover Types

Wetland Swale

Open Water

Pickleweed Salt Marsh

Tidal Waters

Non-Sensitive Land Cover Types

Developed/Landscaped

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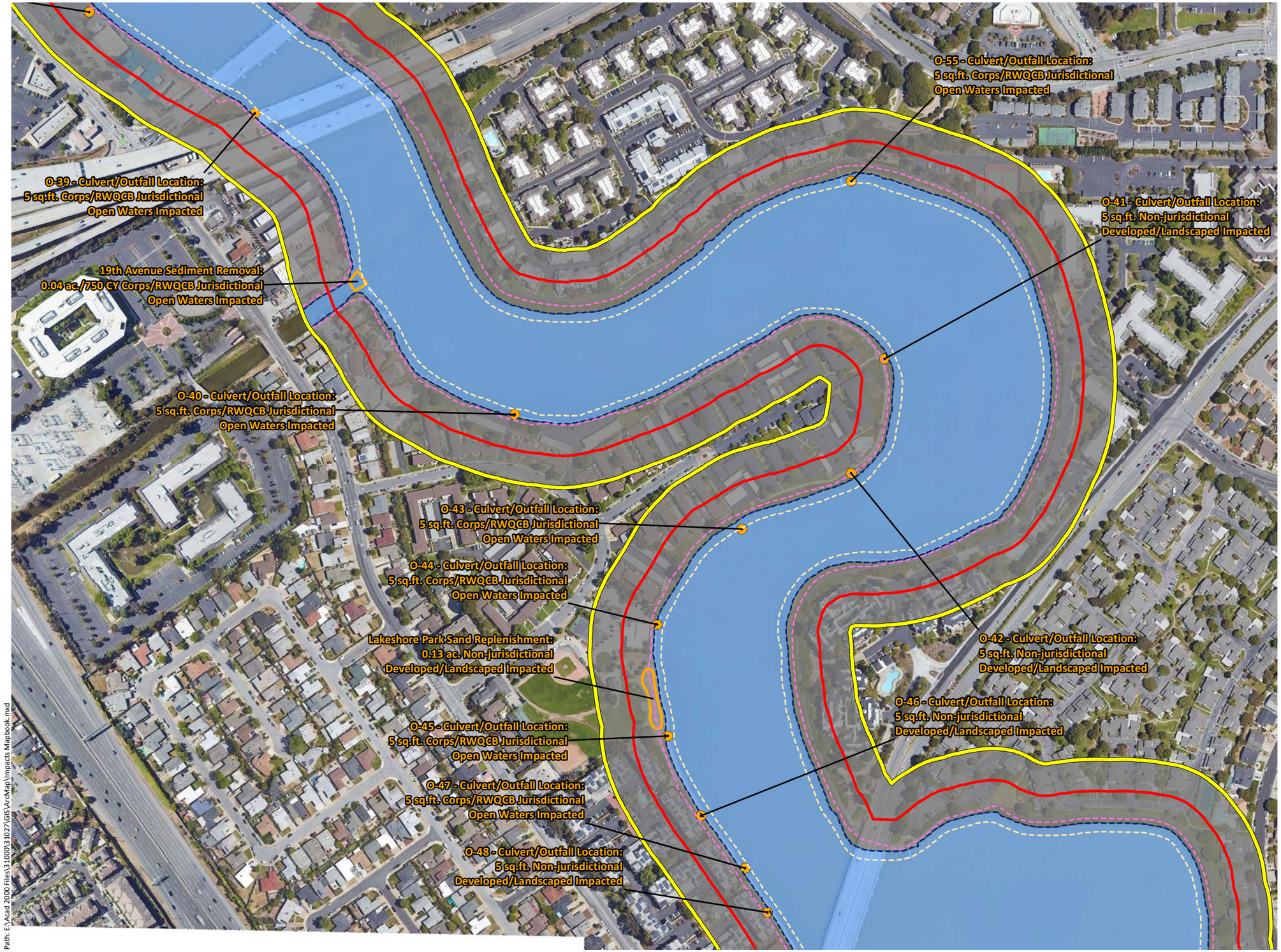

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 8/4/2021

Figure 5-4. Project Impacts (Sheet 3)

San Mateo Marina Lagoon
San Mateo County, California

- Study Area
- Project Area
- Estimated Project Components
- Culvert/Outfall Locations
- Litter Boom
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- Winter Water Line
- High Tide Line

Sensitive Land Cover Types

- Wetland Swale
- Open Water
- Pickleweed Salt Marsh
- Tidal Waters

Non-Sensitive Land Cover Types

- Developed/Landscaped
- Ruderal

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ENVIRONMENTAL CONSULTANTS

Figure 5-5.
Project Impacts
(Sheet 4)

San Mateo Marina Lagoon
San Mateo County, California

Study Area

Project Area

Estimated Project Components

Culvert/Outfall Locations

Litter Boom

Ordinary High Water Mark

Top of Bank

Winter Water Line

High Tide Line

Sensitive Land Cover Types

Wetland Swale

Open Water

Pickleweed Salt Marsh

Tidal Waters

Non-Sensitive Land Cover Types

Developed/Landscaped

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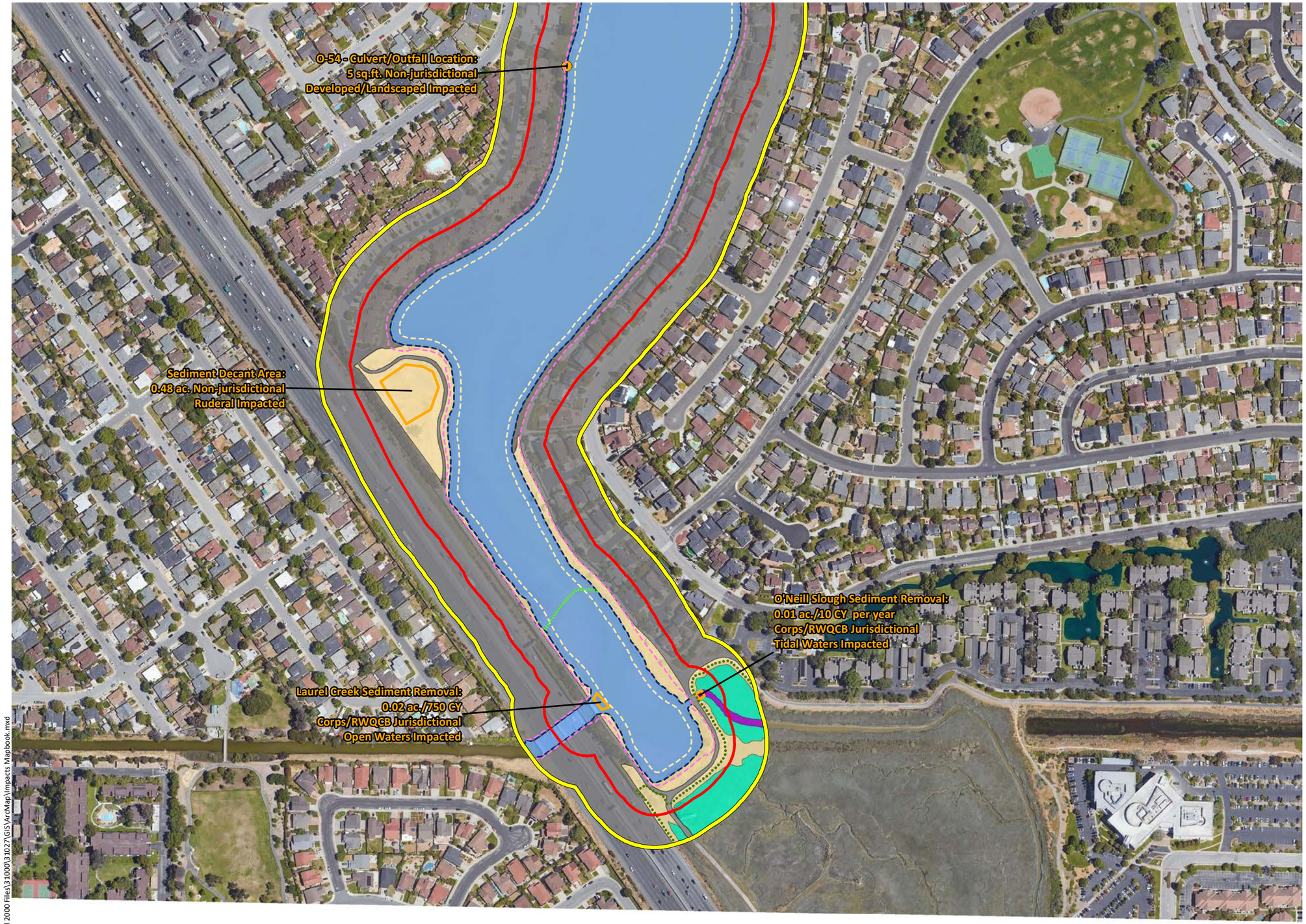

Figure 5-6. Project Impacts (Sheet 5)

San Mateo Marina Lagoon
San Mateo County, California

- Study Area
- Project Area
- Estimated Project Components
- Culvert/Outfall Locations
- Litter Boom
- Ordinary High Water Mark
- Top of Bank
- Winter Water Line
- High Tide Line

Sensitive Land Cover Types

- Wetland Swale
- Open Water
- Pickleweed Salt Marsh
- Tidal Waters

Non-Sensitive Land Cover Types

- Developed/Landscaped
- Ruderal

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ENVIRONMENTAL CONSULTANTS

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 8/4/2021

Final Lake or Streambed Alteration Agreement

(CDFW, 2017)

California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

January 17, 2017

Brad Underwood
City of San Mateo Public Works Department
330 West 20th Street
San Mateo, CA 94403

Dear Mr. Underwood:

Final Lake or Streambed Alteration Agreement, Notification No. 1600-2013-0268-R3, Marina Lagoon General Maintenance Project

Enclosed is the final Streambed Alteration Agreement (Agreement) for the Marina Lagoon General Maintenance Project (Project). Before the California Department of Fish and Wildlife (CDFW) may issue an Agreement, it must comply with the California Environmental Quality Act (CEQA). In this case, CDFW determined your Project is exempt from CEQA and filed a Notice of Exemption (NOE) on the same date it signed the Agreement.

Under CEQA, the filing of an NOE triggers a 35-day statute of limitations period during which an interested party may challenge the filing agency's approval of the Project. You may begin the Project before the statute of limitations expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this letter, please contact Randi Adair, Senior Environmental Scientist (Supervisory) at (707) 576-2786 or by email at randi.adair@wildlife.ca.gov.

Sincerely,

Craig J. Weightman, Environmental Program Manager

cc: Simon Environmental Planning
Susan Simon
simonenvironmental@gmail.com

California Department of Fish and Wildlife
Lieutenant James Ober
James.ober@wildlife.ca.gov

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5500
WWW.WILDLIFE.CA.GOV

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2013-0268-R3
MARINA LAGOON

CITY OF SAN MATEO
MARINA LAGOON GENERAL MAINTENANCE PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the City of San Mateo (Permittee) as represented by Brad Underwood.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on July 3, 2013 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

This Agreement authorizes routine maintenance in the 185-acre Marina Lagoon, which was historically a portion of Seal Slough, located between East 3rd Avenue to the north and Marine Parkway to the south; in the City of San Mateo, County of San Mateo, State of California; most northern Latitude 37°34'07"N and Longitude 122°17'32"N and most southern Latitude 37°32'02"N and Longitude 122°16'37"N.

PROJECT DESCRIPTION

Under this Agreement, Permittee will conduct "routine maintenance activities", defined

as periodic activities necessary to restore the inflow into Marina Lagoon (Lagoon) to maintain the water transport and storage capacity of the Lagoon and to maintain and/or repair existing infrastructure, docks and park areas surrounding the Lagoon.

The Lagoon was historically a tidal slough connected to San Francisco Bay, but was diked and dredged to create a lagoon to function as flood-control relief for low elevation areas and a recreational boating lake. The water levels in the Lagoon are highly regulated and never fluctuate more than a few feet throughout the year. During the month of January the Lagoon is lowered 3.5 feet to facilitate maintenance work on the docks and shoreline. Water intake and release is controlled by the use of intake gates on the lagoon's south end at O'Neill Slough and by the Marina Lagoon Pump Station on the north end where the lagoon outlets to the San Francisco Bay. Numerous small underground storm drains transport runoff from urban areas in San Mateo and Foster City situated on the east side of the lagoon.

The Lagoon complex comprises four minor watersheds including 16th Avenue and 19th Avenue drainages, Laurel Creek and Direct Marina Lagoon Drainage. These watersheds are located in the southern two-thirds of San Mateo. The complex is a watershed of 10 square miles originating in the western hills of San Mateo and Belmont and draining into the Lagoon. Peak storm flows from the western hills are controlled by three dams on Laurel Creek. The watershed is almost entirely urbanized with the exception of Sugarloaf Mountain.

Routine maintenance activities authorized under this Agreement are limited to the following:

1. **Docks and Ramps**

   Construction, maintenance and improvement of public and private individual boat docks and ramps and pile-supported boardwalks on both banks of Marina Lagoon.

   Public Docks

   Parkside Aquatic Park is owned by the Permitee and contains a public boat launch facility and public dock. Park amenities include a public beach, picnic area and play area. There are two boat ramps, one for public use and the other for the Harbor Master's boats. The park contains four docks; three at the south end and one at the north end. The docks at the south end facilitate the launching of boats from the boat ramps and are floating docks. The dock at the north end of the park is a fixed dock.

   The floating sections of the south end docks will be removed and repaired on land. If piles need to be replaced, pre-cast concrete piles or secondary containment for poured piles will be used. Due to safety concerns, the north end dock will be removed in its entirety and will not be replaced.

Private Docks

The Lagoon is surrounded by high density residential areas and several of the shoreline parcels have private docks or the right to own one. Currently, there are approximately 300 private docks. The current Standard Plan issued by the San Mateo City Building Division permit approves only fixed wooden docks with concrete piers.

The City of San Mateo's Dock Information Packet Standards requires the use of pre-cast concrete piles or a secondary containment system. This will ensure that no freshly poured concrete will come in contact with the water for at least 30 days. Typically, poured piles will be concrete surrounded by a high density polyethylene (HDPE) secondary containment casing. The piles will be installed from a barge or aquamog equipped with an auger. The auger is used to drill the HDPE form in the lagoon bottom, driven to a minimum depth of six feet. The concrete is poured after the form has been driven into the lagoon bottom. The decking is then framed over the piles.

A turbidity curtain will be installed in the water surrounding the work area to prevent the migration of construction materials and debris from the work site. The barge or aquamog will access the water from Parkside Aquatic Park. As per City of San Mateo Standard Plan, the decking will be constructed above the summer high water levels.

The repair, replacement in-kind, and minor extensions of existing privately owned docks can be completed with the following restrictions:

- No more than five new docks shall be constructed each year.
- Pressure-treated wood shall not be used for any dock.

2. Sediment Removal from Stormwater Outfalls

Yearly maintenance dredging to remove the accumulation and alluvial material in front of the 19th Avenue Creek inlet located just north of Lakeshore Park and the Laurel Creek inlet on the southern side of the Lagoon.

Laurel Creek and 19th Avenue Creek are freshwater streams discharging to the Lagoon primarily during the winter months. Silt, sediment and debris will be dredged and removed from the Lagoon until it reaches original design depth of six feet. Dredging will be done with an Aquamog equipped with a small sealed 12 cubic yard (cy) clambucket to scoop material directly onto a low draft barge for transport to the access area and staging area at Parkside Aquatic Park. The barge will transport the material to the park where it will be removed by an excavator to sealed 10-wheeled trucks. The material will then be transported for dewatering to an upland are in Laguna Vista Park at the south end of the

Lagoon. After transport an excavator will stockpile material in a holding area designed to dewater solids via infiltration, surrounded by K-rails and straw waddles. A silt fence will be installed surrounding the exterior straw waddle to act as an additional runoff control measure. The dredged material will be dumped in the containment area and the decant water will be captured, settled, and discharged for infiltration. The material will be piled and aerated to remove any remaining water to facilitate offhaul and final disposal.

Sediment may be removed during the work window specified below, with the following restrictions:

- Sediment, vegetation or debris may be removed with mechanized equipment.
- Removal of up to a maximum 750 cubic yards (cy) per outfall per year is covered under this Agreement.

3. Aquatic Vegetation Harvesting

Mechanical harvesters are used intermittently in the Lagoon throughout the late spring and summer (June through August), primarily for the control of nuisance widgeon grass and filamentous algae that interfere with safe boating, water quality, and water flow. Harvesting removes nuisance biomass from the lagoon, thereby helping to reduce a nutrient source. This is a significant benefit to the overall health of the lagoon, which is impaired by Fecal Indicator Bacteria (FIB). The accumulation of biomass promotes and harbors bacteria, including FIB; as well as promoting reduced dissolved oxygen during the cooler evenings. This integrated approach to nuisance algae management helps minimize potential adverse environmental impacts from pesticide use. Harvesting is an efficient means of vegetation and algae control, especially in the open waters throughout the center of the lagoon where the vessels can operate without obstruction. Harvesters cannot work close to the shorelines due to shallow waters, and therefore do not operate in the far southern end of the lagoon near saline emergent wetlands. Approximately 188 cubic yards of nuisance vegetation from lagoon waters between June and August, 2016 were harvested. The amount of vegetation harvested per year fluctuates greatly due to seasonal variations from year to year.

Harvesting equipment is mobilized to the site in May. All equipment is cleaned, dried, and inspected according to the contractor's Aquatic Invasive Species – Hazard Analysis and Critical Control Point Plan (AIS-HACCPP). Once the harvester arrives at the lagoon it does not leave the site until September when it returns to their yard. The vessels are staged and launched from the Hillsdale boat launch area which consists of a gated lot and concrete boat ramp. Harvested material is stockpiled and allowed to dewater at the Hillsdale Launch

ramp before it is transported to a landfill for green-waste disposal within 48 hours.

4. Bank Protection

Most of the lagoon is designed with a 5:1 horizontal to vertical side slopes. Periodically, there are areas where existing bank armoring has been undermined and needs to be repaired. There are also areas that need bank protection where the shoreline has been eroded and exposed. The eroded shoreline areas are in locations where wave action is increased from motorboat activity. The typical bank protection material used in the lagoon is quarter ton angular rock.

Access for slope construction and repair will be from upland areas, if accessible, or from the water. If access is from the water, the material will be transported to the site by a barge. Depending on the material's size, it will be placed by hand or by an aquamog. Before any material is set, a layer of 16-ounce filter fabric will be placed on the slope to prevent the loss of slope material through void spaces. Before any work begins, a silt fence will be installed in the water on the downslope side of construction. Water access and staging will be from the boat ramp and parking lot at Parkside Aquatic Park.

Repair, Replace or Maintain Existing Bank Protection

Replacement or repair of existing damaged or failed sections of rock riprap bank stabilization with the following restrictions:

- Placement of rip-rap above or below failed sections of structures to aid in integrity of those structures. Riprap of proper size and weight to withstand wave action will be set below grade and keyed into the bank.
- Work will be confined to the damaged or failed sections and immediate adjacent bank area affected by the damage failure.
- Other bank stabilization measures that may be employed include broadcast and hydro-seeding, riparian/marsh vegetation planting and other bioengineering techniques.
- Saltmarsh vegetation shall be protected from damage to the greatest extent possible during repair and replacement.
- This activity does not include any new project sites which may need structural repair (for e.g. placement of new riprap or a new retaining wall where these structures have not been installed).

New Bank Protection

New bank stabilization will occur with the following restrictions:

- All new bank stabilization will incorporate bioengineering techniques only or biotechnical techniques if bioengineering is infeasible.

5. Fences

Construction, maintenance and improvement of fences along established property lines. Several private shoreline parcels have fences protruding below the Lagoon's summer high water level.

Construction of New Fences

New fences will be constructed with the following restrictions:

- No new fences will be constructed below the point on the shoreline intersected by the plane of the summer high water level
- Up to 20 linear feet of new fence shall be installed per year

Existing Fences

Repair, improvement and maintenance of existing fences will occur with the following restrictions:

- Up to 40 linear feet of fence repairs per year

6. Beach Sand Replenishment:

Sand replacement typically occurs once a year at Parkside Aquatic Park and Lakeshore Park. Each beach has a concrete path on the upland side and replenishment occurs below and to the side of the path. The sand is replenished this way to maintain a gradual transition from the walkway to the beach for safety reasons. Additional sand is placed around the children's play area at Parkside Aquatic Park.

The concrete path is approximately 120 feet from the shoreline at Parkside Aquatic Park and 100 feet from the shoreline at Lakeshore Park. Sand is never replenished at the shoreline. Staging and access is located in the parking lot areas of each park. Replenishment will be 20-mesh Bay reclaimed sand. The sand will be spread by hand or an excavator.

Beach replenishment will occur with the following restrictions:

- Beach replenishment shall occur once per year.
- Only hand tools shall be used to spread the sand when within 50 feet of the shoreline.

7. Debris Removal

A litter boom is installed at the southern end of the Lagoon to collect debris flowing in from the Laurel Creek and O'Neil Slough inlets. This debris will be removed as needed. Typical materials that are collected behind the boom are wood, recyclables, and trash. An airboat will be used to remove the material and transport it to a City owned waste container at Parkside Aquatic Park. The airboat will access the lagoon from the boat ramps at Parkside Aquatic Park. The City anticipates boom cleaning to occur once approximately every 4 months.

PROJECT IMPACTS

Existing fish or wildlife resources the routine maintenance activities could potentially substantially adversely affect include:

- Green sturgeon (*Acipensar medirostris*) listed as threatened under Endangered Species Act (ESA) and a state Species of Special Concern (SSC);
- Nearshore marine fish species such as surfperch (Embiotocidae), topsmelt (*Atherinops affinis)*, sculpin, and rays and sharks (Elasmobranchii);
- Saltmarsh wandering shrew (*Sorex vagrans halicoetes*), a SSC;
- Migratory, nesting and foraging waterfowl;
- Foraging Ridgeway's rail (*Rallus obsoletus,* formerly California clapper rail), listed as endangered under the CESA and ESA and fully protected under the FGC;
- Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), a SSC;
- Alameda song sparrow (*Melospiza melodia pusillula*), a SSC;
- Foraging California black rail (*Laterallus jamaicensis coturniculus*), listed as endangered under CESA and ESA and fully protected under the FGC;
- Coastal marsh milk-vetch (*Astragalus pycnostachyus var pycnostachyus*) designated as a Rare Plant Rank (RPR) 1B;
- Point Reye's Bird's-beak (*Chloropyron maritimum ssp. polustre*), designated as RPR 1B;
- California seablite (*Saueda californica*), listed as Endangered under ESA and designated as RPR 1B;
- Saline clover (Trifolium hydrophium), designated as RPR 1B;
- Temporary impacts to open water;
- Saline emergent wetlands

The adverse effects the project could potentially have on the fish or wildlife resources identified above, without implementation of the Measures to Protect Fish and Wildlife Resources specified below, include:

- Potential increase in sediment transport during project activities;
- Increase in turbidity during project activities;
- Disruption to nesting and foraging birds;
- Colonization by exotic plant or animal species;

- Direct impacts from dredging on benthic organisms,
- Long-term release of contaminants.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. CDFW shall be notified at Suzanne Deleon, at suzanne.deleon@wildlife.ca.gov, (831) 440-9433, or if unavailable, through contact with the CDFW Bay Delta Regional Office by mail, phone (707-944-5500) or fax (707-944-5553). In that event, CDFW shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the work site(s) at any time to inspect routine maintenance activities performed and to verify compliance with this Agreement. 24-hour notice will be provided to private dock owners prior to inspections.

1.5 Additional Measures. As a result of any field inspection, CDFW may require that additional measures be applied to specific activities to protect sensitive biological resources. Such measures may be amended into this Agreement with the agreement of both parties, or if an exception to authorized activities is identified, Permittee may be asked to submit separate written notification to CDFW pursuant to Condition 1.7, below.

1.6 Authorized Routine Maintenance Activities. Only those activities specifically described in the Project Description shall be conducted under this Agreement.

1.7 Exceptions to Authorized Activities. Permittee shall submit separate written notification (Forms FG 2023 and FG 2024) pursuant to Section 1602 of the FGC, together with the required fee prescribed in the CDFW Streambed Alteration Agreement fee schedule, and otherwise follow the normal notification process prior to the commencement of work activities in all cases where one or more of the following conditions apply:

The proposed work does not meet the criteria established for routine maintenance activities in the Project Description of this Agreement;

The nature of the proposed work is substantially modified from the work described in the Project Description of this Agreement;

CDFW advises Permittee that conditions affecting fish and wildlife resources have substantially changed at a specified work site or that such resources would be adversely affected by the proposed maintenance activity; and/or;

The proposed work would adversely impact a State of California (State) Species of Special Concern or State or federally listed rare, threatened, endangered or candidate species or its habitat.

1.8 CDFW-Approved Qualified Biologist(s) and Biological Monitor(s). Within a minimum of 30 days prior to initiating special-status surveys within the project area, Permittee shall submit to CDFW for approval, the names and resumes of all biologists and biological monitors involved in conducting surveys and/or monitoring work.

A qualified biologist is an individual who shall have a minimum of five years of academic training and professional experience in biological sciences and related resource management activities with a minimum of two years conducting surveys for each species that may be present within the routine maintenance project area.

A biological monitor is an individual who shall have academic and professional experience in biological sciences and related resource management activities as it pertains to this project, experience with construction-level biological monitoring, be able to recognize species that may be present within the routine maintenance project area, and be familiar with the habits and behavior of those species.

1.9 Unauthorized Take. This Agreement does not authorize the take of any State or federally listed threatened species, endangered species, Species of Special Concern or candidate species. If CDFW determines, or Permittee finds, that there are such species on the work site, Permittee shall notify CDFW and/or US Fish and Wildlife Service (USFWS), as appropriate. Permittee shall immediately cease work until CDFW and other applicable agencies deem that the concern

over special status species has been resolved. This Agreement does not authorize capture and/or handling of listed species.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

Work Periods

2.1 Seasonal Work Period for Dredging, New Dock Installation using Poured Concrete and Beach Sand Replenishment. To avoid or minimize adverse impacts to fish and wildlife and their habitats, work within the Lagoon for these activities shall be limited to April 15 to October 31.

2.2 Seasonal Work Period for Dock Repair, Bank Stabilization, Fence Repair and Installation. The work for these activities may occur during the time when the reservoir is normally lowered during the annual drawdown period from January 15 to February 15 to facilitate access and repairs. If not completed during this drawdown period, then the Seasonal Work Period as stated in Measure 2.1 shall be followed. All weather forecast and precipitation measures shall be followed.

2.3 Seasonal Work Period for New Dock Installation using Precast Concrete. New dock installation using precast concrete may be conducted at any time provided that the homeowners follow the requirements of the standard specification packet issued by the City of San Mateo.

2.4 Seasonal Work Period for Debris Removal. Minor debris removal that does not require excavation, and that is immediately necessary to prevent blocking the inlets, may be conducted at any time.

2.5 Seasonal Work Period for Activities near Joinville Park. To avoid impacts to saltmarsh dependent species, any work conducted within 700 feet of Joinville Park shall be conducted from September 1 to October 15.

2.6 Seasonal Work Period for Revegetation. Revegetation work, using hand tools, may occur year-round.

2.7 Completion by End of Seasonal Work Period. The sediment removal and new dock installation using poured concrete shall not be initiated unless there is a high likelihood that it can be completed before the end of the seasonal work window designated in Measure 2.1. After September 15 of each year, projects that have not been started or are still underway shall be evaluated to ensure they can be completed before the end of the seasonal work period. Those projects

unlikely to be completed before the end of the seasonal work windows shall not be started.

2.8 Work Period Modification. If Permittee needs more time to complete project activities, work may be authorized outside of the work period as stated in Measure 2.1 and 2.2 and extended on a day-to-day basis by CDFW representative, Suzanne DeLeón, at suzanne.deleon@wildlife.ca.gov, (831) 440-9433, or if unavailable, through contact with the CDFW Bay Delta Regional Office by mail, phone (707-944-5500) or fax (707-944-5553). Permittee shall submit a written request for a work period variance to CDFW for approval at least seven (7) calendar days prior to October 31. The work period variance request shall: 1) describe the extent of work already completed; 2) detail the activities that remain to be completed; 3) detail the time required to complete each of the remaining activities; and 4) provide photographs of both the current work completed and the proposed site for continued work. Work period variances are issued at the discretion of CDFW. CDFW will review the written request to work outside of the established work period and may require additional measures to protect fish and wildlife resources as a condition for granting the variance. Any additional measures shall be made part of this Agreement.

Construction Measures

2.9 Work During Dry Period Only. Work within the Lagoon shall be restricted to periods of low rainfall (less than ¼ inch of rain in a 24-hour period) and dry weather as allowed during the work periods specified above. In addition, no work shall occur during a dry out period of 24 hours after the above referenced wet weather.

2.10 Weather Forecast. Precipitation forecasts shall be considered when planning maintenance activities. Permittee shall monitor the 72- hour forecast from the National Weather Service (*http://www.nws.noaa.gov*). When there is a forecast of more than 40% chance of rain or at the onset of any unanticipated precipitation, the Permittee shall remove all equipment and shall implement erosion and sediment control measures and all routine maintenance activities shall cease.

2.11 Washing of Equipment. In order to prevent the movement of invasive plant and animal species, fungi, and other biotic agents from external ecological regions, the equipment used shall be washed prior to entry and staging onto construction sites.

2.12 Decontamination of Clothing and Equipment. Any equipment that will enter the water during construction shall be decontaminated before and after construction to prevent the spread of aquatic diseases, such as ranavirus, and invasive aquatic species, such as quagga mussel. Workers shall also decontaminate waders, boots and other clothing that will come in direct contact with the water.

Decontamination of clothing and equipment shall be done through one or more of the following methods:

- Drying equipment in an upland location following last aquatic use. If average daytime temperatures exceed 80° F, drying times shall be at least 7 days. If average daytime temperatures are below 80° F, drying times shall be at least 30 days:
- Scalding water wash (at least 140° F) with varying high and low pressure spray to dislodge pathogens, vegetation, and contaminated sediment;
- Freezing at a temperature of less than 32° F for more than 72 hours; and/or
- Soaking in a hospital-grade disinfectant solution for at least two minutes (or longer, based on product directions). To avoid harm to non-target species, disinfected clothing and equipment shall be thoroughly rinsed in a water bath before entering the stream.
- Repeat decontamination is required only if the equipment/clothing is removed from the site, used within a different waterbody, and returned to the project site. Decontamination shall take place in an upland location, and any chemicals used during decontamination shall be prevented from entering water bodies or stormwater drains.

2.13 Stockpiling of Soil. No castings or spoils shall be placed on the stream side of the bank where it could enter the stream or cover riparian or wetland areas. If soils are stockpiled, the stockpile shall be located away from the creek and a straw waddle or other erosion control device shall surround the stockpile until it is disposed of or used.

2.14 Containment Area on Barge. A containment area shall be established around the perimeter of the barge, as feasible, by laying hay waddles and /or Visqueen around the work areas on the barge. If discharge from dredge spoils is discovered by any of the personnel on board the barge, activities shall cease until appropriate corrective measures have been completed and the discharge source has been repaired or halted. CDFW shall be notified within 24 hours of discharge.

2.15 Silt Boom while Dredging. Permittee shall deploy silt curtains around the project site to prevent heavily silted water from flowing into the Lagoon or outfall pumps. The silt curtain shall be long enough to maintain contact with the bed of the Lagoon at all times. The silt boom shall be maintained throughout all phases of the excavation activities, monitored for effectiveness and repaired or replaced as needed.

2.16 Dredge Material. At no time shall any dredge materials or any other substance deemed deleterious to fish or wildlife be allowed to enter the water or be placed where they may be washed into the water. Any contaminated water/materials from the Project activities shall be pumped or placed into a holding facility and removed for proper disposal. If material is released into the water, CDFW shall be notified within 24 hours of detecting the problem. Project operations shall not be resumed until the source of discharge is identified and remedied. When the situation is remedied to the satisfaction of CDFW, Project operations may resume.

Wildlife Protection Measures

2.17 Education Session before Commencement of Work. Prior to any routine maintenance activity, within or near saline emergent wetlands located at the far north and far south of the main channel, the biological monitor or qualified biologist shall conduct an education session on species that may be present at the project work site. The training shall consist of basic identification of the species, their basic habits, how they may be encountered in the work area, and procedures to follow when they are encountered. Any personnel joining the work crew later shall receive the same training before beginning work. The penalties for non-compliance of conditions in this Agreement shall be relayed to all project personnel.

2.18 Sensitive Plant Survey. Prior to any routine maintenance activity within or near saline emergent wetlands located at the far north and far south of the main channel, a qualified biologist shall conduct protocol-level surveys for sensitive plant species during the peak blooming period for each plant species that could be present within the project area. For information on special status plant survey methodology visit: https://www.wildlife.ca.gov/Conservation/Plants.

2.19 Sensitive Plant Exclusion. If, at any time, a special-status plant species is found, it shall be flagged for avoidance, and site-specific avoidance buffers approved by CDFW shall be implemented. All the special-status plants and associated buffer zones shall be avoided during project activities. CDFW may submit additional written avoidance, minimization and mitigation measures if special-status plants are found in the project area. Permittee may be required, as prescribed in CESA and FESA, to obtain take coverage for any species these acts protect prior to commencement of the project. The additional measures shall be considered part of this Agreement.

2.20 Nesting Bird Survey. If covered activities are scheduled during the nesting season of raptors and migratory birds, a focused survey for active nests of such birds shall be conducted by an approved qualified biologist within 15 days prior to the beginning of project-related activities. Surveys shall be conducted in all suitable habitat located at routine maintenance project work sites, in staging,

storage and stockpile areas. The minimum survey radii surrounding the work area is typically the following: i) 250 feet for passerines; ii) 500 feet for other small raptors such as accipiters; iii) 1,000 feet for larger raptors such as buteos. The bird survey methodology and the results of the survey shall be submitted to the CDFW prior to commencement of project activities.

Nesting seasons shall be defined as followed: i) March 15 to August 30 for smaller bird species such as passerines; ii) February 15 to September 15 for raptors.

2.21 Active Nests. An active nest is defined as a nest having eggs or chicks present. If active nests are found, the Permittee shall consult with the CDFW and the USFWS regarding appropriate action to comply with the Migratory Bird Treaty Act of 1918 and the FGC of California. If a lapse in project-related work of 15 days or longer occurs, another focused survey shall be conducted before project work is reinitiated. If active nests are found, the Permittee shall consult with the CDFW and the USFWS prior to resumption of project activities.

2.22 Active Nest Buffers. Active nest sites shall be designated as "Ecologically Sensitive Areas" and protected (while occupied) during routine maintenance activities with the establishment of a fence barrier surrounding the nest site. The typical minimum distances of the protective buffers surrounding each identified nest site is usually the following: i) 1,000 feet for large raptors such as buteos; ii) 250 feet for small raptors such as accipiters; iii) 250 feet for passerines. A biological monitor shall monitor the behavior of the birds (adults and young, when present) at the nest site to ensure that they are not disturbed by project-related activities. Nest monitoring shall continue during project-related construction work until the young have fully fledged, are no longer being fed by the parents and have left the nest site, as determined by a the approved biological monitor.

2.23 Nesting Habitat Removal or Modification. No trees, shrubs or wetland and marsh habitat shall be disturbed that contain active bird nests until all eggs have hatched, and young have fully fledged (are no longer being fed by the adults, and have completed left the nest site). To avoid potential impact to nesting birds, any removal, trimming or pruning of vegetation shall be conducted during the time period of September 16 to February 14, if feasible. No habitat removal or modification shall occur within the Ecologically Sensitive Area fenced nest zone even if the nest continues to be active beyond the typical nesting season for the species (refer to Measure 2.19), until the young have fully fledged and will no longer be adversely affected by the project.

2.24 Sensitive Species Sightings. If there are any sightings of special-status plant and wildlife species, all project activities shall cease and CDFW shall be contacted within 24 hours of the sighting. Through consultation with CDFW, additional measures may be developed to protect special-status species if found.

2.25 Injury or Mortality of Special-Status Species. If Permittee or its employees, contractors, or agents injures or kills a special-status species, or finds any such animal injured or dead, all activities in the work area shall immediately cease, and CDFW and USFWS shall be notified by telephone within 30 minutes of the discovery. A written report detailing the time, location, and general circumstances under which the dead or injured individual animal was found shall be submitted to CDFW and the USFWS no later than five (5) business days following the incident.

2.26 Stop Work Authority. The biological monitor or qualified biologist shall have the responsibility and authority of stopping the project if any crews or personnel are not complying with the provisions outlined in this Agreement.

2.27 Change of Conditions. If, in the opinion of CDFW, conditions arise, or change, in such a manner as to be considered deleterious to the stream or wildlife, operations shall cease until corrective measures approved by CDFW are taken.

Vegetation Removal

2.28 No Removal of Coastal Salt Marsh Vegetation. No coastal salt marsh vegetation shall be removed from the project site and access areas without the prior approval from CDFW. CDFW shall be consulted regarding the development of suitable protective and mitigation measures if vegetation will be removed. Upon determination of those measures, the CDFW shall submit written avoidance and mitigation measures to the Permittee and those measures shall be considered part of this Agreement.

2.29 Removal of Vegetation. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete activities. Vegetation outside the project work area shall not be removed or damaged without prior consultation and written approval of a CDFW representative. Hand tools shall be used to trim vegetation to the extent necessary to gain access to the work sites.

Routine Maintenance Limits

2.30 Limits on Sediment Removal in the Lagoon. Sediment removal shall be limited to the amounts and timing specified in the Project Description. Specifically, sediment removal shall be limited to 750 cy in each year. No more than one dredging event shall be conducted each year.

2.31 Removal of Native Material. Except as explicitly described in this Agreement, the removal of native soils, rock, gravel, vegetation, and vegetative debris from the Lagoon or Lagoon banks is prohibited.

2.32 Dock Repair and Installation. Pressure-treated wood shall not be used for replacement or newly constructed docks.

Erosion and Sediment Control Measures

2.33 Silt Control Measures. Silt control measures shall be utilized throughout all phases of the project where silt and/or earthen fill threaten to enter Waters of the State.

2.34 Silt Control Effectiveness. Silt control structures shall be monitored daily for effectiveness and shall be repaired or replaced as needed. Passage of sediment beyond the sediment barrier is prohibited. If the sediment barrier fails to retain sediment, construction activities shall cease and corrective measures shall be employed.

2.35 Cease Project for Elevation of Turbidity Levels. Upon CDFW determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation shall be halted until effective CDFW-approved control devices are installed or abatement procedures are initiated. CDFW may take enforcement action if appropriate turbidity and siltation control measures are not deployed.

2.36 Native Vegetation Seeding and Planting. All other areas of disturbed soil which drain toward State waters shall be planted with propagules (seeds, cuttings and/or divisions) of locally-collected native plants appropriate for the soil and hydrological conditions of the site. Locally native wildflower and/or shrub seeds may also be included in the planting mix.

2.37 Prohibited Plant Species. Permittee shall not plant, seed, or otherwise introduce invasive plant species. Prohibited exotic plant species include those categorized as "High" and "Moderate" in the California Invasive Plant Council's Inventory Database, which is accessible at: http://www.cal-ipc.org/paf/.

Equipment and Vehicles

2.38 Vehicle/Equipment Maintenance. Any equipment or vehicles driven and/or operated in proximity of the Lagoon or creeks shall be maintained in good working order to prevent the release of contaminants that if introduced to water could be deleterious to aquatic life, wildlife, or riparian habitat. Vehicles shall be moved away at least 150 feet from the stream prior to refueling and lubrication.

2.39 Equipment Storage and Stationary Operation. Staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located adjacent to the Lagoon or stream, shall be positioned over drip-pans. Any equipment or vehicles driven and/or operated in proximity to the stream must be checked and maintained daily.

Toxic or Hazardous Materials

2.40 Concrete – Primary Containment. Permittee shall install the necessary containment structures to control the placement of wet concrete and to prevent it from entering into the Lagoon outside of those structures. No concrete shall be poured within the high flow line if the 30-day weather forecast indicates any chance of rain.

2.41 Concrete – Designated Monitor. At all times when Permittee is pouring or working with wet concrete, there shall be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the channel outside of those structures. Runoff from the concrete shall not be allowed to enter the stream channel at any time.

2.42 Isolate Poured Concrete for 30 Days. Poured concrete shall be excluded from the wetted channel for a period of 30 days after it is poured. During that time the poured concrete shall be kept moist, and runoff from the concrete shall not be allowed to enter a live stream. CDFW-approved commercial sealants may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is dry.

2.43 Storage and Handling of Hazardous Materials. Any hazardous or toxic materials that could be deleterious to aquatic life shall be contained in watertight containers or removed from the project site. Such materials include, but are not limited to, debris soil, silt, bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, and oil or other petroleum products. These materials shall be prevented from contaminating the soil and/or entering the waters of the State. Any such materials, placed within or where they may enter a stream or lake, by Permittee or any party working under contract, or with permission of Permittee, shall be removed immediately. BMPs shall be employed to accomplish these requirements.

2.44 Removal of Trash and Debris. Permittee shall remove all raw construction materials and wastes from work sites following the completion of maintenance activities. Food-contaminated wastes generated during work shall be removed on a daily basis to avoid attracting predators to work sites. All temporary fences, barriers, and/or flagging shall be completely removed from work sites and properly disposed of upon completion of maintenance activities. Permittee or its contractors shall not dump any litter or construction debris within the riparian/stream zone.

Spills and Emergencies

2.45 Spill Containment. All activities performed in or near a stream shall have absorbent materials designated for spill containment and clean- up activities on-site for use in an accidental spill. The Permittee shall immediately notify the California Emergency Management Agency at 1-800-852-7550 and immediately initiate the clean-up activities. CDFW shall be notified by the Permittee and consulted regarding clean-up procedures.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

3.1 Notification of Proposed Activities. Given that Routine Maintenance Activities begin in January and may occur year-round, on an annual basis, Permittee shall provide CDFW written notification of maintenance projects completed and of proposed routine maintenance activities to be performed in the upcoming year. Annual reports shall include a brief project description, amount of sediment removed, quantify of vegetation removed, number of docks replaced and repaired and description of bank repair and revetment. The appropriate fee from the current CDFW Streambed Alteration Agreement Fee Schedule for work completed under this Agreement based upon the number of projects completed in the reporting period shall also accompany the notice of proposed activities. The annual report is due by January 15 of each year. A report shall be submitted to CDFW regardless of whether work was completed. CDFW may terminate this Agreement if reports and fees are not submitted by this deadline.

CDFW shall append annual notification reports of proposed maintenance activities to this Agreement. For streamlined tracking, Permittee shall label annual notification reports according to the following convention: Exhibit A-[year] (e.g. Exhibit A-2017, Exhibit A-2018).

3.2 Species Survey Methods and Results. Prior to commencement of project activities the Permittee shall submit to CDFW a report containing the species survey methods and results of the survey. Refer to Notification Number 1600-2013-0268-R3 when submitting the report to the CDFW.

3.3 Notification to the California Natural Diversity Database (CNDDB). If any listed, rare, or special status species are detected during project surveys or on or around the project site during project activities, the Permittee shall submit CNDDB Field Survey Forms to CDFW in the manner described at the CNDDB website (http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp) within 14 working days of the sightings. Copies of such submittals shall also be submitted to the CDFW regional office as specified below.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:

Brad Underwood
City of San Mateo Public Works Department
330 West 20th Street
San Mateo, CA 94403
Work (650) 522-7300
bunderwood@smcgov.org

To CDFW:

California Department of Fish and Wildlife
Bay Delta Region
7329 Silverado Trail
Napa, California 94558
Attn: Lake and Streambed Alteration Program – Suzanne DeLeón
Notification #1600-2013-0268-R3
Fax (707) 944-5553
Suzanne.Deleon@wildlife.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the

corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on **December 31, 2021** unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to

protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

EXHIBITS

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

A. Annual Notifications of Proposed Work (reserved for future exhibits)

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR CITY OF SAN MATEO

Brad Underwood
Permittee

1/5/17
Date

FOR DEPARTMENT OF FISH AND WILDLIFE

Craig J. Weightman
Environmental Program Manager

1/17/17
Date

Prepared by: Suzanne DeLeón
Environmental Scientist

Date Sent: September 15, 2016; December 16, 2016

EXHIBIT A
ANNUAL NOTIFICATIONS OF COMPLETED WORK
(Reserved for future exhibits)

Amendment of Lake or Streambed Alteration Agreement

(CDFW, 2025)

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
R3lsa@wildlife.ca.gov
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

June 12, 2025

Katherine Sheehan
City of San Mateo Public Works Department
330 West 20th Avenue
San Mateo, CA 94403
(650) 522-7300
ksheehan@cityofsanmateo.org

AMENDMENT OF LAKE OR STREAMBED ALTERATION AGREEMENT NOTIFICATION NO. 1600-2013-0268-R3, Marina Lagoon General Maintenance Project

Dear Matt Fabry:

The California Department of Fish and Wildlife (CDFW) has received your request to amend the above referenced Lake or Streambed Alteration Agreement (Agreement) and the required fee in the amount of $1,882.25, for a major amendment. Your request to amend the Agreement includes:

- Modifying the project's maximum sediment removal from 750 cubic yards of sediment per outfall to a cumulative maximum of 2,000 cubic yards of sediment removal across all previously identified maintenance sites;
- Redefining the type(s) of dredging equipment to be used to include an excavator with standard or long-reach arm stationed from a float or similar, in addition to an Aquamog;
- Adding an additional sediment dewatering site to the project, at the northern portion of Joinville Park adjacent to the boat ramp at Latitude 37.569838, Longitude -122.290927; and
- Removing Measure 2.5, Seasonal Work Period for Activities near Joinville Park. The project will adhere to the seasonal work period specified in Measure 2.1 for all dredging activities.

CDFW hereby agrees to amend the Agreement with addition of the following conditions:

2.30 Limits on Sediment Removal in the Lagoon. Sediment removal shall be limited to the amounts and timing specified in the Project Description. Specifically, sediment removal shall be limited to a cumulative maximum of 2,000 cubic yards in each year.

All other conditions in the Agreement remain in effect unless otherwise noted herein.

Matt Fabry
1600-2013-0268-R3
June 12, 2025

The Agreement and this amendment letter must be readily available at project work sites and must be presented when requested by a CDFW representative or agency with inspection authority.

If you have any questions regarding this letter, please contact Shannon Husband, Environmental Scientst at (707) 337-1364 or by email at Shannon.Husband@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Craig Weightman
7988F6C4FDC24F2...
Craig Weightman, Environmental Program Manager

ec: California Department of Fish and Wildlife

Wesley Stokes, Senior Environmental Scientist (Supervisor)
Wesley.Stokes@wildlife.ca.gov

ACKNOWLEDGEMENT

I hereby agree to the above-referenced amendment.

Print Name: Katherine Sheehan for Matt Fabry, Director of Public Works Date: 6/12/2025

Signature: Signed by:
Katherine Sheehan for Matt Fabry, Director of Public Works
BE3D06137D7E452...

Sediment Characterization Sampling and Analysis Plan

(Pacific EcoRisk, 2025)

PACIFIC ECORISK | ENVIRONMENTAL CONSULTING & TESTING

May 28, 2025

Jessica Vargas
Department of the Army
San Francisco District, Corps of Engineers
450 Golden Gate Avenue, 4th Floor, Suite 0134
San Francisco, CA 94102

Jessica Vargas:

On behalf of Jaclyn Gnusti of Moffatt & Nichol and James Yang of the City of San Mateo Department of Public Works, please find our report "Characterization of the Sediment from the Marina Lagoon in San Mateo, CA: Results of Sediment Sampling and Analysis" for review at the May 28th DMMO meeting. An electronic copy of this report has been uploaded to the DMMO website for DMMO participating agency representatives to access.

If you have any questions, please give me a call at (707) 207-7778. I look forward to hearing from you.

Sincerely,

Mike McElroy
Sr. Project Manager

(w/ enc): Brenda Goeden, BCDC
Selina Louie, SFRWQCB
Jennifer Siu, U.S. EPA
Marlene Schroeder, CSLC
Arn Aarreberg, CDFW
Sara Azat, NMFS
Jaclyn Gnusti, Moffatt & Nichol
James Yang, City of San Mateo

2250 Cordelia Road, Fairfield, CA 94534 *phone*: 707.207.7760 *fax*: 707.207.7916 *www.pacificecorisk.com*

DATA REPORT

Characterization of the Sediment from the Marina Lagoon in San Mateo, CA: Results of Sediment Sampling and Analysis

Permits

USACE Permit # 2000-257530S
BCDC Permit # M2004.030.00 Amendment No. 1
RWQCB CIWQS Place ID # 445464
CDFW SAA:1600-2013-0268-R3

Prepared for

City of San Mateo, Public Works Department
330 W. 20th Avenue
San Mateo, CA 94403

Prepared by

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534

May 2025

PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING

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List of Acronyms

Bay	San Francisco Bay
BCDC	Bay Conservation and Development Commission
CDFW	California Department of Fish and Wildlife
City	City of San Mateo
COC	Chain-of-custody
DDT	Dichlorodiphenyltrichloroethane
DMMO	Dredged Material Management Office
Eurofins	Eurofins Calscience
GPS	Global positioning system
HDPE	High density polyethylene
IDA	Isotope Diltution Analyte
ITM	Inland Testing Manual
Lagoon	Marina Lagoon
LCS	Laboratory Control Sample
µg/kg	Microgram per kilogram
mg/kg	Milligram per kilogram
MLLW	Mean lower low water
MDL	Method detection limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAVD88	North American Vertical Datum 1988
OCI	Organochlorine
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PER	Pacific EcoRisk, Inc.
QA/QC	Quality assurance/quality control
RRF	Relative response factor
SAP	Sampling and Analysis Plan
SFEI	San Francisco Estuary Institute
SFRWQCB	San Francisco Regional Water Quality Control Board
TEG	TEG Oceanographic Services
TMDL	Total maximum daily load
TOC	Total organic carbon
USACE	U.S. Army Corps of Engineers

USEPA	U.S. Environmental Protection Agency
WAAS	Wide angle augmentation system
WQC	Water quality certification
yds^3	Cubic yards

Distribution List

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Note: Electronic copies provided at DMMO "meeting area" at http://www.dmmosfbay.org

1. INTRODUCTION

The City of San Mateo (City) is planning to dredge accumulated sediment in 2025 from the Marina Lagoon located in San Mateo, CA (Figures 1-1 and 1-2). The dredging is required to remove sediment buildup at the inlets of two freshwater streams that flow into Leslie and Borel creeks to reintroduce flow to the main lagoon. This work is authorized under the U.S. Army Corps of Engineers (USACE), permit 2000-25730S, San Francisco Bay Conservation and Development Commission (BCDC) permit M2004.030.00, Amendment 1, San Francisco Regional Water Quality Control Board (SFRWQCB) water quality certification (WQC) 445464, WD ID 2 CW445464, and a California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement 1600-2013-0268-R3.

In order to provide the chemical characterization needed to obtain regulatory approval for this dredging, on behalf of the City, Moffatt and Nichol has contracted with Pacific EcoRisk (PER) to perform sediment characterization of the Marina Lagoon sediments as per regional and federal guidance. Sampling and testing were consistent with agency requirements. The City intends to temporarily store dredged material on site with subsequent transport to a permitted landfill. There will not be any decant water during dredging nor during temporary on-site storage. Sampling and testing were performed according to the Inland Testing Manual (ITM), placement site site-specific requirements, and Dredged Material Management Office (DMMO) guidance. This report presents the results of sampling and testing of the Marina Lagoon sediments.

1.1 Project Overview

The City requires dredging of the inlets of two freshwater streams that flow into the Marina Lagoon to a depth no greater than -3 ft NAVD88 + 1 ft over-dredge; these areas were sampled and tested to a total depth of –4 ft NAVD88 (Table 1-1). In addition, a “Z-layer” sample consisting of the top 0.5 ft of the post-dredged mudline will be collected at each sediment core location. The extent of the final dredging footprint at each site will be determined pending further analysis but will not exceed beyond the boundaries shown and the total volume to be removed will not exceed a combined 2,000 cubic yards (yd^3).

The permitted dredging limits are not within the resource agency established 250-meter eelgrass buffer zone (Figures 1-3 and 1-4 [USEPA/USACE 2011]).

Table 1-1. City of San Mateo Marina Lagoon Dredging Volumes

Marina Lagoon Area	Proposed Depth (ft NAVD88)	Estimated Volume (yd^3)	Over-depth (ft.)	Estimated Volume (yd^3)	Permitted Depth + Over-depth (ft. NAVD88)	Total Estimated Volume (yd^3)[A]
North Dredge Boundary	-3.0	500	+1.0	1,900	-4.0	2,400
South Dredge Boundary	-3.0	1,900	+1.0	8,600	-4.0	10,500
Total		**2,400**		**10,500**		**12,000***

Notes:
ft = Feet.
NAVD88 = North American Vertical Datum 1988 with application of the GEOID18 hybrid geoid model.
yd^3 = cubic yards.
A - Dredge volumes are estimates are based on Keir-Wright bathymetric survey performed July 23-25, 2024.
* Total dredging will not exceed the permit allowance of 2,000 yd^3. Permittee is seeking suitability determination for all sediment volume within the Dredge Boundaries to allow flexibility in final design.

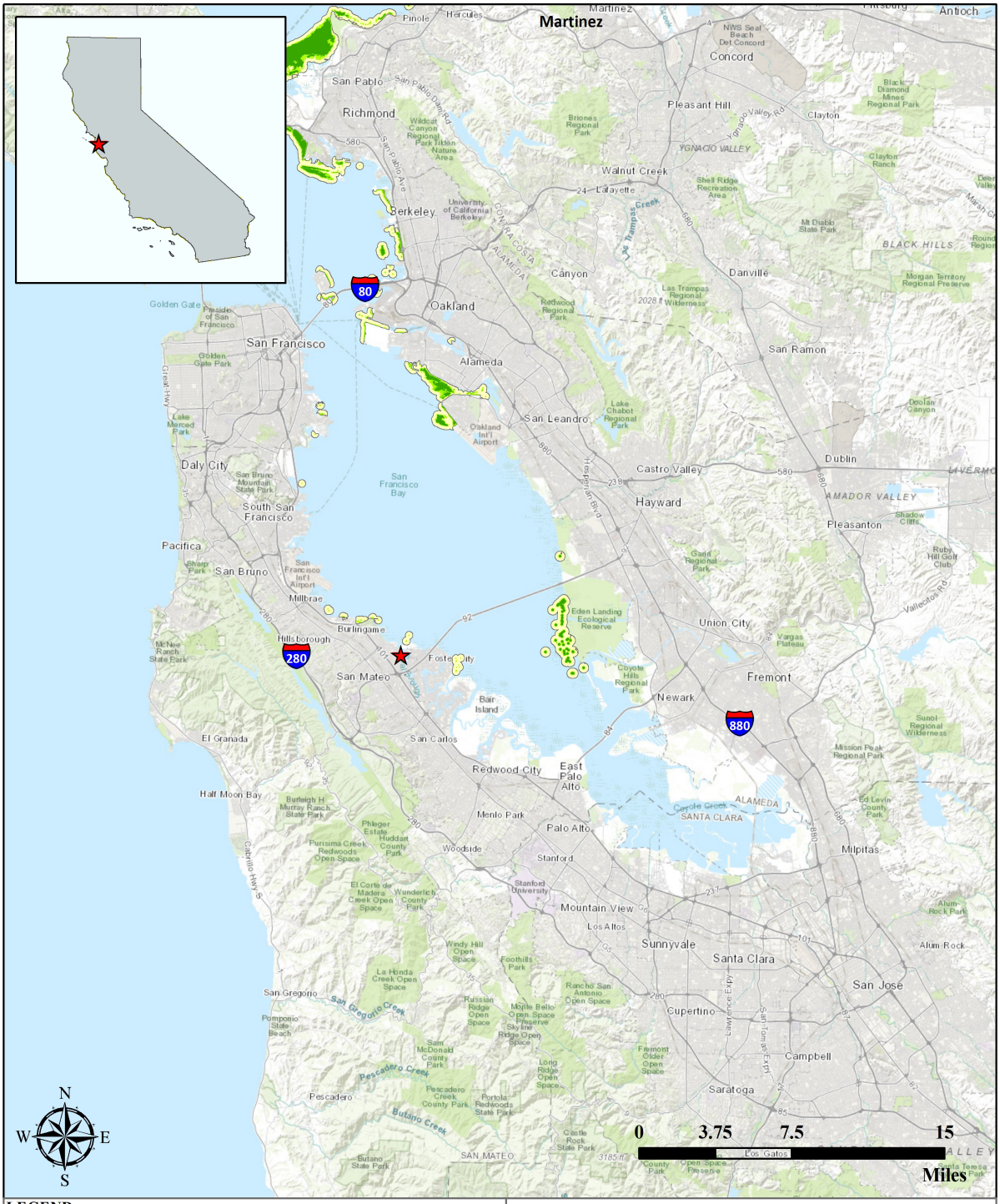
1.2 Objectives of the Sediment Investigation

The purpose of the proposed sampling and testing was to evaluate the proposed dredged material to determine whether it would represent an adverse impact during removal and placement operations. The procedures for sediment sample collection, sample processing and preparation, physical and chemical analyses, and data analyses were presented in a previously approved SAP (PER 2025). The specific objectives of the SAP scope-of-work were as follows:

- Collect core samples from within the designated sampling areas following field protocol detailed in the SAP; and
- Conduct chemical analyses of the collected sediments to determine whether they are suitable for proposed placement options.

1.3 Organization of this Document

Sample collection and handling procedures are discussed in Sections 2 and 3 of this report. Results of chemical analyses are provided in Section 4. Section 5 discusses quality control (QC) and Section 6 presents the conclusions regarding suitability of the material to be dredged with subsequent placement at a landfill.



LEGEND

PROJECT LOCATION

45M EELGRASS BUFFER

EELGRASS BEDS

250M EELGRASS BUFFER

Eelgrass data sourced from Merkel & Associates surveys from 2003, 2009, 2014, and 2019

FIGURE 1-1.
LOCATION MAP:
SAN MATEO MARINA LAGOON

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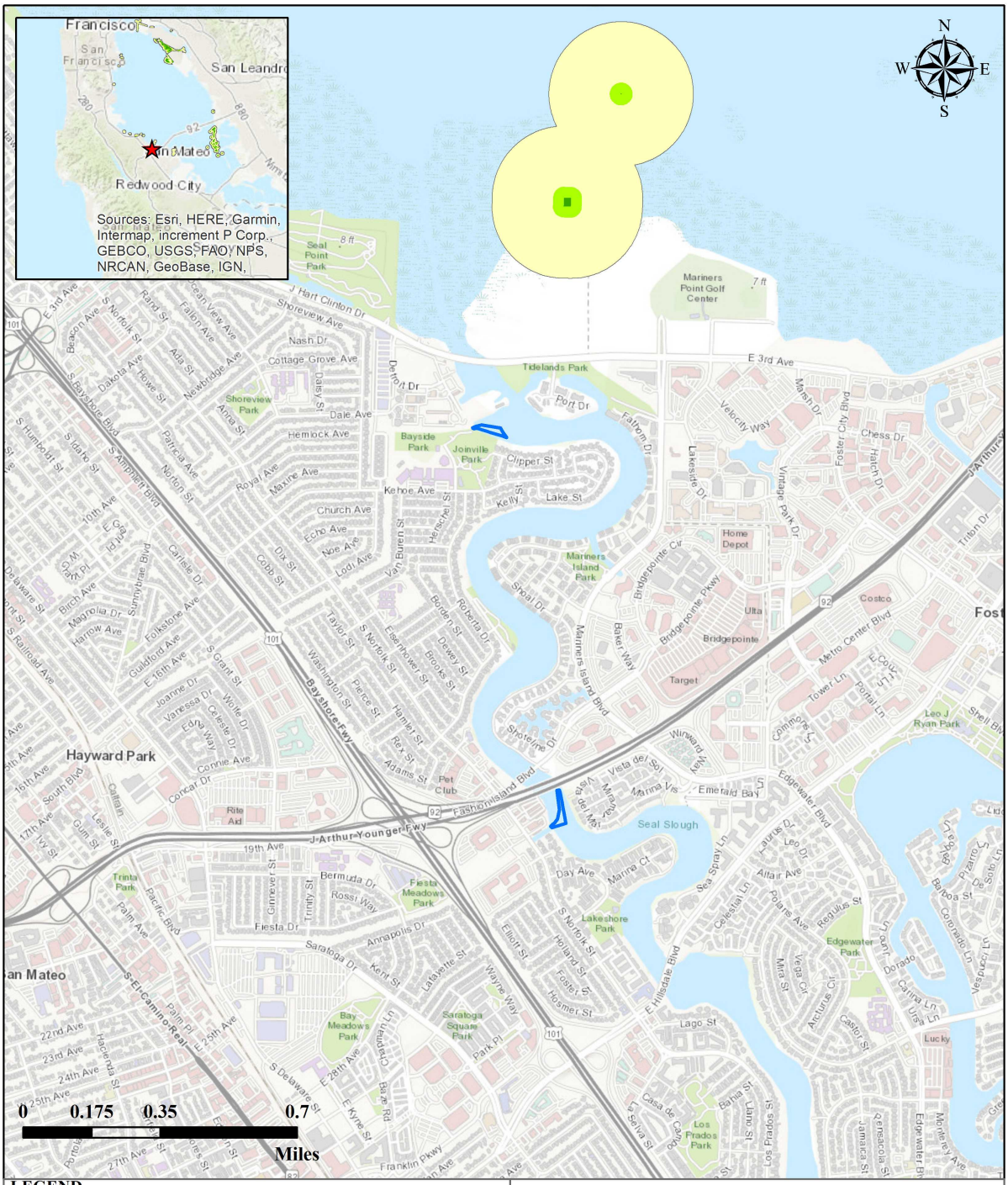


FIGURE 1-2.
VICINITY MAP:
SAN MATEO MARINA LAGOON

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING

FIGURE 1-3.
PROJECT OVERVIEW:
SAN MATEO MARINA LAGOON

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING

2. FIELD SEDIMENT SAMPLE COLLECTION

All sediments (and site water) were collected in accordance with guidelines and procedures outlined in the SAP (PER 2025) with the exception that the project design depth was modified from -6 ft NAVD88 to -3 ft NAVD88; sample were collect to -3 ft NAVD88 plus a 1 ft over-depth.

Sampling was performed on March 12, 2025. A total of four sediment cores were collected from within the proposed north and south dredge boundaries (Figure 2-1). Table 2-1 lists station identifiers, GPS coordinates, mudline elevations, and core penetration depths for all stations.

Using an appropriate core device, the ML-2025-01, ML-2025-02, ML-2025-03, and ML-2025-CS-04 sediment cores were collected to the project depth plus over-depth; an additional 0.5 ft core section was collected from immediately below the 'project depth plus over-depth' and was designated the 'Z-layer'. The 'Z-layer' sections of the cores were removed from each core and stored in a separate container. The remaining individual sediment cores were extruded and placed into food-grade polyethylene bags at PER. While aboard the vessel, the cores were temporarily stored on ice (or frozen "blue ice") within insulated coolers until transport to the laboratory in Fairfield, CA.

Final sample site positions were determined with a global positioning system (GPS) that uses U.S. Government Wide Angle Augmentation System (WAAS) differential correction data to identify each sampling location.

Upon receipt at PER, all samples were logged in and placed in cold storage at ≤4°C in the dark until needed. There were no unusual circumstances encountered during the fieldwork, and no major deviations from the SAP (PER 2025). Field log sheets are presented in Appendix A.

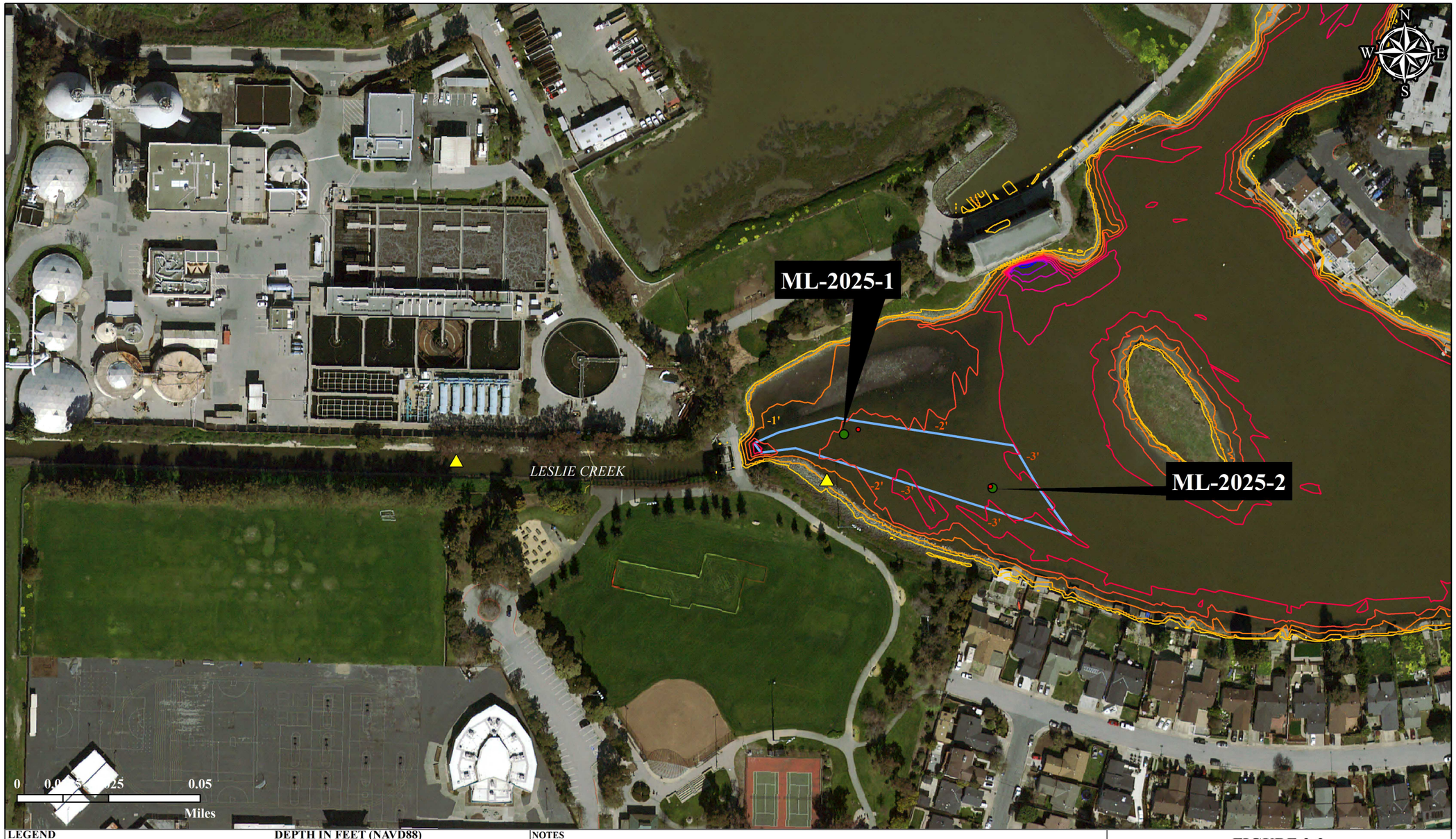
Table 2-1. Locations of Sampling Stations and Core Depths Achieved.

DU (Area)	SAMPLE ID	Latitude (decimal-deg)[A]	Longitude (decimal-deg)[A]	Mudline Elevation (ft. NAVD88)	Core Penetration Depth (ft) Excluding Z-Layer	Core Penetration Depth (ft) Including Z-Layer	Cored Depth (ft. NAVD88)
ML-2025	ML-2025-01	37.567950	-122.292717	-0.4	3.6	4.1	-4.5
	ML-2025-02	37.567733	-122.292053	-1.9	2.1	2.6	-4.5
	ML-2025-03	37.554100	-122.288318	-0.4	3.6	4.1	-4.5
	ML-2025-04	37.553442	-122.288800	-1.4	2.6	3.1	-4.5

A - State Plane Coordinate System, California Zone 3, NAD 83.
ML – Marina Lagoon
MWD – Measured Water Depth
OR – Operating Range
ft - feet

FIGURE 2-1.
PROPOSED AND ACTUAL SAMPLE LOCATIONS:
SAN MATEO MARINA LAGOON

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING



LEGEND

- NORTH DREDGE BOUNDARY *0.67 Acres*
- PROPOPOSED SAMPLE LOCATIONS
- ACTUAL SAMPLE LOCATIONS
- STORMWATER OUTFALLS

DEPTH IN FEET (NAVD88)

1 -2 -5 -8
0 -3 -6
-1 -4 -7

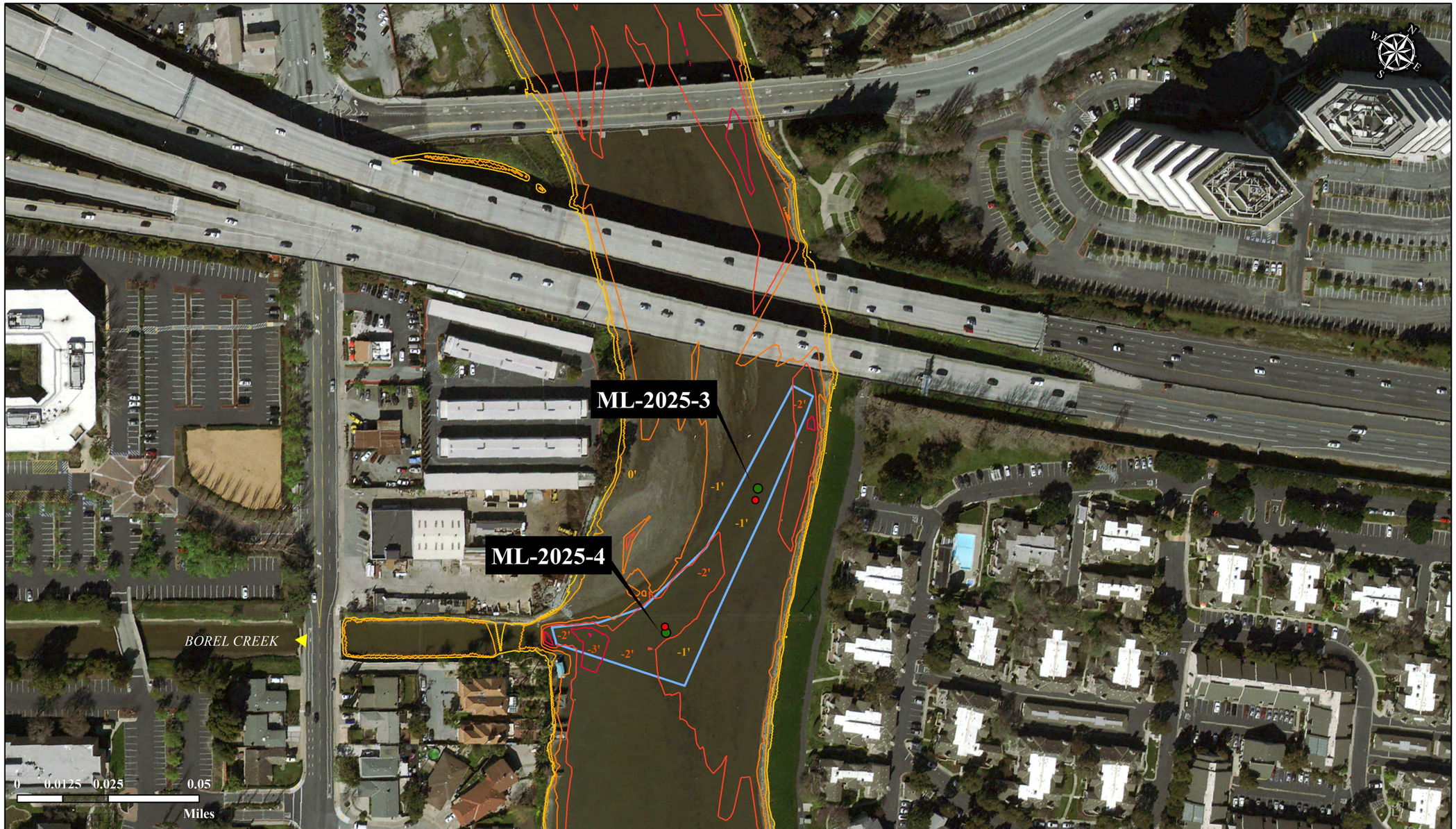
NOTES

1. ELEVATION SURVEY DATA INDICATED ON THESE PLANS ARE PROVIDED BY KEIR+WRIGHT PROJECT SURVEYOR MICHAEL ANAYAS-HILLIARD. SURVEY DATA WAS COLLECTED BETWEEN 07/23/2024 AND 07/25/2024. ELEVATIONS INDICATED ARE ONLY REPRESENTATIVE OF CONDITIONS AT THE TIME THE SURVEY DATA WAS COLLECTED.
2. HORIZONTAL DATUM: CALIFORNIA ZONE 3, NAD83(2011) US SURVEY FEET VERTICAL DATUM: NAVD88 (GEOID18) (US FT)
3. MAP PREPARED BY PACIFIC ECORISK ON 4/1/25.

FIGURE 2-2.

PROPOSED AND ACTUAL SAMPLE LOCATIONS:
SAN MATEO MARINA LAGOON - NORTH DREDGE BOUNDARY

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING



LEGEND

- SOUTH DREDGE BOUNDARY *0.80 Acres*
- PROPOSED SAMPLE LOCATIONS
- ACTUAL SAMPLE LOCATIONS
- STORMWATER OUTFALLS

DEPTH IN FEET (NAVD88)

1 -2 -5 -8
0 -3 -6
-1 -4 -7

NOTES

1. ELEVATION SURVEY DATA INDICATED ON THESE PLANS ARE PROVIDED BY KEIR+WRIGHT PROJECT SURVEYOR MICHAEL ANAYAS-HILLIARD. SURVEY DATA WAS COLLECTED BETWEEN 07/23/2024 AND 07/25/2024. ELEVATIONS INDICATED ARE ONLY REPRESENTATIVE OF CONDITIONS AT THE TIME THE SURVEY DATA WAS COLLECTED.
2. HORIZONTAL DATUM: CALIFORNIA ZONE 3, NAD83(2011) US SURVEY FEET
VERTICAL DATUM: NAVD88 (GEOID18) (US FT)
3. MAP PREPARED BY PACIFIC ECORISK ON 4/1/25.

FIGURE 2-3.

PROPOSED AND ACTUAL SAMPLE LOCATIONS:
SAN MATEO MARINA LAGOON - SOUTH DREDGE BOUNDARY

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING

3. SAMPLE PROCESSING

3.1 Homogenization and Compositing of Sediments

Each core was received intact at the PER laboratory facility in Fairfield, CA and divided into maintenance depth sections and Z-layer sections in the laboratory. Subsequent homogenization and compositing of individual sediment core sections was performed at the PER. The maintenance depth sections from each individual core were individually homogenized in a stainless-steel bowl or high-density polyethylene (HDPE) container. A 500-mL sub-sample of the homogenized sediment from each individual sediment core was archived to allow for additional chemical analyses, if necessary; archived samples are being stored frozen at ≤-20˚C for up to one [1] year after sample collection.

Proportionate amounts of the homogenized sediment from the Marina Lagoon individual sediment cores were composited and re-homogenized within a stainless steel container to form the composited sediment sample, which was designated "ML-2025". Sub-samples of the composited sediment sample were frozen for archival storage as described above.

The Z-layer sediment sections were frozen for archival storage.

Samples of the composited maintenance depth sediments were submitted for chemical and conventional analyses.

3.2 Shipping of Sediment Samples to the Analytical Laboratories

Prior to shipping to the analytical laboratory, sample containers were wrapped in bubble wrap and securely packed inside a cooler with ice packs or crushed ice. A temperature blank was included in each cooler. The original signed chain-of-custody (COC) forms were placed in a sealed plastic bag and taped to the inside lid of each cooler. Appropriate packaging tape was wrapped completely around each cooler. *This Side Up* arrow labels and a *Glass-Handle with Care* label were attached on each side and to the top of each cooler, respectively. Each cooler was then sealed with custody seals on both the front and the back lid seams.

The sediment samples were shipped by overnight delivery. The sub-contracting analytical laboratories have been instructed to not dispose of any samples for this project unless notified by PER in writing.

3.2.1 Chain-of-Custody (COC) Protocol

COC procedures were followed for all samples throughout the collection, handling, and analyses activities. The Sampling and Analysis Project Manager, or a designee, was responsible for all sample tracking and COC procedures. This person was responsible for final sample inventory, maintenance of sample custody documentation, and completion of COC forms prior to

transferring samples to the analytical laboratory. A COC form accompanied each cooler of samples to the respective analytical laboratories. Each custodian of the samples signed the COC form; copies of the COC forms are retained in the project file.

4. RESULTS OF PHYSICAL/CHEMICAL ANALYSES

Sediment physical and chemical characteristics provide information about chemicals of concern present in the sediment and their potential bioavailability, and about non-chemical factors that could affect toxicity. The Marina Lagoon sediments were submitted to Eurofins Calscience (Tustin, CA) for conventional and chemical parameters. Conventional parameters included total organic carbon (TOC), total solids, and grain size. Chemical analyses included trace metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), organochlorine (OCl) pesticides, butyltins (also referred to as organotins), and dioxins/furans. The results of these analyses are presented in Table 4-1; the full Data Report submitted by Eurofins is provided in Appendix B.

The results of the physical and chemical analyses of the sediments were compared to:

- SF Bay ambient sediment concentrations (SFEI 2015);
- SF Bay Bioaccumulation Trigger Levels (SFEI 2025); and
- SF Bay Total Maximum Daily Load (TMDL) Thresholds (where applicable; SFEI 2025);

4.1 ML-2025 Analytical Chemistry Results

The ML-2025-DU1 site sediment was 42.6% total solids with 100% fines (silts and clays). The TOC level was 4.60%.

The cadmium, copper, lead, silver, and zinc concentrations were above the Bay Background sediment concentrations (SFEI 2015); all remaining metal analytes were below all screening concentrations. Total butyltins were measured at 8.2 µg/kg, dry wt.

Total dichlorodiphenyltrichloroethane (DDT) was less than the method detection limit (< MDL). Endrin ketone was measured at 11 µg/kg, dry wt. The remaining OCl pesticides were below all screening concentrations.

Total PAHs were reported at 6,227 µg/kg, which was above Bay Background sediment concentration and the SF Bay Bioaccumulation Trigger (SFEI 2025).

Measured total PCBs were reported at 143 µg/kg, which was above Bay Background sediment concentration, and the SF Bay Bioaccumulation Trigger, and SF Bay TMDL threshold (SFEI 2025).

The composite sample total dioxin and furan concentration was adjusted according to applicable World Health Organization (WHO) toxicity equivalency factors (TEFs) and were expressed as toxicity equivalency quotients (TEQs). The total dioxins and furans TEQ was 39.7 ng TEQ/kg dry weight, which was above Bay Background sediment concentration and the SF Bay Bioaccumulation Trigger.

Table 4-1. San Mateo Lagoon 2025 Sediment Sample Chemistries.

Analyte	ML-2025	Bay Background[1] <100% fines
% Solids	42.6	-
% TOC	4.60	-
Grain Size (%, dry wt)		
Gravel (>2.00 mm)	<0.01	<100% fines
Sand (0.0625 mm to 2.00 mm)	<0.01	
Silt (0.0039 mm to 0.0625 mm)	55.39	
Clay (< 0.0039 mm)	44.62	
Percent fines (Silt+Clay)	100	
Metals (mg/kg, dry wt***)***		
Arsenic	9.93	13.9
Cadmium	1.12[A]	0.33
Chromium	80.0	112
Copper	80.3[A]	53.9
Lead	156[A]	25.1
Mercury	0.329	0.33 (0.43[a])
Nickel	86.1	98.3
Selenium	0.357 J	0.36
Silver	0.403[A]	0.32
Zinc	324[A]	136
Butyltins (µg/kg, dry wt)		
Tetrabutyltin	<3.8	-
Tributyltin	3.6 J	-
Dibutyltin	4.6 J	-
Monobutyltin	<1.3	-
∑ detected Butyltins	**8.2 J**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
a - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2025]).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015).

Table 4-1 *(continued)*. San Mateo Lagoon 2025 Sediment Sample Chemistries.

Analyte	ML-2025-DU1	Bay Background[1] <100% fines
Organochlorine Pesticides (µg/kg, dry wt)		
Aldrin	<0.85	0.03
alpha-BHC	<0.19	-
beta-BHC	<0.45	-
delta-BHC	<0.35	-
gamma-BHC (Lindane)	<0.25	-
Total BHCs	0	0.78
Chlordane (technical)	<1.7	-
Cis-nonachlor	<0.11	-
alpha-Chlordane	<0.24	-
gamma-Chlordane	<0.82	-
Trans-nonachlor	<0.26	-
Oxychlordane	<0.35	-
Heptachlor	<0.14	-
Heptachlor epoxide	<0.20	-
∑ Chlordane[2]	**0**	0.34 (37[a])
Dieldrin	<0.15	0.16 (1.9[a])
Endosulfan I	<0.27	-
Endosulfan II	<0.53	-
Endosulfan sulfate	<0.25	-
Endrin	<0.44	0.01
Endrin aldehyde	<2.3	-
Endrin ketone	11	-
Toxaphene	<2.3	-
2,4'-DDD	<0.15	0.51
2,4'-DDE	<2.4	1.98
2,4'-DDT	<0.22	0.11
4,4'-DDD	<1.2	1.98
4,4'-DDE	<0.63	0.04
4,4'-DDT	<0.72	0.27
∑ detected DDTs	**0**	**4.68 (50[a])**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - Total Chlordane is the sum of: alpha Chlordane, gamma Chlordane, Cis-nonachlor, Trans-nonachlor, Oxychlordane, Heptachlor, and Heptachlor epoxide.
a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2025).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

Table 4-1 *(continued)*. San Mateo Lagoon 2025 Sediment Sample Chemistries.

Analyte	ML-2025-DU1	Bay Background[1] <100% fines
PAHs (µg/kg, dry wt)		
1,6,7-Trimethylnaphthalene	<8.8	7.43
1-Methylnaphthalene	<9.1	13.4
1-Methylphenanthrene	62[A]	37.6
2,6-Dimethylnaphthalene	64[A]	13
2-Methylnaphthalene	14 J	20.8
Acenaphthene	15 J[A]	13.5
Acenaphthylene	<9.8	32.6
Anthracene	57	80.1
Benzo(a)anthracene	340[A]	212
Benzo(a)pyrene	450[A]	428
Benzo(b)fluoranthene	590[A]	227
Benzo(e)pyrene	420[A]	244
Benzo(g,h,i)perylene	350	416
Benzo(k)fluoranthene	430[A]	231
Biphenyl	<15	11.7
Chrysene	510[A]	252
Dibenz(a,h)anthracene	83[A]	49.9
Dibenzothiophene	27	-
Fluoranthene	850[A]	620
Fluorene	22 J	27.1
Indeno(1,2,3-cd)pyrene	350[A]	337
Naphthalene	13 J	56.4
Perylene	250[A]	216
Phenanthrene	230[A]	176
Pyrene	1100[A]	791
∑ detected PAHs	**6,227[A,B]**	**4,540 (4,500[a])**

Notes:

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2025).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015).

B - Value exceeds Bay Bioaccumulation Trigger (SFEI 2025).

Table 4-1 *(continued)*. San Mateo Lagoon 2025 Sediment Sample Chemistries.

Analyte	ML-2025-DU1	Bay Background[1] <100% fines
PCBs (µg/kg, dry wt)		
PCB 005/008	<0.27	0.14
PCB 018	<0.22	0.07
PCB 028	<0.23	0.28
PCB 031	<0.21	0.13
PCB 033	<0.11	0.08
PCB 044	<0.28	0.33
PCB 049	<0.26	0.25
PCB 052	5.5[A]	0.39
PCB 056	<0.11	0.14
PCB 060	<0.30	0.07
PCB 066	<0.26	0.48
PCB 070	<0.22	0.59
PCB 074	<0.24	-
PCB 087	7.1[A]	0.46
PCB 095	10[A]	0.60
PCB 097	<0.33	-
PCB 099	6.3[A]	0.65
PCB 101	18[A]	1.15
PCB 105	<0.25	0.36
PCB 110	12[A]	1.04
PCB 118	<0.19	0.98
PCB 128	<0.32	0.28
PCB 132/153	21[A]	2.11
PCB 138/158	16[A]	1.98
PCB 141	<0.15	0.20
PCB 149	14[A]	1.25
PCB 151	4.0[A]	0.56
PCB 156	<0.22	0.16
PCB 170	6.6[A]	0.47
PCB 174	4.9[A]	0.49
PCB 177	<0.22	0.36
PCB 180	<0.19	1.02
PCB 183	3.4[A]	0.37
PCB 187	6.6[A]	0.87
PCB 194	7.3[A]	0.33
PCB 195	<0.15	0.11
PCB 201	<0.32	0.05
PCB 203	<0.16	0.17
∑ detected PCBs	**143[A,B,C]**	**18.3, 18[a], 26.5[b]**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2025).
b - Total PCB concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2025]).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015).
B - Value exceeds Bay Bioaccumulation Trigger (SFEI 2025).
C – Value exceeds SF Bay TMDL threshold (SFEI 2025).

Table 4-1. ***(continued)*** **San Mateo Lagoon 2025 Sediment Sample Chemistries.**

Analyte	TEF	ML-2025-DU1		Bay Background[1] <100% fines
Dioxins and Furans (ng/kg, dry wt)		**Concentration**	**TEQ**	
1,2,3,4,6,7,8-HpCDD	0.05	400	20	-
1,2,3,4,6,7,8-HpCDF	0.02	110	2.2	-
1,2,3,4,7,8-HxCDD	0.09	10 J	0.9	-
1,2,3,4,7,8-HxCDF	0.3	8.2 J	2.46	-
1,2,3,4,7,8,9-HpCDF	0.1	6.2 J	0.62	-
1,2,3,6,7,8-HxCDD	0.07	25	1.75	-
1,2,3,6,7,8-HxCDF	0.09	7.3 J	0.657	-
1,2,3,7,8-PeCDD	0.4	7.1 J	2.84	-
1,2,3,7,8-PeCDF	0.1	2.4 J	0.24	-
1,2,3,7,8,9-HxCDD	0.05	19	0.95	-
1,2,3,7,8,9-HxCDF	0.2	2.3 J	0.46	-
2,3,4,6,7,8-HxCDF	0.1	11 J	1.1	-
2,3,4,7,8-PeCDF	0.1	9.6 J	0.96	-
2,3,7,8-TCDD	1	1.4 J	1.4	-
2,3,7,8-TCDF	0.07	3.7	0.259	-
OCDD	0.001	2500	2.5	-
OCDF	0.002	200	0.4	-
∑ Dioxin/Furan ng TEQ/kg	**NA**	**NA**	**39.7[A,B]**	**2.90 (10[a])**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2025).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient
A - Value exceeds Bay Background (SFEI 2015).
B - Value exceeds Bay Bioaccumulation Trigger (SFEI 2025).

5. QUALITY CONTROL REVIEW

Any analyses that did not comply with the analytical laboratory QA/QC limits are presented below (also, see the final analytical reports in Appendix B for a full case narrative).

The QA/QC review entailed reviewing the contract lab Data Report(s) for sample integrity, correct methodology, and compliance with all appropriate Lab QA/QC requirements. The overall data quality assessment found that all data were usable. Appendix B contains the conventional and chemical analyses report, which includes the contract laboratory QA/QC narratives.

5.1 Sediment Conventional and Chemical Analytical QA/QC Summary

Eurofins Calscience Report 570-223210-1

Total Metals

Recovery of the matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision were outside control limits. Sample matrix interference and/or non-homogeneity were suspected because the associated laboratory control sample (LCS)/ laboratory control sample duplicate (LCSD) recovery was within acceptance limits.

Organochlorine Pesticides

The sample, MS, and MSD required a mercury clean-up to reduce matrix interferences caused by sulfur. Recoveries of the MS/MSD for one or more analytes were out of control limits due to suspected matrix interference. Sample matrix interference and/or non-homogeneity were suspected because the associated LCS and/or LCSD recovery was within acceptance limits.

Surrogate recovery for the MSD was outside control limits due to suspected matrix interference

PAHs

The sample, MS, and MSD required a mercury clean-up to reduce matrix interferences caused by sulfur. Recoveries of the MS/ MSD were out of control due to suspected matrix interference. The associated LCS recovery was within acceptance limits.

PCBs

The sample, MS, and MSD required a mercury clean-up to reduce matrix interferences caused by sulfur. Recoveries of the MS/ MSD were outside of control limits. The associated LCS recovery was within acceptance limits.

Dioxins/Furans

Diphenyl ethers were found to be interfering with non-2,3,7,8 substituted furans in totals reporting. Non-2,3,7,8 substituted furans with interfering diphenyl ethers were removed from reporting in totals.

Eurofins Calscience Report 570-223210-2

TOC

Sample was received at laboratory within hold-time, however laboratory was unable to performed analyses within method hold-time.

6. SUMMARY

The sediments proposed for dredging in support of the Marina Lagoon dredging were analyzed to determine suitability of the material to be dredged with subsequent placement at a landfill.

Given that previous testing performed on sediments currently in place at the lagoon indicated elevated concentrations of mercury, total DDTs, Chlordane, Dieldrin, and total PCBs above the SF Bay Bioaccumulation Triggers or TMDL threshold, the proposed dredging is not expected to adversely impact lagoon sediments beyond current conditions given the small dredge footprint.

As the dredge footprint is minimal, the San Mateo Marina Lagoon is not tidally linked to San Francisco Bay, presence of elevated contaminant concentrations in lagoon sediment, Z-layer analyses is not proposed to be performed.

7. REFERENCES

PER (2025) Sediment Characterization Sampling and Analysis Plan (SAP) for the Dredging of Sediment from the Marina Lagoon in San Mateo, CA. Prepared for the City of San Mateo, Public Works Department. Prepared by Pacific EcoRisk, Fairfield, CA.

SFEI (2015) Regional Monitoring Program: Updated Ambient Concentrations of Toxic Chemical in San Francisco Bay Sediments. San Francisco Estuary Institute. July 2015.

SFEI (2025) Dredged Material Testing Thresholds for San Francisco Bay Area Sediments. Prepared by San Francisco Estuary Institute (http://www.sfei.org/content/dmmo-ambient-sediment-conditions). Prepared for the Long-Term Management Strategy Program for the Placement of Dredged Material in the San Francisco Bay Region.

USEPA/USACE (2011) DMMO Agreement on Programmatic Essential Fish Habitat (EFH) Conservation Measures for Maintenance Dredging Conducted Under LTMS Program (Tracking Number 2009/06769).

Appendix A

Sampling Field Logs and Data Sheets

Pacific EcoRisk
Environmental Consulting and Testing

Sediment Core Collection Form

Station ID: ML-2025- 1 **Date:** 3/12/25

Project Name: Marina Lagoon, San Mateo, CA **Project No.:** 39812

Vertical Datum: SMD (San Mateo Datum)

Depth Measurement: Sounder (Leadline)

Excavation Depth: 90.5 ft **Z-layer (ft):** 0.5

	Attempt 1	Attempt 2	Attempt 3
Time:	0940	1330	
Latitude/Northing	37.34.0770	37.34.0770	
Longitude/Easting	122.17.5670	122.17.5630	
(A) Water Surface Elevation (ft)	94.9	94.9'	
(B) Measured Water Depth (ft)	1'	1'	
(C) Mudline Elevation (A–B=C)	93.9'	93.9'	
(D) Excavation Depth +Z-layer (ft)	90.0	90.0'	
(E) Calculated Core Length (ft) (C-D=E)	3.9'	3.9'	
Estimated Penetration (ft)	6'	5.5'	
Refusal Encountered?	Y (N)	Y (N)	Y N
Total Core Length Recovered (ft)	6.0'	4.3'	

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray) black, brown, brown surface, olivine	(gray) black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, (slight) mod, strong H_2S, petroleum, septic	None, (slight) mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Homogenous (H) / Layering (L)	(H) L	(H) L	H L

Comments: MG-3/12/25 - Entire 6.0' core collected/processed in error. Resampled station. Recorded as attempt 2.

Recorded by: Miguel Guzman

Pacific EcoRisk
Environmental Consulting and Testing

Sediment Core Collection Form

Station ID: ML-2025- 2 **Date:** 3/12/25

Project Name: Marina Lagoon, San Mateo, CA **Project No.:** 39812

Vertical Datum: SMD (San Mateo Datum)

Depth Measurement: Sounder (Leadline)

Excavation Depth: 90.5 ft **Z-layer (ft):** 0.5

	Attempt 1	Attempt 2	Attempt 3
Time:	1030	1345	
Latitude/Northing	37.34.0637	37.34.0640	
Longitude/Easting	122.17.5230	122.17.5232	
(A) Water Surface Elevation (ft)	94.9	94.9'	
(B) Measured Water Depth (ft)	2.6'	2.5'	
(C) Mudline Elevation (A–B=C)	92.3'	92.4'	
(D) Excavation Depth +Z-layer (ft)	90.0	90.0'	
(E) Calculated Core Length (ft) (C-D=E)	2.3'	2.4'	
Estimated Penetration (ft)	5.5'	5.5'	
Refusal Encountered?	Y (N)	Y (N)	Y N
Total Core Length Recovered (ft)	4.3'	4.3	

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray) black, brown, brown surface, olivine	(gray) black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, (slight) mod, strong H_2S, petroleum, septic	None, (slight) mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Homogenous (H) / Layering (L)	(H) L	(H) L	H L

Comments: MG-3/12/25 - Entire 4.3' core collected in error. Station resampled. Recorded as attempt 2.

Recorded by: Miguel Guzman

Pacific EcoRisk
Environmental Consulting and Testing

Sediment Core Collection Form

Station ID: ML-2025-3 **Date:** 3/12/25

Project Name: Marina Lagoon, San Mateo, CA **Project No.:** 39812

Vertical Datum: **SMD (San Mateo Datum)**

Depth Measurement: Sounder (Leadline)

Excavation Depth: **90.5 ft** **Z-layer (ft):** **0.5**

	Attempt 1	Attempt 2	Attempt 3
Time:	1130		
Latitude/Northing	37.33.2460		
Longitude/Easting	122.17.2991		
(A) Water Surface Elevation (ft)	94.9		
(B) Measured Water Depth (ft)	1'		
(C) Mudline Elevation (A–B=C)	93.9		
(D) Excavation Depth +Z-layer (ft)	90.0		
(E) Calculated Core Length (ft) (C-D=E)	3.9'		
Estimated Penetration (ft)	5.5'		
Refusal Encountered?	Y (N)	Y N	Y N
Total Core Length Recovered (ft)	5'		

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray), black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, (slight), mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Homogenous (H) / Layering (L)	(H) L	H L	H L
Comments:			

Recorded by: Miguel Guzman

Pacific EcoRisk
Environmental Consulting and Testing

Sediment Core Collection Form

Station ID: ML-2025- 4 **Date:** 3/12/25

Project Name: Marina Lagoon, San Mateo, CA **Project No.:** 39812

Vertical Datum: SMD (San Mateo Datum)

Depth Measurement: Sounder (Leadline)

Excavation Depth: 90.5 ft **Z-layer (ft):** 0.5

	Attempt 1	Attempt 2	Attempt 3
Time:	1150		
Latitude/Northing	37.33.2065		
Longitude/Easting	122.17.3280		
(A) Water Surface Elevation (ft)	94.9		
(B) Measured Water Depth (ft)	2'		
(C) Mudline Elevation (A–B=C)	92.9'		
(D) Excavation Depth +Z-layer (ft)	90.0		
(E) Calculated Core Length (ft) (C-D=E)	2.9'		
Estimated Penetration (ft)	5'		
Refusal Encountered?	Y (N)	Y N	Y N
Total Core Length Recovered (ft)	4.8'		

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray, black, brown, brown surface, olivine)	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, (slight), mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Homogenous (H) / Layering (L)	(H) L	H L	H L
Comments:			

Recorded by: Miguel Guzman

Appendix B

Eurofins Data Report for the Sediment Analyses

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Jaclyn Gnusti
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JOB DESCRIPTION

San Mateo Lagoon

JOB NUMBER

570-223210-1

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin CA 92780

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

Authorization

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Authorized for release by
Carla Hollowell, Project Manager I
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Table of Contents

Definitions/Glossary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
S1+	Surrogate recovery exceeds control limits, high biased.

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
570-223210-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) for most analyses if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times.

Receipt
The sample was received on 3/21/2025 10:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.7°C.

GC/MS Semi VOA
Method 8270C_SIM_PAH: The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: ML-2025-DU1 (570-223210-1), (570-223210-C-1 MS) and (570-223210-C-1 MSD). The reagent lot number used was: 5356770
Method:8270 Sim P.A.H.

Method Organotins_SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-549966 and analytical batch 570-550825 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

PCBs
Method 8270C_SIM_CON: The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: ML-2025-DU1 (570-223210-1), (570-223210-C-1 MS) and (570-223210-C-1 MSD). The reagent lot number used was: 5356770
Method:8270 Sim con

Method 8270C_SIM_CON: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for the following sample associated with preparation batch 570-549991 and analytical batch 570-551369 were outside control limits: (570-223210-C-1-D MS) and (570-223210-C-1-E MSD). The associated laboratory control sample (LCS) recovery met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Pesticides
Method 8081A: The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: ML-2025-DU1 (570-223210-1), (570-223210-B-1 MS) and (570-223210-B-1 MSD). The reagent lot number used was: 5356770
Method:8081

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-549988 and analytical batch 570-557663 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-549988 and analytical batch 570-557663 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-549988 and analytical batch 570-557663 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8081A: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-549988 and analytical batch 570-557663 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8081A: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-549988 and analytical batch 570-557663 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8081A: The continuing calibration verification (CCV) associated with batch 570-557663 recovered above the upper control limit for Toxaphene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is:ML-2025-DU1 (570-223210-1).

Method 8081A: The continuing calibration verification (CCV) associated with 570-557663 recovered high and outside the control limits for 4,4'-DDT on one column. Results are confirmed on both columns and reported from the passing column. The associated sample is: (570-223210-B-1-E MSD).

Method 8081A: Surrogate recovery for the following sample was outside control limits: (570-223210-B-1-E MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Dioxin

Method 8290A: The bracketing continuing calibration verification (CCV) associated with batch 410-624754 has analytes with percent difference values that are outside the method criteria. Per method guidelines, an average relative response factor (RRF) is calculated from the bracketing CCV and is used to quantitate the Isotope Dilution Analyte (IDA) recovery in the associated samples.

Method 8290A: Diphenyl ethers were found to be interfering with non-2,3,7,8 substituted furans in totals reporting. Non-2,3,7,8 substituted furans with interfering diphenyl ethers have been removed from reporting in totals.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals

Method 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 570-556644 and analytical batch 570-556922 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Geotechnical

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method: SW846 8270C SIM CON - PCB Congeners (GC/MS)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.94	0.27	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-18	ND		0.47	0.22	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-28	ND		0.47	0.23	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-31	ND		0.47	0.21	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-33	ND		0.47	0.11	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-44	ND		0.47	0.28	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-49	ND		0.47	0.26	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-52	**5.5**		0.47	0.19	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-56	ND		0.47	0.11	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-60	ND		0.47	0.30	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-66	ND		0.47	0.26	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-70	ND		0.47	0.22	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-74	ND		0.47	0.24	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-87	**7.1**		0.47	0.29	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-95	**10**		0.47	0.15	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-97	ND		0.47	0.33	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-99	**6.3**		0.47	0.20	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-101	**18**		0.47	0.25	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-105	ND		0.47	0.25	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-110	**12**		0.47	0.21	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-118	ND		0.47	0.19	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-128	ND		0.47	0.32	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-132/153	**21**		0.94	0.56	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-138/158	**16**		0.94	0.57	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-141	ND		0.47	0.15	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-149	**14**		0.47	0.25	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-151	**4.0**		0.47	0.21	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-156	ND		0.47	0.22	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-170	**6.6**		0.47	0.24	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-174	**4.9**		0.47	0.13	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-177	ND		0.47	0.22	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-180	ND		0.47	0.19	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-183	**3.4**		0.47	0.29	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-187	**6.6**		0.47	0.21	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-194	**7.3**		0.47	0.26	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-195	ND		0.47	0.15	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-201	ND		0.47	0.32	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1
PCB-203	ND		0.47	0.16	ug/Kg	☼	03/27/25 13:00	03/30/25 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*70*		*20 - 139*	*03/27/25 13:00*	*03/30/25 21:44*	*1*
p-Terphenyl-d14	*102*		*37 - 165*	*03/27/25 13:00*	*03/30/25 21:44*	*1*

Method: SW846 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**15**	**J**	23	10	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Acenaphthylene	ND		23	9.8	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Anthracene	**57**		23	9.0	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Benzo[a]anthracene	**340**		23	10	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Benzo[a]pyrene	**450**		23	14	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Benzo[b]fluoranthene	**590**		23	16	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Benzo[e]pyrene	**420**		23	12	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Benzo[g,h,i]perylene	**350**		23	15	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Benzo[k]fluoranthene	**430**		23	17	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Biphenyl	ND		23	15	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Chrysene	**510**		23	7.8	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Dibenz(a,h)anthracene	**83**		23	9.1	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Dibenzothiophene	**27**		23	13	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
2,6-Dimethylnaphthalene	**64**		23	6.0	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Fluoranthene	**850**		23	13	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Fluorene	**22**	**J**	23	10	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Indeno[1,2,3-cd]pyrene	**350**		23	17	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
1-Methylnaphthalene	ND		23	9.1	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
2-Methylnaphthalene	**14**	**J**	23	8.7	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
1-Methylphenanthrene	**62**		23	10	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Naphthalene	**13**	**J**	23	6.6	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Perylene	**250**		23	13	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Phenanthrene	**230**		23	10	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
Pyrene	**1100**		23	15	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1
1,6,7-Trimethylnaphthalene	ND		23	8.8	ug/Kg	☼	03/27/25 13:00	03/29/25 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*86*		*22 - 130*	*03/27/25 13:00*	*03/29/25 14:09*	*1*
Nitrobenzene-d5	*54*		*20 - 145*	*03/27/25 13:00*	*03/29/25 14:09*	*1*
p-Terphenyl-d14	*98*		*33 - 147*	*03/27/25 13:00*	*03/29/25 14:09*	*1*

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: Lab SOP Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		7.0	3.8	ug/Kg	☼	03/26/25 16:02	03/28/25 18:04	1
Tributyltin	**3.6**	**J**	7.0	3.3	ug/Kg	☼	03/26/25 16:02	03/28/25 18:04	1
Dibutyltin	**4.6**	**J**	7.0	3.0	ug/Kg	☼	03/26/25 16:02	03/28/25 18:04	1
Monobutyltin	ND	F1	7.0	1.3	ug/Kg	☼	03/26/25 16:02	03/28/25 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*79*		*39 - 150*	*03/26/25 16:02*	*03/28/25 18:04*	*1*

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: SW846 8081A - Organochlorine Pesticides (GC)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND	F1	2.3	0.15	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
2,4'-DDE	ND	F1	4.7	2.4	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
2,4'-DDT	ND	F1 F2	2.3	0.22	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
4,4'-DDD	ND	F1 F2	2.3	1.2	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
4,4'-DDE	ND	F1	2.3	0.63	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
4,4'-DDT	ND	F2	2.3	0.72	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Aldrin	ND		2.3	0.85	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
alpha-BHC	ND		2.3	0.19	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
alpha-Chlordane	ND	F1	2.3	0.24	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
beta-BHC	ND		2.3	0.45	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Chlordane	ND		12	1.7	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
cis-Nonachlor	ND	F1	2.3	0.11	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
delta-BHC	ND	F2	2.3	0.35	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Dieldrin	ND		0.47	0.15	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Endosulfan I	ND		2.3	0.27	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Endosulfan II	ND		2.3	0.53	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Endosulfan sulfate	ND	F2	2.3	0.25	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Endrin	ND		2.3	0.44	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Endrin aldehyde	ND		2.3	2.3	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Endrin ketone	**11**	**F1**	2.3	0.45	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
gamma-BHC	ND		2.3	0.25	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
gamma-Chlordane	ND	F2	2.3	0.82	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Heptachlor	ND		2.3	0.14	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Heptachlor epoxide	ND	F1 F2	2.3	0.20	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Oxychlordane	ND		2.3	0.35	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
Toxaphene	ND		12	2.3	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1
trans-Nonachlor	ND	F1	2.3	0.26	ug/Kg	☼	03/27/25 13:00	04/14/25 19:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*27*	*p*	*20 - 180*	*03/27/25 13:00*	*04/14/25 19:41*	*1*
Tetrachloro-m-xylene	*76*	*p*	*20 - 131*	*03/27/25 13:00*	*04/14/25 19:41*	*1*

Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	400		12	0.37	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,4,6,7,8-HpCDF	110		12	0.48	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,4,7,8-HxCDD	10	J	12	0.22	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,4,7,8-HxCDF	8.2	J B	12	0.43	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,4,7,8,9-HpCDF	6.2	J	12	0.55	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,6,7,8-HxCDD	25		12	0.21	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,6,7,8-HxCDF	7.3	J	12	0.41	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,7,8-PeCDD	7.1	J I	12	0.12	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,7,8-PeCDF	2.4	J	12	0.19	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,7,8,9-HxCDD	19		12	0.21	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
1,2,3,7,8,9-HxCDF	2.3	J I	12	0.45	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
2,3,4,6,7,8-HxCDF	11	J	12	0.41	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
2,3,4,7,8-PeCDF	9.6	J	12	0.16	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
2,3,7,8-TCDD	1.4	J I	2.3	0.056	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
2,3,7,8-TCDF	3.7	I	2.3	0.21	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
OCDD	2500	B	35	0.34	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
OCDF	200		23	0.18	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total HxCDD	170		12	0.22	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total HxCDF	190	I B	12	0.42	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total HpCDD	750		12	0.37	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total HpCDF	280		12	0.51	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total PeCDD	21	I	12	0.12	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total PeCDF	100		12	0.17	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total TCDD	3.5	I	2.3	0.056	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1
Total TCDF	71	I B	2.3	0.21	ng/Kg	☼	03/31/25 20:05	04/03/25 15:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-OCDF	*78*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-OCDD	*72*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-2,3,7,8-TCDF	*78*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-2,3,7,8-TCDD	*72*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-2,3,4,7,8-PeCDF	*80*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-2,3,4,6,7,8-HxCDF	*79*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,7,8,9-HxCDF	*88*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,7,8,9-HxCDD	*74*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,7,8-PeCDF	*80*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,7,8-PeCDD	*91*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,6,7,8-HxCDF	*81*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*72*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*91*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*80*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,4,7,8-HxCDD	*77*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*79*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*40 - 135*	*03/31/25 20:05*	*04/03/25 15:25*	*1*

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: SW846 6020 - Metals (ICP/MS)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.93		1.16	0.147	mg/Kg	☼	04/11/25 07:00	04/11/25 18:34	20
Chromium	80.0		2.33	0.537	mg/Kg	☼	04/11/25 07:00	04/11/25 18:34	20
Copper	80.3		2.33	0.714	mg/Kg	☼	04/11/25 07:00	04/11/25 18:34	20
Nickel	86.1		2.33	0.621	mg/Kg	☼	04/11/25 07:00	04/11/25 18:34	20
Lead	156		1.16	0.219	mg/Kg	☼	04/11/25 07:00	04/11/25 18:34	20
Zinc	324		23.3	2.56	mg/Kg	☼	04/11/25 07:00	04/11/25 18:34	20

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: SW846 7471A - Mercury (CVAA)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.329		0.196	0.0540	mg/Kg	☼	03/28/25 03:04	03/28/25 12:19	1

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

General Chemistry

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (EPA Moisture)	42.6		0.1	0.1	%			03/26/25 18:27	1

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: ASTM D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay (less than 0.00391 mm)	**44.62**		0.01	0.01	%			04/01/25 12:22	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			04/01/25 12:22	1
Fine Sand (0.125 to 0.25mm)	ND		0.01	0.01	%			04/01/25 12:22	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			04/01/25 12:22	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			04/01/25 12:22	1
Silt (0.00391 to 0.0625mm)	**55.39**		0.01	0.01	%			04/01/25 12:22	1
Total Silt and Clay (0 to 0.0626mm)	**100.00**		0.01	0.01	%			04/01/25 12:22	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			04/01/25 12:22	1
Very Fine Sand (0.0625 to 0.125 mm)	ND		0.01	0.01	%			04/01/25 12:22	1

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

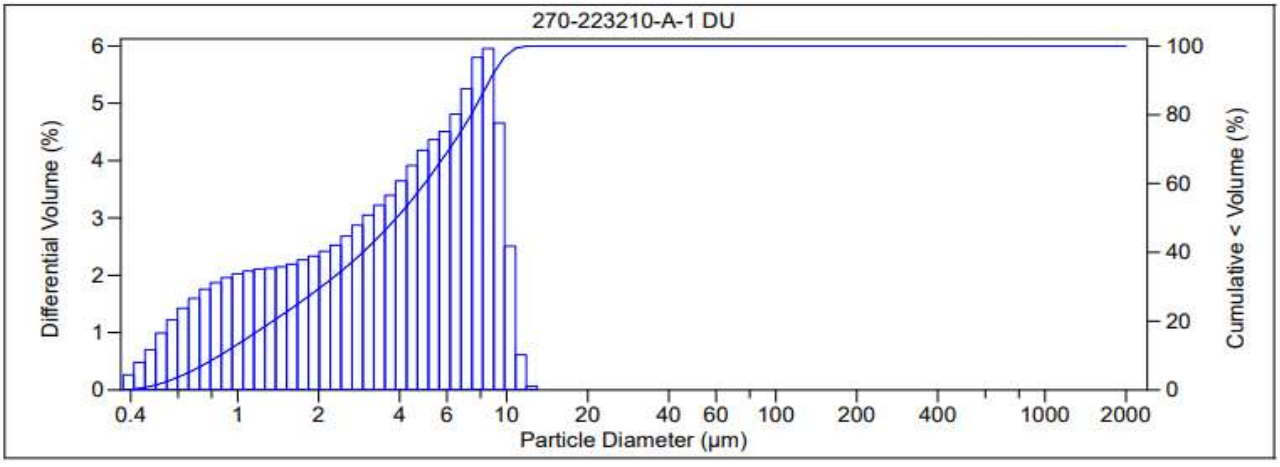
LAB DUPLICATE

Date Sampled:	03/12/25
Date Received:	03/21/25
Work Order No:	570-223210-1
Date Analyzed:	04/01/25
Method:	ASTM D4464M

DUPLICATE

Sample ID	Depth ft	Description	Mean Grain Size mm
DUPLICATE		Silt	0.004

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.000	0.000	0.000	0.000	0.000	0.000	49.824	50.176	100.000



V 3.0

PARTICLE SIZE SUMMARY

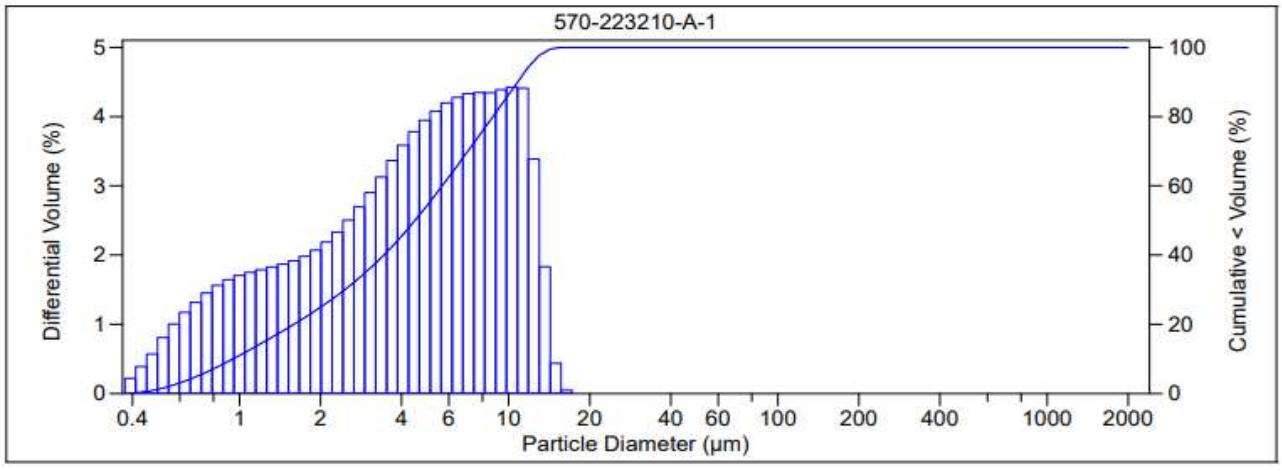
(ASTM D422 / D4464M)

Moffat & Nichol Carlsbad	Date Sampled:	03/12/25
	Date Received:	03/21/25
	Work Order No:	570-223210-1
	Date Analyzed:	04/01/25
	Method:	ASTM D4464M

ML-2025-DU1

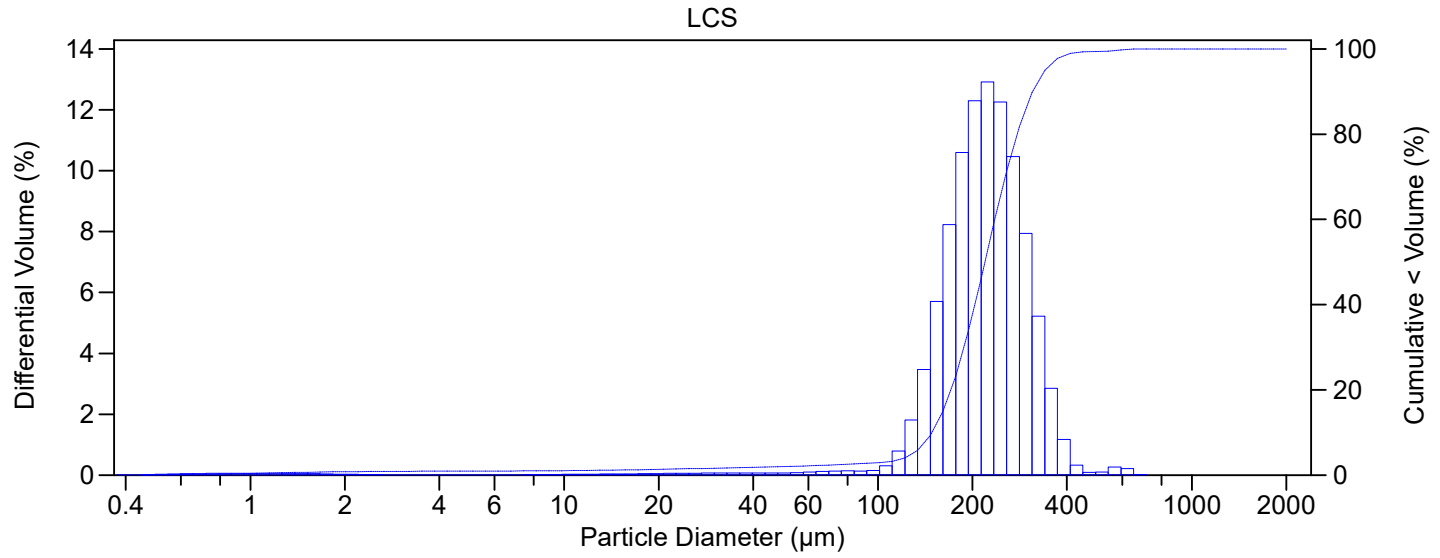
Sample ID	Depth ft	Description	Mean Grain Size mm
ML-2025-DU1		Silt	0.005

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.000	0.000	0.000	0.000	0.000	0.000	55.380	44.620	100.000



V 3.0

File name:	C:\LS13320\LCS_ 1 Apr 2025_11.55.13.$ls LCS_ 1 Apr 2025_11.55.13.$ls		
File ID:	LCS		
Sample ID:	LCS		
Operator:	EL8Q		
Bar code:	6112983		
Run number:	1 Control Sample		
Comment 1:	ASTM D4464M, LPSA1		
Comment 2:	6112983		
Optical model:	Fraunhofer.rf780d		
Residual:	0.57%		
LS 13 320	Aqueous Liquid Module		
Start time:	11:54 1 Apr 2025	Run length:	60 seconds
Pump speed:	49		
Obscuration:	9%		
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) LCS_ 1 Apr 2025_11.55.13.$ls

Calculations from 0.375 µm to 2000 µm

Volume:	100%		
Mean:	224.4 µm	S.D.:	73.57 µm
Median:	219.4 µm	Variance:	5413 µm^2
Mean/Median ratio:	1.023	Skewness:	0.588 Right skewed
Mode:	223.4 µm	Kurtosis:	3.789 Leptokurtic

d_{10}: 148.5 µm d_{50}: 219.4 µm d_{90}: 311.3 µm

Folk and Ward Statistics (Phi)

Mean:	2.20	Median:	2.19	Deviation:	0.42
Skewness:	0.07	Kurtosis:	1.02		

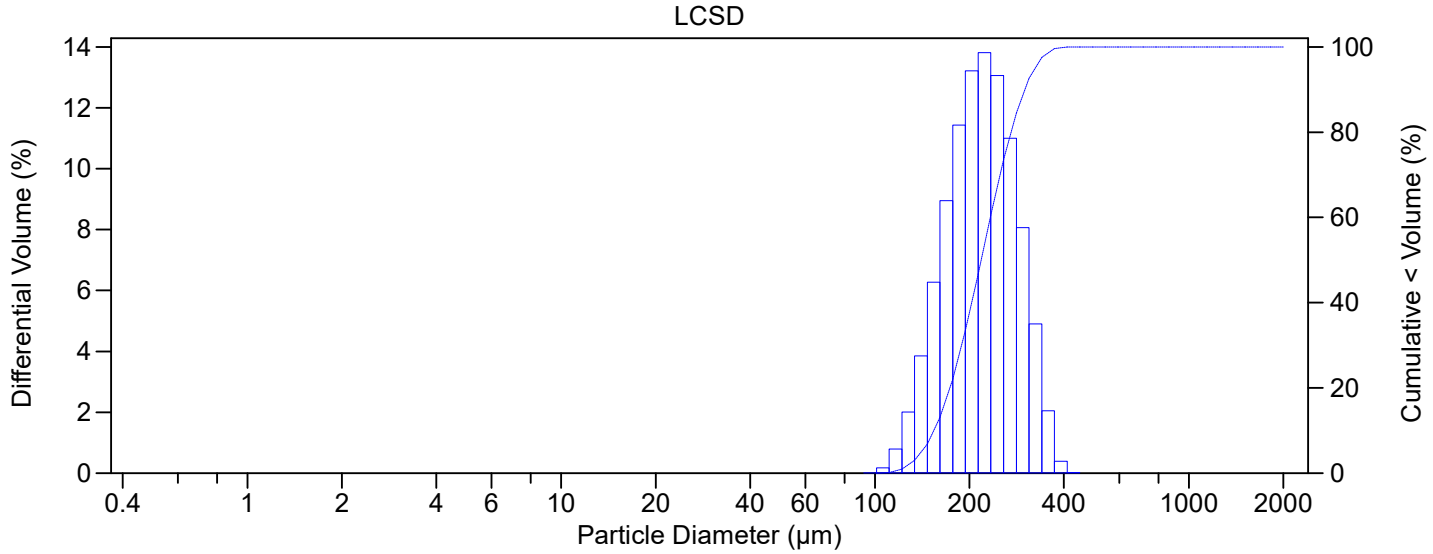
<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
128.2 µm	163.1 µm	179.8 µm	203.7 µm	219.4 µm	265.8 µm	289.8 µm	340.6 µm

Particle Diameter µm	LCS_ 1 Apr 2025_11.55 .13.$ls Volume %
0.04	0.0049
0.4	0.80
1.95	0.13
3.91	1.30
62.5	2.28
125	63.1
250	31.8
500	0.60
1000	0
2000	

LCS_ 1 Apr 2025_11.55.13.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.375	0.0072	22.73	0.064	1377	0
0.412	0.014	24.95	0.067	1512	0
0.452	0.023	27.39	0.068	1660	0
0.496	0.032	30.07	0.068	1822	0
0.545	0.039	33.01	0.068	2000	
0.598	0.046	36.24	0.068		
0.657	0.052	39.78	0.068		
0.721	0.057	43.67	0.070		
0.791	0.061	47.94	0.076		
0.869	0.063	52.63	0.085		
0.954	0.063	57.77	0.099		
1.047	0.062	63.42	0.12		
1.149	0.060	69.62	0.14		
1.261	0.057	76.43	0.14		
1.385	0.052	83.90	0.13		
1.520	0.047	92.10	0.15		
1.669	0.041	101.1	0.31		
1.832	0.036	111.0	0.79		
2.011	0.030	121.8	1.81		
2.208	0.024	133.7	3.47		
2.423	0.020	146.8	5.70		
2.660	0.015	161.2	8.23		
2.920	0.012	176.9	10.6		
3.206	0.0096	194.2	12.3		
3.519	0.0081	213.2	12.9		
3.863	0.0074	234.1	12.3		
4.241	0.0074	256.9	10.5		
4.656	0.0080	282.1	7.94		
5.111	0.0092	309.6	5.22		
5.611	0.011	339.9	2.86		
6.159	0.013	373.1	1.17		
6.761	0.015	409.6	0.33		
7.422	0.018	449.7	0.090		
8.148	0.021	493.6	0.10		
8.944	0.024	541.9	0.26		
9.819	0.027	594.9	0.22		
10.78	0.031	653.0	0.026		
11.83	0.034	716.9	0		
12.99	0.038	786.9	0		
14.26	0.042	863.9	0		
15.65	0.046	948.3	0		
17.18	0.051	1041	0		
18.86	0.055	1143	0		
20.71	0.060	1255	0		

File name:	C:\LS13320\LCSD_ 1 Apr 2025_12.34.55.$ls LCSD_ 1 Apr 2025_12.34.55.$ls		
File ID:	LCSD		
Sample ID:	LCSD		
Operator:	EL8Q		
Bar code:	6112983		
Run number:	3		
	Control Sample		
Comment 1:	ASTM D4464M, LPSA1		
Comment 2:	6112983		
Optical model:	Fraunhofer.rf780d		
Residual:	2.11%		
LS 13 320	Aqueous Liquid Module		
Start time:	12:33 1 Apr 2025	Run length:	60 seconds
Pump speed:	49		
Obscuration:	9%		
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) LCSD_ 1 Apr 2025_12.34.55.$ls

Calculations from 0.375 µm to 2000 µm

Volume:	100%		
Mean:	223.1 µm	S.D.:	55.19 µm
Median:	218.2 µm	Variance:	3046 µm^2
Mean/Median ratio:	1.022	Skewness:	0.405 Right skewed
Mode:	223.4 µm	Kurtosis:	-0.294 Platykurtic

d_{10}: 154.1 µm d_{50}: 218.2 µm d_{90}: 300.6 µm

Folk and Ward Statistics (Phi)

Mean:	2.21	Median:	2.20	Deviation:	0.37
Skewness:	0.04	Kurtosis:	0.95		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
140.6 µm	166.3 µm	181.4 µm	203.6 µm	218.2 µm	260.2 µm	280.8 µm	324.2 µm

Particle Diameter µm	LCSD_ 1 Apr 2025 _12.34.55 .$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	1.51
125	68.1
250	30.4
500	0
1000	0
2000	

LCSD_ 1 Apr 2025_12.34.55.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.375	0	20.71	0	1143	0
0.412	0	22.73	0	1255	0
0.452	0	24.95	0	1377	0
0.496	0	27.39	0	1512	0
0.545	0	30.07	0	1660	0
0.598	0	33.01	0	1822	0
0.657	0	36.24	0	2000	
0.721	0	39.78	0		
0.791	0	43.67	0		
0.869	0	47.94	0		
0.954	0	52.63	0		
1.047	0	57.77	0		
1.149	0	63.42	0		
1.261	0	69.62	0		
1.385	0	76.43	0		
1.520	0	83.90	0		
1.669	0	92.10	0.0095		
1.832	0	101.1	0.17		
2.011	0	111.0	0.79		
2.208	0	121.8	2.01		
2.423	0	133.7	3.86		
2.660	0	146.8	6.27		
2.920	0	161.2	8.95		
3.206	0	176.9	11.4		
3.519	0	194.2	13.2		
3.863	0	213.2	13.8		
4.241	0	234.1	13.1		
4.656	0	256.9	11.0		
5.111	0	282.1	8.07		
5.611	0	309.6	4.91		
6.159	0	339.9	2.05		
6.761	0	373.1	0.39		
7.422	0	409.6	0.017		
8.148	0	449.7	0		
8.944	0	493.6	0		
9.819	0	541.9	0		
10.78	0	594.9	0		
11.83	0	653.0	0		
12.99	0	716.9	0		
14.26	0	786.9	0		
15.65	0	863.9	0		
17.18	0	948.3	0		
18.86	0	1041	0		

Surrogate Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-223210-1	ML-2025-DU1	86	54	98
570-223210-1 MS	ML-2025-DU1	94	55	107
570-223210-1 MSD	ML-2025-DU1	90	52	106
LCS 570-549990/2-A	Lab Control Sample	90	61	97
LCSD 570-549990/3-A	Lab Control Sample Dup	89	60	100
MB 570-549990/1-A	Method Blank	94	65	100

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		FBP	TPHd14
Lab Sample ID	Client Sample ID	(20-139)	(37-165)
570-223210-1	ML-2025-DU1	70	102
570-223210-1 MS	ML-2025-DU1	70	102
570-223210-1 MSD	ML-2025-DU1	73	99
LCS 570-549991/2-A	Lab Control Sample	79	96
LCSD 570-549991/3-A	Lab Control Sample Dup	80	95
MB 570-549991/1-A	Method Blank	75	101

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
TPHd14 = p-Terphenyl-d14

Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		TPTT
Lab Sample ID	Client Sample ID	(39-150)
570-223210-1	ML-2025-DU1	79
570-223210-1 MS	ML-2025-DU1	68
570-223210-1 MSD	ML-2025-DU1	79
LCS 570-545557/2-A	Lab Control Sample	63
LCS 570-549966/2-A	Lab Control Sample	85
LCS 570-549966/2-A	Lab Control Sample	92
LCSD 570-545557/3-A	Lab Control Sample Dup	68
LCSD 570-549966/3-A	Lab Control Sample Dup	90
LCSD 570-549966/3-A	Lab Control Sample Dup	93
MB 570-549966/1-A	Method Blank	93
MB 570-549966/1-A	Method Blank	95

Surrogate Legend

TPTT = Tripentyltin

Surrogate Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB1	TCX1
Lab Sample ID	Client Sample ID	(20-180)	(20-131)
570-223210-1	ML-2025-DU1	27 p	76 p
570-223210-1 MSD	ML-2025-DU1	236 S1+	85 p
570-223210-1 MSD	ML-2025-DU1	97	69 p

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB2	TCX1
Lab Sample ID	Client Sample ID	(20-180)	(20-131)
570-223210-1 MS	ML-2025-DU1	132	63 p
570-223210-1 MS	ML-2025-DU1	56 p	61 p

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB1	TCX2
Lab Sample ID	Client Sample ID	(20-180)	(20-131)
LCS 570-549988/2-A	Lab Control Sample	169	128
LCSD 570-549988/3-A	Lab Control Sample Dup	152	110
LCSD 570-549988/5-A	Lab Control Sample Dup	147	117

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB2	TCX2
Lab Sample ID	Client Sample ID	(20-180)	(20-131)
LCS 570-549988/4-A	Lab Control Sample	138	123
MB 570-549988/1-A	Method Blank	141	113

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene

Isotope Dilution Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		OCDF	OCDD	TCDF	TCDD	PeCF	13CHxCF	HxCF	13CHxCD
Lab Sample ID	Client Sample ID	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)
570-223210-1	ML-2025-DU1	78	72	78	72	80	79	88	74
LCS 410-624340/2-A	Lab Control Sample	92	98	73	79	96	95	95	88
MB 410-624340/1-A	Method Blank	85	84	71	74	88	84	85	81

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDF	PeCDD	HxDF	HxDD	HpCDF2	HxCDF	HxCDD	HpCDF
Lab Sample ID	Client Sample ID	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)
570-223210-1	ML-2025-DU1	80	91	81	72	91	80	77	79
LCS 410-624340/2-A	Lab Control Sample	91	92	93	87	93	90	85	90
MB 410-624340/1-A	Method Blank	87	85	85	78	85	82	76	80

		Percent Isotope Dilution Recovery (Acceptance Limits)
		HpCDD
Lab Sample ID	Client Sample ID	(40-135)
570-223210-1	ML-2025-DU1	78
LCS 410-624340/2-A	Lab Control Sample	91
MB 410-624340/1-A	Method Blank	79

Surrogate Legend

OCDF = 13C-OCDF
OCDD = 13C-OCDD
TCDF = 13C-2,3,7,8-TCDF
TCDD = 13C-2,3,7,8-TCDD
PeCF = 13C-2,3,4,7,8-PeCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCD = 13C-1,2,3,7,8,9-HxCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-549990/1-A
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 549990

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		10	4.3	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Acenaphthylene	ND		10	4.2	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Anthracene	ND		10	3.8	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Benzo[a]anthracene	ND		10	4.5	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Benzo[a]pyrene	ND		10	6.0	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Benzo[b]fluoranthene	ND		10	6.9	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Benzo[e]pyrene	ND		10	5.3	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Benzo[g,h,i]perylene	ND		10	6.6	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Benzo[k]fluoranthene	ND		10	7.4	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Biphenyl	ND		10	6.4	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Chrysene	ND		10	3.3	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Dibenz(a,h)anthracene	ND		10	3.9	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Dibenzothiophene	ND		10	5.6	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
2,6-Dimethylnaphthalene	ND		10	2.6	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Fluoranthene	ND		10	5.6	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Fluorene	ND		10	4.4	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Indeno[1,2,3-cd]pyrene	ND		10	7.1	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
1-Methylnaphthalene	ND		10	3.9	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
2-Methylnaphthalene	ND		10	3.7	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
1-Methylphenanthrene	ND		10	4.4	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Naphthalene	ND		10	2.8	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Perylene	ND		10	5.4	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Phenanthrene	ND		10	4.3	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
Pyrene	ND		10	6.4	ug/Kg		03/27/25 13:00	03/29/25 12:24	1
1,6,7-Trimethylnaphthalene	ND		10	3.8	ug/Kg		03/27/25 13:00	03/29/25 12:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*94*		*22 - 130*	*03/27/25 13:00*	*03/29/25 12:24*	*1*
Nitrobenzene-d5	*65*		*20 - 145*	*03/27/25 13:00*	*03/29/25 12:24*	*1*
p-Terphenyl-d14	*100*		*33 - 147*	*03/27/25 13:00*	*03/29/25 12:24*	*1*

Lab Sample ID: LCS 570-549990/2-A
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	500	378.5		ug/Kg		76	53 - 125
Acenaphthylene	500	399.8		ug/Kg		80	50 - 123
Anthracene	500	425.8		ug/Kg		85	50 - 132
Benzo[a]anthracene	500	405.0		ug/Kg		81	50 - 133
Benzo[a]pyrene	500	443.0		ug/Kg		89	50 - 134
Benzo[b]fluoranthene	500	412.5		ug/Kg		82	50 - 142
Benzo[g,h,i]perylene	500	437.6		ug/Kg		88	50 - 130
Benzo[k]fluoranthene	500	461.2		ug/Kg		92	49 - 150
Chrysene	500	395.0		ug/Kg		79	51 - 129
Dibenz(a,h)anthracene	500	447.0		ug/Kg		89	50 - 133
Fluoranthene	500	416.4		ug/Kg		83	55 - 127
Fluorene	500	415.6		ug/Kg		83	55 - 127

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-549990/2-A
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Indeno[1,2,3-cd]pyrene	500	439.4		ug/Kg		88	50 - 148
1-Methylnaphthalene	500	380.0		ug/Kg		76	54 - 132
2-Methylnaphthalene	500	433.8		ug/Kg		87	50 - 127
Naphthalene	500	365.5		ug/Kg		73	51 - 129
Phenanthrene	500	395.4		ug/Kg		79	50 - 122
Pyrene	500	449.9		ug/Kg		90	50 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*90*		*22 - 130*
Nitrobenzene-d5	*61*		*20 - 145*
p-Terphenyl-d14	*97*		*33 - 147*

Lab Sample ID: LCSD 570-549990/3-A
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549990

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acenaphthene	500	386.2		ug/Kg		77	53 - 125	2	20
Acenaphthylene	500	410.5		ug/Kg		82	50 - 123	3	20
Anthracene	500	439.0		ug/Kg		88	50 - 132	3	20
Benzo[a]anthracene	500	419.5		ug/Kg		84	50 - 133	4	20
Benzo[a]pyrene	500	439.0		ug/Kg		88	50 - 134	1	20
Benzo[b]fluoranthene	500	416.2		ug/Kg		83	50 - 142	1	20
Benzo[g,h,i]perylene	500	438.2		ug/Kg		88	50 - 130	0	20
Benzo[k]fluoranthene	500	455.4		ug/Kg		91	49 - 150	1	20
Chrysene	500	401.3		ug/Kg		80	51 - 129	2	20
Dibenz(a,h)anthracene	500	447.6		ug/Kg		90	50 - 133	0	20
Fluoranthene	500	429.6		ug/Kg		86	55 - 127	3	20
Fluorene	500	425.0		ug/Kg		85	55 - 127	2	20
Indeno[1,2,3-cd]pyrene	500	442.2		ug/Kg		88	50 - 148	1	20
1-Methylnaphthalene	500	399.4		ug/Kg		80	54 - 132	5	20
2-Methylnaphthalene	500	450.3		ug/Kg		90	50 - 127	4	20
Naphthalene	500	377.9		ug/Kg		76	51 - 129	3	20
Phenanthrene	500	409.0		ug/Kg		82	50 - 122	3	20
Pyrene	500	473.8		ug/Kg		95	50 - 134	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*89*		*22 - 130*
Nitrobenzene-d5	*60*		*20 - 145*
p-Terphenyl-d14	*100*		*33 - 147*

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549990

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	15	J	1170	975.8		ug/Kg	☼	82	29 - 137
Acenaphthylene	ND		1170	1027		ug/Kg	☼	88	29 - 131

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549990

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Anthracene	57		1170	1167		ug/Kg	☼	95	26 - 134
Benzo[a]anthracene	340		1170	1370		ug/Kg	☼	88	24 - 150
Benzo[a]pyrene	450		1170	1433		ug/Kg	☼	84	29 - 149
Benzo[b]fluoranthene	590		1170	1590		ug/Kg	☼	85	21 - 153
Benzo[g,h,i]perylene	350		1170	1125		ug/Kg	☼	66	20 - 148
Benzo[k]fluoranthene	430		1170	1401		ug/Kg	☼	83	28 - 148
Chrysene	510		1170	1500		ug/Kg	☼	84	25 - 145
Dibenz(a,h)anthracene	83		1170	967.9		ug/Kg	☼	75	20 - 132
Fluoranthene	850		1170	1876		ug/Kg	☼	87	20 - 151
Fluorene	22	J	1170	1118		ug/Kg	☼	94	36 - 132
Indeno[1,2,3-cd]pyrene	350		1170	1153		ug/Kg	☼	69	20 - 154
1-Methylnaphthalene	ND		1170	948.5		ug/Kg	☼	81	34 - 136
2-Methylnaphthalene	14	J	1170	1080		ug/Kg	☼	91	29 - 137
Naphthalene	13	J	1170	871.2		ug/Kg	☼	73	20 - 150
Phenanthrene	230		1170	1312		ug/Kg	☼	92	20 - 144
Pyrene	1100		1170	2342		ug/Kg	☼	108	20 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*94*		*22 - 130*
Nitrobenzene-d5	*55*		*20 - 145*
p-Terphenyl-d14	*107*		*33 - 147*

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549990

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acenaphthene	15	J	1170	951.2		ug/Kg	☼	80	29 - 137	3	28
Acenaphthylene	ND		1170	1016		ug/Kg	☼	87	29 - 131	1	32
Anthracene	57		1170	1125		ug/Kg	☼	91	26 - 134	4	27
Benzo[a]anthracene	340		1170	1295		ug/Kg	☼	81	24 - 150	6	24
Benzo[a]pyrene	450		1170	1331		ug/Kg	☼	75	29 - 149	7	22
Benzo[b]fluoranthene	590		1170	1491		ug/Kg	☼	77	21 - 153	6	26
Benzo[g,h,i]perylene	350		1170	1070		ug/Kg	☼	61	20 - 148	5	27
Benzo[k]fluoranthene	430		1170	1332		ug/Kg	☼	77	28 - 148	5	26
Chrysene	510		1170	1404		ug/Kg	☼	76	25 - 145	7	28
Dibenz(a,h)anthracene	83		1170	934.8		ug/Kg	☼	73	20 - 132	3	26
Fluoranthene	850		1170	1708		ug/Kg	☼	73	20 - 151	9	26
Fluorene	22	J	1170	1084		ug/Kg	☼	90	36 - 132	3	27
Indeno[1,2,3-cd]pyrene	350		1170	1091		ug/Kg	☼	63	20 - 154	5	25
1-Methylnaphthalene	ND		1170	942.2		ug/Kg	☼	80	34 - 136	1	29
2-Methylnaphthalene	14	J	1170	1065		ug/Kg	☼	89	29 - 137	1	31
Naphthalene	13	J	1170	867.5		ug/Kg	☼	73	20 - 150	0	33
Phenanthrene	230		1170	1232		ug/Kg	☼	85	20 - 144	6	27
Pyrene	1100		1170	2181		ug/Kg	☼	94	20 - 150	7	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*90*		*22 - 130*

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 551204

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549990

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Nitrobenzene-d5	*52*		*20 - 145*
p-Terphenyl-d14	*106*		*33 - 147*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: MB 570-549991/1-A
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 549991

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-18	ND		0.20	0.094	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-28	ND		0.20	0.10	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-31	ND		0.20	0.089	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-33	ND		0.20	0.047	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-44	ND		0.20	0.12	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-49	ND		0.20	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-52	ND		0.20	0.079	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-56	ND		0.20	0.047	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-60	ND		0.20	0.13	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-66	ND		0.20	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-70	ND		0.20	0.093	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-74	ND		0.20	0.10	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-87	ND		0.20	0.12	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-95	ND		0.20	0.066	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-97	ND		0.20	0.14	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-99	ND		0.20	0.086	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-101	ND		0.20	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-105	ND		0.20	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-110	ND		0.20	0.089	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-118	ND		0.20	0.080	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-128	ND		0.20	0.14	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-132/153	ND		0.40	0.24	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-138/158	ND		0.40	0.24	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-141	ND		0.20	0.066	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-149	ND		0.20	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-151	ND		0.20	0.092	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-156	ND		0.20	0.095	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-170	ND		0.20	0.10	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-174	ND		0.20	0.057	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-177	ND		0.20	0.094	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-180	ND		0.20	0.083	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-183	ND		0.20	0.12	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-187	ND		0.20	0.089	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-194	ND		0.20	0.11	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-195	ND		0.20	0.062	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-201	ND		0.20	0.14	ug/Kg		03/27/25 13:00	03/30/25 19:37	1
PCB-203	ND		0.20	0.070	ug/Kg		03/27/25 13:00	03/30/25 19:37	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: MB 570-549991/1-A
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 549991

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	75		20 - 139	03/27/25 13:00	03/30/25 19:37	1
p-Terphenyl-d14	101		37 - 165	03/27/25 13:00	03/30/25 19:37	1

Lab Sample ID: LCS 570-549991/2-A
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549991

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-5/8	50.0	43.58		ug/Kg		87	50 - 150
PCB-18	50.0	37.06		ug/Kg		74	33 - 114
PCB-28	50.0	48.43		ug/Kg		97	40 - 132
PCB-44	50.0	45.62		ug/Kg		91	38 - 131
PCB-52	50.0	45.16		ug/Kg		90	38 - 131
PCB-66	50.0	47.48		ug/Kg		95	42 - 141
PCB-101	50.0	57.34		ug/Kg		115	40 - 132
PCB-105	50.0	49.05		ug/Kg		98	39 - 135
PCB-118	50.0	44.34		ug/Kg		89	38 - 131
PCB-128	50.0	53.42		ug/Kg		107	43 - 149
PCB-132/153	50.0	56.75		ug/Kg		114	37 - 164
PCB-138/158	50.0	44.91		ug/Kg		90	36 - 124
PCB-170	50.0	48.95		ug/Kg		98	35 - 134
PCB-180	50.0	63.32		ug/Kg		127	38 - 159
PCB-187	50.0	53.02		ug/Kg		106	41 - 147
PCB-195	50.0	52.44		ug/Kg		105	44 - 128
PCB-201	50.0	55.63		ug/Kg		111	40 - 156

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl (Surr)	79		20 - 139
p-Terphenyl-d14	96		37 - 165

Lab Sample ID: LCSD 570-549991/3-A
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549991

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-5/8	50.0	44.26		ug/Kg		89	50 - 150	2	25
PCB-18	50.0	37.16		ug/Kg		74	33 - 114	0	29
PCB-28	50.0	49.38		ug/Kg		99	40 - 132	2	29
PCB-44	50.0	47.61		ug/Kg		95	38 - 131	4	32
PCB-52	50.0	46.74		ug/Kg		93	38 - 131	3	32
PCB-66	50.0	47.71		ug/Kg		95	42 - 141	1	34
PCB-101	50.0	58.38		ug/Kg		117	40 - 132	2	34
PCB-105	50.0	49.54		ug/Kg		99	39 - 135	1	37
PCB-118	50.0	43.39		ug/Kg		87	38 - 131	2	35
PCB-128	50.0	53.12		ug/Kg		106	43 - 149	1	37
PCB-132/153	50.0	57.24		ug/Kg		114	37 - 164	1	38
PCB-138/158	50.0	44.61		ug/Kg		89	36 - 124	1	40
PCB-170	50.0	49.57		ug/Kg		99	35 - 134	1	31

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: LCSD 570-549991/3-A
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549991

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-180			50.0	63.58		ug/Kg		127	38 - 159	0	40
PCB-187			50.0	53.22		ug/Kg		106	41 - 147	0	40
PCB-195			50.0	53.18		ug/Kg		106	44 - 128	1	28
PCB-201			50.0	54.88		ug/Kg		110	40 - 156	1	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*80*		*20 - 139*
p-Terphenyl-d14	*95*		*37 - 165*

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549991

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-5/8	ND		117	91.42		ug/Kg	☼	78	50 - 150
PCB-18	ND		117	83.36		ug/Kg	☼	71	29 - 127
PCB-28	ND		117	134.0		ug/Kg	☼	114	29 - 170
PCB-44	ND		117	126.7		ug/Kg	☼	108	33 - 150
PCB-52	5.5		117	132.2		ug/Kg	☼	108	23 - 159
PCB-66	ND		117	125.6		ug/Kg	☼	107	29 - 166
PCB-101	18		117	146.1		ug/Kg	☼	109	30 - 159
PCB-105	ND		117	132.2		ug/Kg	☼	113	22 - 173
PCB-118	ND		117	127.8		ug/Kg	☼	109	24 - 162
PCB-128	ND		117	147.8		ug/Kg	☼	126	18 - 180
PCB-132/153	21		117	167.6		ug/Kg	☼	125	27 - 180
PCB-138/158	16		117	139.1		ug/Kg	☼	105	18 - 160
PCB-170	6.6		117	142.4		ug/Kg	☼	116	25 - 165
PCB-180	ND		117	195.2		ug/Kg	☼	166	20 - 180
PCB-187	6.6		117	158.8		ug/Kg	☼	130	14 - 180
PCB-195	ND		117	142.1		ug/Kg	☼	121	44 - 128
PCB-201	ND		117	169.1		ug/Kg	☼	144	17 - 180

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*70*		*20 - 139*
p-Terphenyl-d14	*102*		*37 - 165*

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549991

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-5/8	ND		117	95.77		ug/Kg	☼	82	50 - 150	5	25
PCB-18	ND		117	80.84		ug/Kg	☼	69	29 - 127	3	40
PCB-28	ND		117	134.5		ug/Kg	☼	115	29 - 170	0	32
PCB-44	ND		117	123.4		ug/Kg	☼	105	33 - 150	3	40
PCB-52	5.5		117	131.4		ug/Kg	☼	107	23 - 159	1	40
PCB-66	ND		117	124.8		ug/Kg	☼	107	29 - 166	1	40
PCB-101	18		117	146.6		ug/Kg	☼	110	30 - 159	0	40

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 551369

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549991

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-105	ND		117	135.4		ug/Kg	☼	116	22 - 173	2	40
PCB-118	ND		117	123.7		ug/Kg	☼	106	24 - 162	3	40
PCB-128	ND		117	138.7		ug/Kg	☼	118	18 - 180	6	40
PCB-132/153	21		117	167.2		ug/Kg	☼	125	27 - 180	0	40
PCB-138/158	16		117	133.8		ug/Kg	☼	101	18 - 160	4	40
PCB-170	6.6		117	147.3		ug/Kg	☼	120	25 - 165	3	22
PCB-180	ND		117	189.3		ug/Kg	☼	162	20 - 180	3	40
PCB-187	6.6		117	154.1		ug/Kg	☼	126	14 - 180	3	40
PCB-195	ND		117	145.8		ug/Kg	☼	124	44 - 128	3	28
PCB-201	ND		117	167.3		ug/Kg	☼	143	17 - 180	1	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*73*		*20 - 139*
p-Terphenyl-d14	*99*		*37 - 165*

Method: Organotins SIM - Organotins (GC/MS SIM)

Lab Sample ID: LCS 570-545557/2-A
Matrix: Solid
Analysis Batch: 551808

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 545557

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Tetrabutyltin			20.0	12.84		ug/Kg		64	10 - 153		
Tributyltin			17.8	16.33		ug/Kg		92	10 - 126		
Dibutyltin			15.3	14.83		ug/Kg		97	14 - 174		
Monobutyltin			12.5	4.335		ug/Kg		35	5 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*63*		*39 - 150*

Lab Sample ID: LCSD 570-545557/3-A
Matrix: Solid
Analysis Batch: 551808

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 545557

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrabutyltin			20.0	13.62		ug/Kg		68	10 - 153	6	30
Tributyltin			17.8	17.46		ug/Kg		98	10 - 126	7	30
Dibutyltin			15.3	15.57		ug/Kg		102	14 - 174	5	30
Monobutyltin			12.5	4.865		ug/Kg		39	5 - 120	12	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*68*		*39 - 150*

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: MB 570-549966/1-A
Matrix: Solid
Analysis Batch: 551011

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 549966

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		3.0	1.6	ug/Kg		03/26/25 16:02	03/28/25 17:01	1
Tributyltin	ND		3.0	1.4	ug/Kg		03/26/25 16:02	03/28/25 17:01	1
Dibutyltin	ND		3.0	1.3	ug/Kg		03/26/25 16:02	03/28/25 17:01	1
Monobutyltin	ND		3.0	0.54	ug/Kg		03/26/25 16:02	03/28/25 17:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*95*		*39 - 150*	*03/26/25 16:02*	*03/28/25 17:01*	*1*

Lab Sample ID: MB 570-549966/1-A
Matrix: Solid
Analysis Batch: 550825

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 549966

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		3.0	1.6	ug/Kg		03/26/25 16:02	03/28/25 19:17	1
Tributyltin	ND		3.0	1.4	ug/Kg		03/26/25 16:02	03/28/25 19:17	1
Dibutyltin	ND		3.0	1.3	ug/Kg		03/26/25 16:02	03/28/25 19:17	1
Monobutyltin	ND		3.0	0.54	ug/Kg		03/26/25 16:02	03/28/25 19:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*93*		*39 - 150*	*03/26/25 16:02*	*03/28/25 19:17*	*1*

Lab Sample ID: LCS 570-549966/2-A
Matrix: Solid
Analysis Batch: 550825

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549966

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Tetrabutyltin			20.0	18.08		ug/Kg		90	10 - 153		
Tributyltin			17.8	18.65		ug/Kg		105	10 - 126		
Dibutyltin			15.3	17.11		ug/Kg		112	14 - 174		
Monobutyltin			12.5	0.6969	J	ug/Kg		6	5 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*85*		*39 - 150*

Lab Sample ID: LCS 570-549966/2-A
Matrix: Solid
Analysis Batch: 551011

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549966

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Tetrabutyltin			20.0	21.16		ug/Kg		106	10 - 153		
Tributyltin			17.8	20.97		ug/Kg		118	10 - 126		
Dibutyltin			15.3	19.16		ug/Kg		125	14 - 174		
Monobutyltin			12.5	1.150	J	ug/Kg		9	5 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*92*		*39 - 150*

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 570-549966/3-A
Matrix: Solid
Analysis Batch: 550825

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549966

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrabutyltin			20.0	18.03		ug/Kg		90	10 - 153	0	30
Tributyltin			17.8	19.15		ug/Kg		107	10 - 126	3	30
Dibutyltin			15.3	18.21		ug/Kg		119	14 - 174	6	30
Monobutyltin			12.5	0.8055	J	ug/Kg		6	5 - 120	14	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*90*		*39 - 150*

Lab Sample ID: LCSD 570-549966/3-A
Matrix: Solid
Analysis Batch: 551011

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549966

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrabutyltin			20.0	20.35		ug/Kg		102	10 - 153	4	30
Tributyltin			17.8	21.46		ug/Kg		120	10 - 126	2	30
Dibutyltin			15.3	19.31		ug/Kg		126	14 - 174	1	30
Monobutyltin			12.5	0.8860	J	ug/Kg		7	5 - 120	26	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*93*		*39 - 150*

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 550825

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549966

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Tetrabutyltin	ND		47.0	36.77		ug/Kg	☼	78	10 - 140
Tributyltin	3.6	J	41.9	34.31		ug/Kg	☼	73	10 - 135
Dibutyltin	4.6	J	36.0	34.15		ug/Kg	☼	82	10 - 180
Monobutyltin	ND	F1	29.3	ND	F1	ug/Kg	☼	0	5 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tripentyltin	*68*		*39 - 150*

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 550825

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549966

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrabutyltin	ND		46.3	43.83		ug/Kg	☼	95	10 - 140	18	40
Tributyltin	3.6	J	41.3	39.67		ug/Kg	☼	87	10 - 135	14	40
Dibutyltin	4.6	J	35.5	39.47		ug/Kg	☼	98	10 - 180	14	40
Monobutyltin	ND	F1	28.9	ND	F1	ug/Kg	☼	0	5 - 125	NC	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tripentyltin	*79*		*39 - 150*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 570-549988/1-A
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 549988

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.0	0.064	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
2,4'-DDE	ND		2.0	1.0	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
2,4'-DDT	ND		1.0	0.092	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
4,4'-DDD	ND		1.0	0.50	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
4,4'-DDE	ND		1.0	0.27	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
4,4'-DDT	ND		1.0	0.31	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Aldrin	ND		1.0	0.37	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
alpha-BHC	ND		1.0	0.080	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
alpha-Chlordane	ND		1.0	0.10	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
beta-BHC	ND		1.0	0.19	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Chlordane	ND		5.0	0.71	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
cis-Nonachlor	ND		1.0	0.047	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
delta-BHC	ND		1.0	0.15	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Dieldrin	ND		0.20	0.066	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Endosulfan I	ND		1.0	0.12	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Endosulfan II	ND		1.0	0.23	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Endosulfan sulfate	ND		1.0	0.11	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Endrin	ND		1.0	0.19	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Endrin aldehyde	ND		1.0	0.98	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Endrin ketone	ND		1.0	0.19	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
gamma-BHC	ND		1.0	0.11	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
gamma-Chlordane	ND		1.0	0.35	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Heptachlor	ND		1.0	0.060	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Heptachlor epoxide	ND		1.0	0.085	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Oxychlordane	ND		1.0	0.15	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
Toxaphene	ND		5.0	1.0	ug/Kg		03/27/25 13:00	04/14/25 19:26	1
trans-Nonachlor	ND		1.0	0.11	ug/Kg		03/27/25 13:00	04/14/25 19:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*141*		*20 - 180*	*03/27/25 13:00*	*04/14/25 19:26*	*1*
Tetrachloro-m-xylene	*113*		*20 - 131*	*03/27/25 13:00*	*04/14/25 19:26*	*1*

Lab Sample ID: LCS 570-549988/2-A
Matrix: Solid
Analysis Batch: 557389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	5.00	5.608		ug/Kg		112	54 - 150
4,4'-DDE	5.00	5.472		ug/Kg		109	49 - 146
4,4'-DDT	5.00	5.885		ug/Kg		118	52 - 147
Aldrin	5.00	4.893		ug/Kg		98	28 - 116
alpha-BHC	5.00	4.795		ug/Kg		96	44 - 123
alpha-Chlordane	5.00	5.147		ug/Kg		103	48 - 125
beta-BHC	5.00	4.863		ug/Kg		97	48 - 127
delta-BHC	5.00	4.062		ug/Kg		81	10 - 149
Dieldrin	5.00	5.597		ug/Kg		112	48 - 132
Endosulfan I	5.00	5.233		ug/Kg		105	44 - 125
Endosulfan II	5.00	5.647		ug/Kg		113	47 - 136

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 570-549988/2-A
Matrix: Solid
Analysis Batch: 557389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Endosulfan sulfate	5.00	5.396		ug/Kg		108	46 - 133
Endrin	5.00	5.059		ug/Kg		101	43 - 142
Endrin aldehyde	5.00	5.455		ug/Kg		109	29 - 141
Endrin ketone	5.00	6.173		ug/Kg		123	52 - 135
gamma-BHC	5.00	5.073		ug/Kg		101	44 - 126
gamma-Chlordane	5.00	5.216		ug/Kg		104	29 - 153
Heptachlor	5.00	5.028		ug/Kg		101	50 - 123
Heptachlor epoxide	5.00	4.998		ug/Kg		100	49 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*169*		*20 - 180*
Tetrachloro-m-xylene	*128*		*20 - 131*

Lab Sample ID: LCS 570-549988/4-A
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDD	5.00	5.404		ug/Kg		108	28 - 150
2,4'-DDE	5.00	5.504		ug/Kg		110	25 - 156
2,4'-DDT	5.00	5.435		ug/Kg		109	24 - 165
Oxychlordane	5.00	5.391		ug/Kg		108	20 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*138*		*20 - 180*
Tetrachloro-m-xylene	*123*		*20 - 131*

Lab Sample ID: LCSD 570-549988/3-A
Matrix: Solid
Analysis Batch: 557389

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD	5.00	4.958		ug/Kg		99	54 - 150	12	29
4,4'-DDE	5.00	4.670		ug/Kg		93	49 - 146	16	28
4,4'-DDT	5.00	5.145		ug/Kg		103	52 - 147	13	32
Aldrin	5.00	4.387		ug/Kg		88	28 - 116	11	30
alpha-BHC	5.00	4.541		ug/Kg		91	44 - 123	5	27
alpha-Chlordane	5.00	4.530		ug/Kg		91	48 - 125	13	27
beta-BHC	5.00	4.599		ug/Kg		92	48 - 127	6	28
delta-BHC	5.00	3.703		ug/Kg		74	10 - 149	9	27
Dieldrin	5.00	4.849		ug/Kg		97	48 - 132	14	28
Endosulfan I	5.00	4.579		ug/Kg		92	44 - 125	13	29
Endosulfan II	5.00	4.874		ug/Kg		97	47 - 136	15	29
Endosulfan sulfate	5.00	4.818		ug/Kg		96	46 - 133	11	28
Endrin	5.00	4.631		ug/Kg		93	43 - 142	9	27
Endrin aldehyde	5.00	4.835		ug/Kg		97	29 - 141	12	40
Endrin ketone	5.00	5.589		ug/Kg		112	52 - 135	10	26
gamma-BHC	5.00	4.761		ug/Kg		95	44 - 126	6	28

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-549988/3-A
Matrix: Solid
Analysis Batch: 557389

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549988

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
gamma-Chlordane			5.00	4.555		ug/Kg		91	29 - 153	14	40
Heptachlor			5.00	4.660		ug/Kg		93	50 - 123	8	28
Heptachlor epoxide			5.00	4.605		ug/Kg		92	49 - 125	8	28

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*152*		*20 - 180*
Tetrachloro-m-xylene	*110*		*20 - 131*

Lab Sample ID: LCSD 570-549988/5-A
Matrix: Solid
Analysis Batch: 557389

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 549988

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4'-DDD			5.00	5.309		ug/Kg		106	28 - 150	2	30
2,4'-DDE			5.00	5.289		ug/Kg		106	25 - 156	4	42
2,4'-DDT			5.00	5.646		ug/Kg		113	24 - 165	4	31
Oxychlordane			5.00	5.114		ug/Kg		102	20 - 144	5	36

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*147*		*20 - 180*
Tetrachloro-m-xylene	*117*		*20 - 131*

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	ND	F1 F2	11.7	22.13	E p F1	ug/Kg	☼	189	17 - 180
4,4'-DDE	ND	F1	11.7	36.54	E p F1	ug/Kg	☼	312	20 - 180
4,4'-DDT	ND	F2	11.7	3.480	p	ug/Kg	☼	30	10 - 180
Aldrin	ND		11.7	8.467	p	ug/Kg	☼	72	27 - 146
alpha-BHC	ND		11.7	8.049	p	ug/Kg	☼	69	33 - 160
alpha-Chlordane	ND	F1	11.7	24.66	E p F1	ug/Kg	☼	210	24 - 164
beta-BHC	ND		11.7	5.779	p	ug/Kg	☼	49	14 - 178
delta-BHC	ND	F2	11.7	11.85		ug/Kg	☼	101	10 - 159
Dieldrin	ND		11.7	12.24	p	ug/Kg	☼	104	25 - 180
Endosulfan I	ND		11.7	10.66	p	ug/Kg	☼	91	31 - 146
Endosulfan II	ND		11.7	5.779	p	ug/Kg	☼	49	14 - 176
Endosulfan sulfate	ND	F2	11.7	7.660	p	ug/Kg	☼	65	22 - 167
Endrin	ND		11.7	5.425	p	ug/Kg	☼	46	23 - 174
Endrin aldehyde	ND		11.7	2.697	p	ug/Kg	☼	23	10 - 180
Endrin ketone	11	F1	11.7	7.695	p F1	ug/Kg	☼	-28	20 - 166
gamma-BHC	ND		11.7	6.252	p	ug/Kg	☼	53	27 - 160
gamma-Chlordane	ND	F2	11.7	16.71	p	ug/Kg	☼	143	26 - 180
Heptachlor	ND		11.7	6.308	p	ug/Kg	☼	54	23 - 144
Heptachlor epoxide	ND	F1 F2	11.7	10.55	p	ug/Kg	☼	90	25 - 173

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549988

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	*132*		*20 - 180*
Tetrachloro-m-xylene	*63*	*p*	*20 - 131*

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDD	ND	F1	11.7	22.90	E F1	ug/Kg	☼	196	13 - 178
2,4'-DDE	ND	F1	11.7	66.07	E p F1	ug/Kg	☼	564	10 - 180
2,4'-DDT	ND	F1 F2	11.7	0.4926	J p F1	ug/Kg	☼	4	10 - 180
Oxychlordane	ND		11.7	9.426	p	ug/Kg	☼	81	10 - 167

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	*56*	*p*	*20 - 180*
Tetrachloro-m-xylene	*61*	*p*	*20 - 131*

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD	ND	F1 F2	11.7	8.532	p F2	ug/Kg	☼	73	17 - 180	89	40
4,4'-DDE	ND	F1	11.7	74.77	E F1 F2	ug/Kg	☼	638	20 - 180	69	40
4,4'-DDT	ND	F1 F2	11.7	15.96	F2	ug/Kg	☼	136	10 - 180	47	40
Aldrin	ND		11.7	11.78	p	ug/Kg	☼	101	27 - 146	33	40
alpha-BHC	ND		11.7	15.13	F2	ug/Kg	☼	129	33 - 160	61	36
alpha-Chlordane	ND	F1	11.7	32.07	E p F1	ug/Kg	☼	274	24 - 164	26	40
beta-BHC	ND		11.7	5.413	p	ug/Kg	☼	46	14 - 178	7	40
delta-BHC	ND	F2	11.7	18.07	F2	ug/Kg	☼	154	10 - 159	42	40
Dieldrin	ND		11.7	20.01	E F2	ug/Kg	☼	171	25 - 180	48	40
Endosulfan I	ND		11.7	22.46	E F1 F2	ug/Kg	☼	192	31 - 146	71	34
Endosulfan II	ND		11.7	8.661	p	ug/Kg	☼	74	14 - 176	40	40
Endosulfan sulfate	ND	F2	11.7	17.89	F2	ug/Kg	☼	153	22 - 167	80	40
Endrin	ND		11.7	6.442	p	ug/Kg	☼	55	23 - 174	17	40
Endrin aldehyde	ND		11.7	3.181	p	ug/Kg	☼	27	10 - 180	16	40
Endrin ketone	11	F1	11.7	7.298	p F1	ug/Kg	☼	-32	20 - 166	5	40
gamma-BHC	ND		11.7	4.902	p	ug/Kg	☼	42	27 - 160	24	40
gamma-Chlordane	ND	F2	11.7	3.765	p F2	ug/Kg	☼	32	26 - 180	126	40
Heptachlor	ND		11.7	5.119	p	ug/Kg	☼	44	23 - 144	21	40
Heptachlor epoxide	ND	F1 F2	11.7	20.91	E p F1 F2	ug/Kg	☼	178	25 - 173	66	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	*236*	*S1+*	*20 - 180*
Tetrachloro-m-xylene	*85*	*p*	*20 - 131*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 557663

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 549988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4'-DDD	ND	F1	11.7	26.14	E F1	ug/Kg	☼	223	13 - 178	13	40
2,4'-DDE	ND	F1	11.7	46.94	E p F1	ug/Kg	☼	401	10 - 180	34	40
2,4'-DDT	ND	F1 F2	11.7	7.059	p F2	ug/Kg	☼	60	10 - 180	174	40
Oxychlordane	ND		11.7	9.758	p	ug/Kg	☼	83	10 - 167	3	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*97*		*20 - 180*
Tetrachloro-m-xylene	*69*	*p*	*20 - 131*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 410-624340/1-A
Matrix: Solid
Analysis Batch: 624754

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 624340

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		5.0	0.021	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,4,6,7,8-HpCDF	ND		5.0	0.0093	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,4,7,8-HxCDF	0.03825	J I	5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.011	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,7,8-PeCDD	ND		5.0	0.014	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,7,8-PeCDF	ND		5.0	0.019	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.013	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.011	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
2,3,4,7,8-PeCDF	ND		5.0	0.017	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
2,3,7,8-TCDD	ND		1.0	0.020	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
2,3,7,8-TCDF	ND		1.0	0.018	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
OCDD	0.8090	J	15	0.017	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
OCDF	ND		10	0.016	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total HxCDD	ND		5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total HxCDF	0.03825	J I	5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total HpCDD	ND		5.0	0.021	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total HpCDF	ND		5.0	0.012	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total PeCDD	ND		5.0	0.014	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total PeCDF	ND		5.0	0.053	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total TCDD	ND		1.0	0.095	ng/Kg		03/31/25 20:05	04/02/25 01:03	1
Total TCDF	0.03707	J	1.0	0.018	ng/Kg		03/31/25 20:05	04/02/25 01:03	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-OCDF	*85*		*40 - 135*	*03/31/25 20:05*	*04/02/25 01:03*	*1*
13C-OCDD	*84*		*40 - 135*	*03/31/25 20:05*	*04/02/25 01:03*	*1*
13C-2,3,7,8-TCDF	*71*		*40 - 135*	*03/31/25 20:05*	*04/02/25 01:03*	*1*
13C-2,3,7,8-TCDD	*74*		*40 - 135*	*03/31/25 20:05*	*04/02/25 01:03*	*1*
13C-2,3,4,7,8-PeCDF	*88*		*40 - 135*	*03/31/25 20:05*	*04/02/25 01:03*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 410-624340/1-A
Matrix: Solid
Analysis Batch: 624754

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 624340

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,6,7,8-HxCDF	84		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,7,8,9-HxCDF	85		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,7,8,9-HxCDD	81		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,7,8-PeCDF	87		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,7,8-PeCDD	85		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,6,7,8-HxCDF	85		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,6,7,8-HxCDD	78		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,4,7,8,9-HpCDF	85		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,4,7,8-HxCDF	82		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,4,7,8-HxCDD	76		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,4,6,7,8-HpCDF	80		40 - 135	03/31/25 20:05	04/02/25 01:03	1
13C-1,2,3,4,6,7,8-HpCDD	79		40 - 135	03/31/25 20:05	04/02/25 01:03	1

Lab Sample ID: LCS 410-624340/2-A
Matrix: Solid
Analysis Batch: 624754

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 624340

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2,3,4,6,7,8-HpCDD			100	106.6		ng/Kg		107	74 - 120		
1,2,3,4,6,7,8-HpCDF			100	115.6		ng/Kg		116	72 - 120		
1,2,3,4,7,8-HxCDD			100	111.2		ng/Kg		111	77 - 120		
1,2,3,4,7,8-HxCDF			100	112.5		ng/Kg		112	76 - 120		
1,2,3,4,7,8,9-HpCDF			100	116.0		ng/Kg		116	73 - 120		
1,2,3,6,7,8-HxCDD			100	107.7		ng/Kg		108	77 - 120		
1,2,3,6,7,8-HxCDF			100	114.7		ng/Kg		115	76 - 120		
1,2,3,7,8-PeCDD			100	109.0		ng/Kg		109	80 - 128		
1,2,3,7,8-PeCDF			100	103.5		ng/Kg		103	75 - 127		
1,2,3,7,8,9-HxCDD			100	113.4		ng/Kg		113	77 - 121		
1,2,3,7,8,9-HxCDF			100	110.7		ng/Kg		111	75 - 120		
2,3,4,6,7,8-HxCDF			100	113.0		ng/Kg		113	75 - 120		
2,3,4,7,8-PeCDF			100	98.57		ng/Kg		99	74 - 120		
2,3,7,8-TCDD			20.0	19.51		ng/Kg		98	66 - 120		
2,3,7,8-TCDF			20.0	23.33		ng/Kg		117	69 - 127		
OCDD			200	209.3		ng/Kg		105	75 - 120		
OCDF			200	220.4		ng/Kg		110	75 - 123		

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-OCDF	92		40 - 135
13C-OCDD	98		40 - 135
13C-2,3,7,8-TCDF	73		40 - 135
13C-2,3,7,8-TCDD	79		40 - 135
13C-2,3,4,7,8-PeCDF	96		40 - 135
13C-2,3,4,6,7,8-HxCDF	95		40 - 135
13C-1,2,3,7,8,9-HxCDF	95		40 - 135
13C-1,2,3,7,8,9-HxCDD	88		40 - 135
13C-1,2,3,7,8-PeCDF	91		40 - 135
13C-1,2,3,7,8-PeCDD	92		40 - 135
13C-1,2,3,6,7,8-HxCDF	93		40 - 135
13C-1,2,3,6,7,8-HxCDD	87		40 - 135

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 410-624340/2-A
Matrix: Solid
Analysis Batch: 624754

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 624340

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,7,8,9-HpCDF	*93*		*40 - 135*
13C-1,2,3,4,7,8-HxCDF	*90*		*40 - 135*
13C-1,2,3,4,7,8-HxCDD	*85*		*40 - 135*
13C-1,2,3,4,6,7,8-HpCDF	*90*		*40 - 135*
13C-1,2,3,4,6,7,8-HpCDD	*91*		*40 - 135*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-556644/1-A
Matrix: Solid
Analysis Batch: 556922

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 556644

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.493	0.0621	mg/Kg		04/11/25 07:00	04/11/25 18:14	20
Chromium	ND		0.985	0.228	mg/Kg		04/11/25 07:00	04/11/25 18:14	20
Copper	ND		0.985	0.302	mg/Kg		04/11/25 07:00	04/11/25 18:14	20
Nickel	ND		0.985	0.263	mg/Kg		04/11/25 07:00	04/11/25 18:14	20
Lead	ND		0.493	0.0926	mg/Kg		04/11/25 07:00	04/11/25 18:14	20
Zinc	ND		9.85	1.08	mg/Kg		04/11/25 07:00	04/11/25 18:14	20

Lab Sample ID: LCS 570-556644/2-A
Matrix: Solid
Analysis Batch: 556922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 556644

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			49.0	47.86		mg/Kg		98	80 - 120		
Chromium			49.0	48.78		mg/Kg		100	80 - 120		
Copper			49.0	49.63		mg/Kg		101	80 - 120		
Nickel			49.0	49.29		mg/Kg		101	80 - 120		
Lead			49.0	48.15		mg/Kg		98	80 - 120		
Zinc			49.0	48.66		mg/Kg		99	80 - 120		

Lab Sample ID: LCSD 570-556644/3-A
Matrix: Solid
Analysis Batch: 556922

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 556644

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic			49.3	47.51		mg/Kg		96	80 - 120	1	20
Chromium			49.3	49.05		mg/Kg		100	80 - 120	1	20
Copper			49.3	49.91		mg/Kg		101	80 - 120	1	20
Nickel			49.3	49.33		mg/Kg		100	80 - 120	0	20
Lead			49.3	48.53		mg/Kg		99	80 - 120	1	20
Zinc			49.3	48.65		mg/Kg		99	80 - 120	0	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-550627/1-A
Matrix: Solid
Analysis Batch: 550775

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 550627

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0887	0.0245	mg/Kg		03/28/25 03:04	03/28/25 08:54	1

Lab Sample ID: LCS 570-550627/2-A
Matrix: Solid
Analysis Batch: 550775

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 550627

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.400	0.3498		mg/Kg		87	80 - 120		

Lab Sample ID: LCSD 570-550627/3-A
Matrix: Solid
Analysis Batch: 550775

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 550627

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.385	0.3405		mg/Kg		89	80 - 120	3	10

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Lab Sample ID: 570-223210-1 DU
Matrix: Solid
Analysis Batch: 551639

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Clay (less than 0.00391 mm)	44.62			50.18		%				12	20
Coarse Sand (0.5mm to 1mm)	ND			ND		%				NC	20
Fine Sand (0.125 to 0.25mm)	ND			ND		%				NC	20
Gravel (greater than 2 mm)	ND			ND		%				NC	20
Medium Sand (0.25 to 0.5 mm)	ND			ND		%				NC	20
Silt (0.00391 to 0.0625mm)	55.39			49.82		%				11	20
Total Silt and Clay (0 to 0.0626mm)	100.00			100.00		%				0	20
Very Coarse Sand (1 to 2mm)	ND			ND		%				NC	20
Very Fine Sand (0.0625 to 0.125 mm)	ND			ND		%				NC	20

GC/MS Semi VOA

Prep Batch: 545557

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-545557/2-A	Lab Control Sample	Total/NA	Solid	Organotin Prep	
LCSD 570-545557/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotin Prep	

Prep Batch: 549966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	Organotin Prep	
MB 570-549966/1-A	Method Blank	Total/NA	Solid	Organotin Prep	
LCS 570-549966/2-A	Lab Control Sample	Total/NA	Solid	Organotin Prep	
LCSD 570-549966/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotin Prep	
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	Organotin Prep	
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	Organotin Prep	

Prep Batch: 549990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	3541	
MB 570-549990/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-549990/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-549990/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	3541	
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	3541	

Prep Batch: 549991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	3541	
MB 570-549991/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-549991/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-549991/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	3541	
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	3541	

Analysis Batch: 550825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	Organotins SIM	549966
MB 570-549966/1-A	Method Blank	Total/NA	Solid	Organotins SIM	549966
LCS 570-549966/2-A	Lab Control Sample	Total/NA	Solid	Organotins SIM	549966
LCSD 570-549966/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotins SIM	549966
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	Organotins SIM	549966
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	Organotins SIM	549966

Analysis Batch: 551011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-549966/1-A	Method Blank	Total/NA	Solid	Organotins SIM	549966
LCS 570-549966/2-A	Lab Control Sample	Total/NA	Solid	Organotins SIM	549966
LCSD 570-549966/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotins SIM	549966

Analysis Batch: 551204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	8270C SIM	549990
MB 570-549990/1-A	Method Blank	Total/NA	Solid	8270C SIM	549990
LCS 570-549990/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	549990
LCSD 570-549990/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM	549990

GC/MS Semi VOA (Continued)

Analysis Batch: 551204 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	8270C SIM	549990
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	8270C SIM	549990

Analysis Batch: 551369

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	8270C SIM CON	549991
MB 570-549991/1-A	Method Blank	Total/NA	Solid	8270C SIM CON	549991
LCS 570-549991/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM CON	549991
LCSD 570-549991/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM CON	549991
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	8270C SIM CON	549991
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	8270C SIM CON	549991

Analysis Batch: 551808

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-545557/2-A	Lab Control Sample	Total/NA	Solid	Organotins SIM	545557
LCSD 570-545557/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotins SIM	545557

GC Semi VOA

Prep Batch: 549988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	3541	
MB 570-549988/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-549988/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCS 570-549988/4-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-549988/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
LCSD 570-549988/5-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	3541	
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	3541	
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	3541	
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	3541	

Analysis Batch: 557389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-549988/2-A	Lab Control Sample	Total/NA	Solid	8081A	549988
LCSD 570-549988/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	549988
LCSD 570-549988/5-A	Lab Control Sample Dup	Total/NA	Solid	8081A	549988

Analysis Batch: 557663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	8081A	549988
MB 570-549988/1-A	Method Blank	Total/NA	Solid	8081A	549988
LCS 570-549988/4-A	Lab Control Sample	Total/NA	Solid	8081A	549988
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	8081A	549988
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	8081A	549988
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	8081A	549988
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	8081A	549988

QC Association Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Specialty Organics

Prep Batch: 624340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	8290A	
MB 410-624340/1-A	Method Blank	Total/NA	Solid	8290A	
LCS 410-624340/2-A	Lab Control Sample	Total/NA	Solid	8290A	

Analysis Batch: 624754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 410-624340/1-A	Method Blank	Total/NA	Solid	8290A	624340
LCS 410-624340/2-A	Lab Control Sample	Total/NA	Solid	8290A	624340

Analysis Batch: 625489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	8290A	624340

Metals

Prep Batch: 550627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	7471A	
MB 570-550627/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-550627/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-550627/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	

Analysis Batch: 550775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	7471A	550627
MB 570-550627/1-A	Method Blank	Total/NA	Solid	7471A	550627
LCS 570-550627/2-A	Lab Control Sample	Total/NA	Solid	7471A	550627
LCSD 570-550627/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	550627

Prep Batch: 556644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	3050B	
MB 570-556644/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 570-556644/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 570-556644/3-A	Lab Control Sample Dup	Total/NA	Solid	3050B	

Analysis Batch: 556922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	6020	556644
MB 570-556644/1-A	Method Blank	Total/NA	Solid	6020	556644
LCS 570-556644/2-A	Lab Control Sample	Total/NA	Solid	6020	556644
LCSD 570-556644/3-A	Lab Control Sample Dup	Total/NA	Solid	6020	556644

General Chemistry

Analysis Batch: 550032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	Moisture	

QC Association Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Geotechnical

Analysis Batch: 551639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	D4464	
LCS 570-551639/1	Lab Control Sample	Total/NA	Solid	D4464	
LCSD 570-551639/3	Lab Control Sample Dup	Total/NA	Solid	D4464	
570-223210-1 DU	ML-2025-DU1	Total/NA	Solid	D4464	

Lab Chronicle

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Client Sample ID: ML-2025-DU1

Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.08 g	2 mL	549990	03/27/25 13:00	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM		1	1 mL	1 mL	551204	03/29/25 14:09	PQS1	EET CAL 4
	Instrument ID: GCMSAAA									
Total/NA	Prep	3541			20.08 g	2 mL	549991	03/27/25 13:00	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	551369	03/30/25 21:44	J7WE	EET CAL 4
	Instrument ID: GCMSHHH									
Total/NA	Prep	Organotin Prep			20.0 g	2 mL	549966	03/26/25 16:02	UWEZ	EET CAL 4
Total/NA	Analysis	Organotins SIM		1	1 mL	1 mL	550825	03/28/25 18:04	ULLI	EET CAL 4
	Instrument ID: GCMSY									
Total/NA	Prep	3541			20.07 g	2 mL	549988	03/27/25 13:00	UM1W	EET CAL 4
Total/NA	Analysis	8081A		1	1 mL	1 mL	557663	04/14/25 19:41	N5Y3	EET CAL 4
	Instrument ID: GC54A									
Total/NA	Prep	8290A			10.19 g	20 uL	624340	03/31/25 20:05	SA8Q	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	625489	04/03/25 15:25	UC8F	ELLE
	Instrument ID: DF17280B									
Total/NA	Prep	3050B			2.02 g	50 mL	556644	04/11/25 07:00	GYR8	EET CAL 4
Total/NA	Analysis	6020		20			556922	04/11/25 18:34	C0YH	EET CAL 4
	Instrument ID: ICPMS11									
Total/NA	Prep	7471A			0.50 g	50 mL	550627	03/28/25 03:04	VCN7	EET CAL 4
Total/NA	Analysis	7471A		1			550775	03/28/25 12:19	RL6Q	EET CAL 4
	Instrument ID: HG8									
Total/NA	Analysis	Moisture		1			550032	03/26/25 18:27	N9ZN	EET CAL 4
	Instrument ID: BAL115									
Total/NA	Analysis	D4464		1			551639	04/01/25 12:22	EL8Q	EET CAL 4
	Instrument ID: NOEQUIP									

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	9257304	07-31-26

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020	3050B	Solid	Arsenic
6020	3050B	Solid	Chromium
6020	3050B	Solid	Copper
6020	3050B	Solid	Lead
6020	3050B	Solid	Nickel
6020	3050B	Solid	Zinc
7471A	7471A	Solid	Mercury
8081A	3541	Solid	2,4'-DDD
8081A	3541	Solid	2,4'-DDE
8081A	3541	Solid	2,4'-DDT
8081A	3541	Solid	4,4'-DDD
8081A	3541	Solid	4,4'-DDE
8081A	3541	Solid	4,4'-DDT
8081A	3541	Solid	Aldrin
8081A	3541	Solid	alpha-BHC
8081A	3541	Solid	alpha-Chlordane
8081A	3541	Solid	beta-BHC
8081A	3541	Solid	Chlordane
8081A	3541	Solid	cis-Nonachlor
8081A	3541	Solid	delta-BHC
8081A	3541	Solid	Dieldrin
8081A	3541	Solid	Endosulfan I
8081A	3541	Solid	Endosulfan II
8081A	3541	Solid	Endosulfan sulfate
8081A	3541	Solid	Endrin
8081A	3541	Solid	Endrin aldehyde
8081A	3541	Solid	Endrin ketone
8081A	3541	Solid	gamma-BHC
8081A	3541	Solid	gamma-Chlordane
8081A	3541	Solid	Heptachlor
8081A	3541	Solid	Heptachlor epoxide
8081A	3541	Solid	Oxychlordane
8081A	3541	Solid	Toxaphene
8081A	3541	Solid	trans-Nonachlor
8270C SIM	3541	Solid	1,6,7-Trimethylnaphthalene
8270C SIM	3541	Solid	1-Methylnaphthalene
8270C SIM	3541	Solid	1-Methylphenanthrene
8270C SIM	3541	Solid	2,6-Dimethylnaphthalene
8270C SIM	3541	Solid	2-Methylnaphthalene
8270C SIM	3541	Solid	Acenaphthene
8270C SIM	3541	Solid	Acenaphthylene
8270C SIM	3541	Solid	Anthracene
8270C SIM	3541	Solid	Benzo[a]anthracene
8270C SIM	3541	Solid	Benzo[a]pyrene
8270C SIM	3541	Solid	Benzo[b]fluoranthene

Laboratory: Eurofins Calscience (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270C SIM	3541	Solid	Benzo[e]pyrene
8270C SIM	3541	Solid	Benzo[g,h,i]perylene
8270C SIM	3541	Solid	Benzo[k]fluoranthene
8270C SIM	3541	Solid	Biphenyl
8270C SIM	3541	Solid	Chrysene
8270C SIM	3541	Solid	Dibenz(a,h)anthracene
8270C SIM	3541	Solid	Dibenzothiophene
8270C SIM	3541	Solid	Fluoranthene
8270C SIM	3541	Solid	Fluorene
8270C SIM	3541	Solid	Indeno[1,2,3-cd]pyrene
8270C SIM	3541	Solid	Naphthalene
8270C SIM	3541	Solid	Perylene
8270C SIM	3541	Solid	Phenanthrene
8270C SIM	3541	Solid	Pyrene
8270C SIM CON	3541	Solid	PCB-101
8270C SIM CON	3541	Solid	PCB-105
8270C SIM CON	3541	Solid	PCB-110
8270C SIM CON	3541	Solid	PCB-118
8270C SIM CON	3541	Solid	PCB-128
8270C SIM CON	3541	Solid	PCB-132/153
8270C SIM CON	3541	Solid	PCB-138/158
8270C SIM CON	3541	Solid	PCB-141
8270C SIM CON	3541	Solid	PCB-149
8270C SIM CON	3541	Solid	PCB-151
8270C SIM CON	3541	Solid	PCB-156
8270C SIM CON	3541	Solid	PCB-170
8270C SIM CON	3541	Solid	PCB-174
8270C SIM CON	3541	Solid	PCB-177
8270C SIM CON	3541	Solid	PCB-18
8270C SIM CON	3541	Solid	PCB-180
8270C SIM CON	3541	Solid	PCB-183
8270C SIM CON	3541	Solid	PCB-187
8270C SIM CON	3541	Solid	PCB-194
8270C SIM CON	3541	Solid	PCB-195
8270C SIM CON	3541	Solid	PCB-201
8270C SIM CON	3541	Solid	PCB-203
8270C SIM CON	3541	Solid	PCB-28
8270C SIM CON	3541	Solid	PCB-31
8270C SIM CON	3541	Solid	PCB-33
8270C SIM CON	3541	Solid	PCB-44
8270C SIM CON	3541	Solid	PCB-49
8270C SIM CON	3541	Solid	PCB-5/8
8270C SIM CON	3541	Solid	PCB-52
8270C SIM CON	3541	Solid	PCB-56
8270C SIM CON	3541	Solid	PCB-60
8270C SIM CON	3541	Solid	PCB-66
8270C SIM CON	3541	Solid	PCB-70

Accreditation/Certification Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Laboratory: Eurofins Calscience (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270C SIM CON	3541	Solid	PCB-74
8270C SIM CON	3541	Solid	PCB-87
8270C SIM CON	3541	Solid	PCB-95
8270C SIM CON	3541	Solid	PCB-97
8270C SIM CON	3541	Solid	PCB-99
D4464		Solid	Clay (less than 0.00391 mm)
D4464		Solid	Coarse Sand (0.5mm to 1mm)
D4464		Solid	Fine Sand (0.125 to 0.25mm)
D4464		Solid	Gravel (greater than 2 mm)
D4464		Solid	Medium Sand (0.25 to 0.5 mm)
D4464		Solid	Silt (0.00391 to 0.0625mm)
D4464		Solid	Total Silt and Clay (0 to 0.0626mm)
D4464		Solid	Very Coarse Sand (1 to 2mm)
D4464		Solid	Very Fine Sand (0.0625 to 0.125 mm)
Moisture		Solid	Percent Solids
Organotins SIM	Organotin Prep	Solid	Dibutyltin
Organotins SIM	Organotin Prep	Solid	Monobutyltin
Organotins SIM	Organotin Prep	Solid	Tetrabutyltin
Organotins SIM	Organotin Prep	Solid	Tributyltin

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-26
A2LA	Dept. of Energy	0001.01	11-30-26
A2LA	ISO/IEC 17025	0001.01	11-30-26
Alabama	State	43200	01-31-26
Alaska	State	PA00009	06-30-25
Arizona	State	AZ0780	03-12-26
Arkansas DEQ	State	88-00660	08-09-25
California	State	2792	04-13-25
Colorado	State	PA00009	06-30-25
Connecticut	State	PH-0746	06-30-25
Delaware (DW)	State	N/A	01-31-26
Florida	NELAP	E87997	06-30-25
Georgia (DW)	State	C048	01-31-26
Illinois	NELAP	200027	01-31-26
Iowa	State	361	03-01-26
Kansas	NELAP	E-10151	04-07-25
Kentucky (DW)	State	KY90088	12-31-25
Kentucky (UST)	State	0001.01	11-30-26
Kentucky (WW)	State	KY90088	12-31-25
Louisiana (All)	NELAP	02055	06-30-25
Maine	State	2019012	03-12-27
Maryland	State	100	06-30-25
Massachusetts	State	M-PA009	06-30-25

Accreditation/Certification Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9930	01-31-26
Minnesota	NELAP	042-999-487	12-31-25
Mississippi	State	023	01-31-26
Missouri	State	450	01-31-28
Montana (DW)	State	0098	01-01-26
Nebraska	State	NE-OS-32-17	01-31-26
New Hampshire	NELAP	2730	01-10-26
New Jersey	NELAP	PA011	06-30-25
New York	NELAP	10670	04-01-26
North Carolina (DW)	State	42705	07-31-25
North Carolina (WW/SW)	State	521	12-31-25
North Dakota	State	R-205	01-31-24 *
Oklahoma	NELAP	9804	08-31-25
Oregon	NELAP	PA200001	09-11-25
Pennsylvania	NELAP	36-00037	04-10-25
Quebec Ministry of Environment and Fight against Climate Change	PALA	507	09-16-29
Rhode Island	State	LAO00338	12-30-25
South Carolina	State	89002	01-31-25 *
Tennessee	State	02838	01-31-26
Texas	NELAP	T104704194-23-46	08-31-25
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-25
Virginia	NELAP	460182	06-14-25
Washington	State	C457	04-11-25
West Virginia (DW)	State	9906 C	03-31-26
West Virginia DEP	State	055	07-31-25
Wyoming	State	8TMS-L	01-31-26
Wyoming (UST)	A2LA	0001.01	11-30-26

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Method	Method Description	Protocol	Laboratory
8270C SIM	PAHs (GC/MS SIM)	SW846	EET CAL 4
8270C SIM CON	PCB Congeners (GC/MS)	SW846	EET CAL 4
Organotins SIM	Organotins (GC/MS SIM)	Lab SOP	EET CAL 4
8081A	Organochlorine Pesticides (GC)	SW846	EET CAL 4
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	ELLE
6020	Metals (ICP/MS)	SW846	EET CAL 4
7471A	Mercury (CVAA)	SW846	EET CAL 4
Moisture	Percent Moisture	EPA	EET CAL 4
D4464	Particle Size Distribution of Catalytic Material (Laser light scattering)	ASTM	EET CAL 4
3050B	Preparation, Metals	SW846	EET CAL 4
3541	Automated Soxhlet Extraction	SW846	EET CAL 4
7471A	Preparation, Mercury	SW846	EET CAL 4
8290A	Soxhlet Extraction of Dioxins and Furans	SW846	ELLE
Organotin Prep	Extraction (Organotins)	None	EET CAL 4

Protocol References:

ASTM = ASTM International
EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494
ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-223210-1	ML-2025-DU1	Solid	03/12/25 09:40	03/21/25 10:00

Loc: 570
223210

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECOR

Client Name:	PER
Client Address:	2250 Cordelia Rd. Faifield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Mike McElroy
Project Name:	Moffatt & Nichol: San Mateo Lagoon
PO Number:	39812

REQUESTED ANALYSIS

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	* See Analyte List
1	ML-2025	ML-2025-DU1	3/12/25	9:40	Sed	1	poly bag	X
2	ML-2025	ML-2025-DU1	3/12/25	9:40	Sed	2	glass jar	X
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

570-223210 Chain of Custody

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:

Standard TAT.

RELINQUISHED BY

Signature	Luis Ortega	**Signature:**	NCachuela
Print:	Luis Ortega	**Print:**	Noel Cachuela
Organization:	PER	**Organization:**	ECS
DATE:	3/20/25 **TIME:** 954	**DATE:**	03/20/25 **TIME** 1336

RECEIVED BY

Signature	NCachuela	**Signature:**	
Print:	Noel Cachuela	**Print:**	
Organization:	ECS	**Organization:**	
DATE:	03/20/25 **TIME:** 09:53	**DATE:**	3/21/25 **TIME** 1007

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

2-7/2.7 12-92

UJ6P

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **Moffatt & Nichol: San Mateo Lagoon**
Project #: 39812
Site #: ML-2025

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B/USEPA 160.3	0.10%	X
Total Organic Carbon	EPA 9060	0.10%	X
Grain Size	ASTM D4464/D422	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Mercury	EPA 7471B	0.02 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Selenium	EPA 7742 or EPA 6020B Mod	0.1 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
2,4'-DDD	EPA 8081B	1 µg/kg	X
2,4'-DDE	EPA 8081B	1 µg/kg	X
2,4'-DDT	EPA 8081B	1 µg/kg	X
4,4'-DDD	EPA 8081B	1 µg/kg	X
4,4'-DDE	EPA 8081B	1 µg/kg	X
4,4'-DDT	EPA 8081B	1 µg/kg	X
Total DDTs	EPA 8081B	-	X
Aldrin	EPA 8081B	1 µg/kg	X
alpha-BHC	EPA 8081B	1 µg/kg	X
beta-BHC	EPA 8081B	1 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	1 µg/kg	X
delta-BHC	EPA 8081B	1 µg/kg	X
Total BHCs	EPA 8081B	-	X
Alpha Chlrodane	EPA 8081B	2 µg/kg	X
Gamma Chlordane	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Total Chlordanes	EPA 8081B	20 µg/kg	X
Cis-nonachlor	EPA 8081B	2 µg/kg	X
Dieldrin	EPA 8081B	1 µg/kg	X
Endosulfan I	EPA 8081B	1 µg/kg	X
Endosulfan II	EPA 8081B	1 µg/kg	X
Endosulfan sulfate	EPA 8081B	1 µg/kg	X
Endrin	EPA 8081B	1 µg/kg	X
Endrin aldehyde	EPA 8081B	1 µg/kg	X
Endrin ketone	EPA 8081B	1 µg/kg	X
Heptachlor	EPA 8081B	1 µg/kg	X
Heptachlor epoxide	EPA 8081B	1 µg/kg	X
Oxychlordane	EPA 8081B	2 µg/kg	X
Trans-nonachlor	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C	1 µg/kg	X
PCB 018	EPA 8270C	1 µg/kg	X
PCB 028	EPA 8270C	1 µg/kg	X
PCB 031	EPA 8270C	1 µg/kg	X
PCB 033	EPA 8270C	1 µg/kg	X
PCB 044	EPA 8270C	1 µg/kg	X
PCB 049	EPA 8270C	1 µg/kg	X
PCB 052	EPA 8270C	1 µg/kg	X
PCB 056	EPA 8270C	1 µg/kg	X
PCB 060	EPA 8270C	1 µg/kg	X
PCB 066	EPA 8270C	1 µg/kg	X
PCB 070	EPA 8270C	1 µg/kg	X
PCB 074	EPA 8270C	1 µg/kg	X
PCB 087	EPA 8270C	1 µg/kg	X
PCB 095	EPA 8270C	1 µg/kg	X
PCB 097	EPA 8270C	1 µg/kg	X
PCB 099	EPA 8270C	1 µg/kg	X
PCB 101	EPA 8270C	1 µg/kg	X
PCB 105	EPA 8270C	1 µg/kg	X
PCB 110	EPA 8270C	1 µg/kg	X
PCB 118	EPA 8270C	1 µg/kg	X
PCB 128	EPA 8270C	1 µg/kg	X
PCB 132	EPA 8270C	1 µg/kg	X
PCB 138	EPA 8270C	1 µg/kg	X

4/22/2025

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **Moffatt & Nichol: San Mateo Lagoon**
Project #: 39812
Site #: ML-2025

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 141	EPA 8270C	1 µg/kg	X
PCB 149	EPA 8270C	1 µg/kg	X
PCB 151	EPA 8270C	1 µg/kg	X
PCB 153	EPA 8270C	1 µg/kg	X
PCB 156	EPA 8270C	1 µg/kg	X
PCB 158	EPA 8270C	1 µg/kg	X
PCB 170	EPA 8270C	1 µg/kg	X
PCB 174	EPA 8270C	1 µg/kg	X
PCB 177	EPA 8270C	1 µg/kg	X
PCB 180	EPA 8270C	1 µg/kg	X
PCB 183	EPA 8270C	1 µg/kg	X
PCB 187	EPA 8270C	1 µg/kg	X
PCB 194	EPA 8270C	1 µg/kg	X
PCB 195	EPA 8270C	1 µg/kg	X
PCB 201	EPA 8270C	1 µg/kg	X
PCB 203	EPA 8270C	1 µg/kg	X
Total PCBs	EPA 8270C	-	X
Acenaphthalene	EPA 8270C	10 µg/kg	X
Acenaphthylene	EPA 8270C	10 µg/kg	X
Anthracene	EPA 8270C	10 µg/kg	X
Benz(a)anthracene	EPA 8270C	10 µg/kg	X
Benzo(a)pyrene	EPA 8270C	10 µg/kg	X
Benzo(e)pyrene	EPA 8270C	10 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	10 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	10 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	10 µg/kg	X
Biphenyl	EPA 8270C	10 µg/kg	X
Chrysene	EPA 8270C	10 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	10 µg/kg	X
Dibenzothiophene	EPA 8270C	10 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	10 µg/kg	X
Fluoranthene	EPA 8270C	10 µg/kg	X
Fluorene	EPA 8270C	10 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	10 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	10 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	10 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	10 µg/kg	X
Naphthalene	EPA 8270C	10 µg/kg	X
Perylene	EPA 8270C	10 µg/kg	X
Phenanthrene	EPA 8270C	10 µg/kg	X
Pyrene	EPA 8270C	10 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	10 µg/kg	X
Total PAHs	EPA 8270C	-	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins	Krone 1989	10 µg/kg	X
Dioxins/Furans	EPA 8290	1 ng/kg	X

QA/QC
Standard TAT.
Samples frozen (except TOC & grain size).

If you have any questions regarding this request as checked, please call Jeff Cotsifas at (707)207-7760

223449
210

Thursday, March 13, 2025 at 11:29:16 Pacific Daylight Time

Subject: RE: San Mateo Lagoon
Date: Wednesday, March 12, 2025 at 12:53:40 PM Pacific Daylight Time
From: Gnusti, Jaclyn
To: Jeffrey Cotsifas
Attachments: image001.gif

TABLE 1:

NOAA STATION ID#9414523 REDWOOD CITY CA		
DATUM	VALUE	DESCRIPTION
MHHW	7.02	MEAN HIGHER-HIGH WATER
MHW	6.39	MEAN HIGH WATER
MSL	3.22	MEAN SEA LEVEL
MLW	0.02	MEAN LOW WATER
NAVD88	0.00	NORTH AMERICAN VERTICAL DATUM OF 1988
MLLW	-1.18	MEAN LOWER-LOW WATER

TABLE 2:

MARINA LAGOON OPERATING LEVELS			
PERIOD	LEVEL ADJUSTMENT	OPERATING RANGE (NAVD88, FT)	COMMENTS
MAY 1 - OCTOBER 31	NONE	1.5 TO 2.0	SUMMER OPERATING LEVEL
NOVEMBER 1 - NOVEMBER 30	-1FT TO -1.5FT	0.5 TO 1.0	PREPARING FOR WINTER RAINS
DECEMBER 1 - APRIL 14	-0.4FT TO -0.9FT	0.1 TO 0.6	WINTER OPERATING LEVEL
APRIL 15 - APRIL 30	+1.0FT TO +1.5FT	0.5 TO 1.0	SPRING INTERMEDIATE LEVEL
MAY 1 - OCTOBER 31	+1.0FT TO +1.5FT	1.5 TO 2.0	SUMMER OPERATING LEVEL

Jaclyn Gnusti, PE
Senior Coastal Engineer

Moffatt & Nichol
2185 N California Boulevard, Suite 500 | Walnut Creek, CA 94596-3500
D +1 (925) 357-9695 | O +1 (925) 944-5411 | M +1 (925) 360-1890

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-435322.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Los Angeles County Sanitation Di California		Job #: 570-223210-1
Address: 2425 New Holland Pike,	Due Date Requested: 4/18/2025			
City: Lancaster	TAT Requested (days): N/A			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			

Analysis Requested

Preservation Codes:

Other: N/A

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8290A/8290_P_Sox 8290 17 + Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	Sediment HT = 6 mo from collection date; remove H qualifier from data before

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3-27	Company EC	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver: 10/10/2024

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-435336.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest L		Accreditations Required (See note): Los Angeles County Sanitation Di California		Job #: 570-223210-1
Address: 5755 8th Street East,	Due Date Requested: 4/14/2025			
City: Tacoma	TAT Requested (days): N/A			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			

Analysis Requested

Preservation Codes:

Other: N/A

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B_ULL/3051A (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3-27 9-	Company EC	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver: 10/10/2024

4/22/2025

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-439165.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-223210-2
Address: 4955 Yarrow Street, ,	Due Date Requested: 4/16/2025			Preservation Codes: -
City: Arvada	TAT Requested (days): N/A			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			Other: N/A

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9060A/ Solids - TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 4-16 1230	Company EC	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Table 8
Precision and Accuracy Goals
Post-Breach Quality Assurance Project Plan
Montezuma Wetlands Project

Parameter	% Recovery	RPD Limit
Inorganic COCs		
Arsenic, cadmium, chromium, copper, lead, total mercury, nickel, selenium, silver and zinc	75-125	25
Methylmercury	70-130	25
Organics		
PAHs	50 - 150	25
Organochlorine pesticides and PCBs	50 - 150	25
Miscellaneous Analyses		
Electrical conductivity	90 - 110	20
Percent lipids	NA	25
Percent moisture	NA	10
pH	NA	10
Sulfides	75 - 125	20
Total organic carbon	75 - 125	35
Total suspended solids	80 - 120	20
Unionized ammonia (as N)	80 - 120	25

Abbreviations:
COCs Chemicals of concern
NA Not applicable
PAHs Polynulclear aromatic hydrocarbons
PCBs Polychlorinated biphenyls
RPD Relative percent difference

Table 9
Quantitation Limits
Post-Breach Quality Assurance Project Plan
Montezuma Wetlands Project

Inorganic COCs	Water (µg/L)		Sediment (mg/kg)		Tissue (mg/kg)	
	RL	MDL	RL	MDL	RL	MDL
Arsenic	1	0.39	0.2	0.15	0.1	0.05
Cadmium	1	0.13	0.1	0.05	0.1	0.03
Chromium	1	0.40	0.2	0.1	0.02	0.02
Copper	1	0.14	0.2	0.1	0.1	0.02
Lead	1	0.09	0.1	0.06	0.1	0.03
Mercury	0.2	0.045	0.04	0.01	0.02	0.006
Low-level Mercury (EPA 1631)	5.00E-04	1.46E-04	4.00E-04	1.60E-04	4.00E-04	1.60E-04
Methylmercury	5.00E-05	2.58E-05	5.00E-05	1.48E-05	2.00E-03	5.40E-04
Nickel	1	0.13	0.2	0.1	0.1	0.03
Selenium	1	0.17	0.2	0.1	0.1	0.08
Silver	1	0.11	0.1	0.03	0.1	0.02
Zinc	5	0.48	1	0.6	1	0.40

PAHs	Water (µg/L)		Sediment (µg/kg)		Tissue (µg/kg)	
	RL	MDL	RL	MDL	RL	MDL
1-Methylnaphthalene	0.2	0.03	10	2.0	10	2.0
1-Methylphenanthrene		0.03		1.6		1.6
2-Methylnaphthalene		0.03		1.8		1.8
2,3,5-Trimethylnaphthalene		0.11		1.4		1.4
2,6-Dimethylnaphthalene		0.02		1.7		1.7
Acenaphthene		0.02		1.8		1.8
Acenaphthylene		0.02		1.5		1.5
Anthracene		0.03		0.81		0.81
Benzo(a)anthracene		0.02		1.6		1.6
Benzo(a)pyrene		0.04		1.0		1.0
Benzo(b)fluoranthene		0.03		1.0		1.0
Benzo(e)pyrene		0.01		1.5		1.5
Benzo(g,h,i)perylene		0.02		0.94		0.94
Benzo(k)fluoranthene		0.02		1.4		1.4
Biphenyl		0.01		1.4		1.4
Chrysene		0.02		1.2		1.2
Dibenzo(a,h)anthracene		0.03		1.0		1.0
Dibenzothiophene		0.03		1.3		1.3
Fluoranthene		0.03		0.98		0.98
Fluorene		0.02		1.5		1.5
Indeno(1,2,3-cd)pyrene		0.02		1.1		1.1
Naphthalene		0.02		3.0		3.0
Perylene		0.02		1.7		1.7
Phenanthrene		0.03		1.0		1.0
Pyrene		0.03		0.99		0.99

Table 9
Quantitation Limits
Post-Breach Quality Assurance Project Plan
Montezuma Wetlands Project

PCBs	Water (µg/L)		Sediment (µg/kg)		Tissue (µg/kg)	
	RL	MDL	RL	MDL	RL	MDL
PCB 8	4.00E-03	1.30E-03	0.40	0.23	0.40	0.23
PCB 18	2.00E-03	7.00E-04	0.20	0.09	0.20	0.09
PCB 28		4.60E-04		0.05		0.05
PCB 31		9.10E-04		0.10		0.10
PCB 33		7.50E-04		0.10		0.10
PCB 44		7.60E-04		0.09		0.09
PCB 49		8.70E-04		0.08		0.08
PCB 52		5.40E-04		0.12		0.12
PCB 56		7.40E-04		0.10		0.10
PCB 60		3.50E-04		0.88		0.09
PCB 66		7.20E-04		0.08		0.08
PCB 70		8.30E-04		0.09		0.09
PCB 74		7.60E-04		0.08		0.08
PCB 87		6.70E-04		0.07		0.07
PCB 95		1.10E-03		0.10		0.10
PCB 97		8.30E-04		0.10		0.10
PCB 99		8.30E-04		0.09		0.09
PCB 101		1.00E-03		0.09		0.09
PCB 105		4.40E-04		0.07		0.07
PCB 110		8.20E-04		0.09		0.09
PCB 118		6.50E-04		0.08		0.08
PCB 128		8.30E-04		0.10		0.10
PCB 132		1.00E-03		0.11		0.11
PCB 138	4.00E-03	1.60E-03	0.40	0.14	0.40	0.14
PCB 141	2.00E-03	8.40E-04	0.20	0.11	0.20	0.11
PCB 149		9.30E-04		0.12		0.12
PCB 151		7.70E-04		0.12		0.12
PCB 153		1.40E-03		0.06		0.06
PCB 156		8.40E-04		0.02		0.02
PCB 158	4.00E-03	1.60E-03	0.40	0.14	0.40	0.14
PCB 170	2.00E-03	6.10E-04	0.20	0.10	0.20	0.10
PCB 174		7.90E-04		0.10		0.10
PCB 177		6.90E-04		0.06		0.06
PCB 180		5.90E-04		0.06		0.06
PCB 183		6.80E-04		0.06		0.06
PCB 187		7.50E-04		0.08		0.08
PCB 194		5.70E-04		0.14		0.14
PCB 195		3.40E-04		0.12		0.12
PCB 201		6.20E-04		0.12		0.12
PCB 203		6.20E-04		0.12		0.12

Table 9
Quantitation Limits
Post-Breach Quality Assurance Project Plan
Montezuma Wetlands Project

Pesticides	Water (µg/L)		Sediment (µg/kg)		Tissue (µg/kg)	
	RL	MDL	RL	MDL	RL	MDL
Aldrin	0.05	0.01	1.0	0.31	1.0	0.32
Alpha-Chlordane		0.01		0.32		0.25
Gamma-Chlordane		0.01		0.32		0.21
2,4'-DDD	--	--	0.5	0.34		0.40
2,4'-DDE				0.31		0.19
2,4'-DDT				0.32		0.31
4,4'-DDD	0.1	0.03		0.32		0.18
4,4'-DDE		0.02		0.34		0.25
4,4'-DDT		0.03		0.31		0.38
Dieldrin		0.02	1.0	0.33		0.27
Endosulfan I	0.05	0.01		0.26		0.62
Endosulfan II	0.1	0.02		0.28		0.10
Endosulfan sulfate		0.03		0.34		0.26
Endrin		0.03		0.36		0.21
Endrin aldehyde		0.02		0.24		0.17
alpha-HCH	0.05	0.01		0.32		0.17
beta-HCH		0.01		0.26		0.45
delta-HCH		0.02		0.26		0.33
gamma-HCH (Lindane)		0.02		0.35		0.12
Heptachlor		0.01		0.32		0.41
Heptachlor epoxide		0.01		0.36		0.47
Methoxychlor	0.5	0.2		0.32		0.42
cis-Nonachlor	--	--		0.29		0.42
trans-Nonachlor				0.29		0.30
Oxychlordane				0.28		0.22
Toxaphene	1	0.3	20	6.30	20	9.50

Conventional Parameters (units as noted)	Water		Sediment		Tissue	
	RL	MDL	RL	MDL	RL	MDL
EC (µmhos/cm)	1.0	1.0	1.0	1.0	--	--
Lipids (%)	--	--	--	--	0.10	0.10
Percent moisture (%)			1.0	1.0	1.0	1.0
pH (SU)	1.0	1.0	1.0	1.0	--	
Sulfides (mg/kg)	--	--	1.0	0.08		
Total organic carbon (%)			0.15	0.15		
Total suspended solids (mg/L)	1.0	0.95	--			
Unionized ammonia (as N; mg/L)	0.05	0.01				

Abbreviations:
DDD - Dichlorodiohenyldichloroethane
DDE - Dichlorodiphenyltrichloroethylene

Table 9
Quantitation Limits
Post-Breach Quality Assurance Project Plan
Montezuma Wetlands Project

DDT	- Dichlorodiphenyltrichloroethane
EC	- Electrical conductivity
HCH	- Hexachlorocyclohexane
MDL	- Method detection limit
mg/kg	- Milligrams per kilogram
mg/L	- Milligrams per liter
N	- Nitrogen
PAHs	- Polynuclear aromatic hydrocarbons
PCBs	- Polychlorinated biphenyls
RL	- Reporting limit
µg/kg	- Micrograms per kilogram
µg/L	- Micrograms per liter
µmhos/cm	- Micromhos per centimeter

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

4/22/2025

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-435336.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest L		Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-223210-1
Address: 5755 8th Street East, ,	Due Date Requested: 4/14/2025			Preservation Codes: -
City: Tacoma	TAT Requested (days): N/A			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			Other: N/A

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B_ULL/3051A (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	

Therm. ID: SC02 Cust. Seal (Y) / N
Uncorr./Corr. Temp: 0.5 / 0.3 °C
Delivery: UPS / FedEx / Other: ____
Ice Type: Blue / Dry / Wet / None
Label Ver.: 8 Packing: D

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification: Unconfirmed 4499 7560 2107	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3-27 9-	EC		3/28/25 9:45	ET N
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 10/10/2024

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-435322.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-223210-1
Address: 2425 New Holland Pike,	Due Date Requested: 4/18/2025			
City: Lancaster	TAT Requested (days): N/A			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			

Analysis Requested

Preservation Codes: -

Other: N/A

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8290A/8290_P_Sox 8290 17 + Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	Sediment HT = 6 mo from collection date; remove H qualifier from data before

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3-27	Company EC	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 3/28/25 0950	Company

Custody Seals Intact: ▲ Yes △ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: raw: 3.0 corr: 3.0

Ver: 10/10/2024

Login Sample Receipt Checklist

Client: Moffatt & Nichol

Job Number: 570-223210-1

Login Number: 223210
List Number: 1
Creator: Hollowell, Carla

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login.

Login Sample Receipt Checklist

Client: Moffatt & Nichol

Job Number: 570-223210-1

Login Number: 223210
List Number: 3
Creator: Metzger, Katherine A

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC
List Creation: 03/28/25 04:20 PM

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	Not present.
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login.

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jaclyn Gnusti
Moffatt & Nichol
630 Grand Avenue
Suite D
Carlsbad, California 92008

Generated 5/16/2025 3:28:35 PM

JOB DESCRIPTION

San Mateo Lagoon

JOB NUMBER

570-223210-2

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin CA 92780

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

Authorization

Generated
5/16/2025 3:28:35 PM

Authorized for release by
Carla Hollowell, Project Manager I
Carla.Hollowell@et.eurofinsus.com
(714)895-5494

Table of Contents

Definitions/Glossary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
570-223210-2

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) for most analyses if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times.

Receipt
The sample was received on 3/21/2025 10:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.7°C.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
Method 9060A: The following sample was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: ML-2025-DU1 (570-223210-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client: Moffatt & Nichol
Job ID: 570-223210-2
Project/Site: San Mateo Lagoon

Method: SW846 6020B - Metals (ICP/MS)

Client Sample ID: ML-2025-DU1
Lab Sample ID: 570-223210-1
Date Collected: 03/12/25 09:40
Matrix: Solid
Date Received: 03/21/25 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ag	0.403		0.0468	0.00375	mg/Kg	☼	04/15/25 18:51	05/15/25 18:46	1
Se	0.357	J	0.749	0.178	mg/Kg	☼	04/15/25 18:51	05/15/25 18:46	1
Cd	1.12		0.0468	0.00819	mg/Kg	☼	04/15/25 18:51	05/15/25 18:46	1

Client: Moffatt & Nichol
Job ID: 570-223210-2
Project/Site: San Mateo Lagoon

General Chemistry

Client Sample ID: ML-2025-DU1
Date Collected: 03/12/25 09:40
Date Received: 03/21/25 10:00

Lab Sample ID: 570-223210-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	4.60		4.00	2.50	%			04/22/25 15:38	10

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 350-6200/1-A
Matrix: Solid
Analysis Batch: 6843

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6200

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ag	ND		0.0200	0.00160	mg/Kg		04/15/25 18:51	05/15/25 18:31	1
Se	ND		0.320	0.0760	mg/Kg		04/15/25 18:51	05/15/25 18:31	1
Cd	ND		0.0200	0.00350	mg/Kg		04/15/25 18:51	05/15/25 18:31	1

Lab Sample ID: MB 350-6200/2-A
Matrix: Solid
Analysis Batch: 6843

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6200

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ag	ND		0.0200	0.00160	mg/Kg		04/15/25 18:51	05/15/25 18:35	1
Se	ND		0.320	0.0760	mg/Kg		04/15/25 18:51	05/15/25 18:35	1
Cd	ND		0.0200	0.00350	mg/Kg		04/15/25 18:51	05/15/25 18:35	1

Lab Sample ID: LCS 350-6200/3-A
Matrix: Solid
Analysis Batch: 6843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6200

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Ag			2.00	1.975		mg/Kg		99	80 - 120		
Se			10.0	9.996		mg/Kg		100	80 - 120		
Cd			2.00	1.860		mg/Kg		93	80 - 120		

Lab Sample ID: LCSD 350-6200/4-A
Matrix: Solid
Analysis Batch: 6843

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 6200

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ag			2.00	2.001		mg/Kg		100	80 - 120	1	20
Se			10.0	10.14		mg/Kg		101	80 - 120	1	20
Cd			2.00	1.901		mg/Kg		95	80 - 120	2	20

Lab Sample ID: 570-223210-1 MS
Matrix: Solid
Analysis Batch: 6843

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 6200

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Ag	0.403		4.56	4.968		mg/Kg	☼	100	75 - 125		
Se	0.357	J	22.8	18.41		mg/Kg	☼	79	75 - 125		
Cd	1.12		4.56	5.511		mg/Kg	☼	96	75 - 125		

Lab Sample ID: 570-223210-1 MSD
Matrix: Solid
Analysis Batch: 6843

Client Sample ID: ML-2025-DU1
Prep Type: Total/NA
Prep Batch: 6200

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ag	0.403		4.65	5.152		mg/Kg	☼	102	75 - 125	4	20
Se	0.357	J	23.2	18.64		mg/Kg	☼	79	75 - 125	1	20
Cd	1.12		4.65	5.735		mg/Kg	☼	99	75 - 125	4	20

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 280-692858/4
Matrix: Solid
Analysis Batch: 692858

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.400	0.250	%			04/22/25 11:04	1

Lab Sample ID: LCS 280-692858/3
Matrix: Solid
Analysis Batch: 692858

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon			0.325	0.2997	J	%		92	41 - 120		

QC Association Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Metals

Prep Batch: 6200

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	3051A	
MB 350-6200/1-A	Method Blank	Total/NA	Solid	3051A	
MB 350-6200/2-A	Method Blank	Total/NA	Solid	3051A	
LCS 350-6200/3-A	Lab Control Sample	Total/NA	Solid	3051A	
LCSD 350-6200/4-A	Lab Control Sample Dup	Total/NA	Solid	3051A	
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	3051A	
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	3051A	

Analysis Batch: 6843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	6020B	6200
MB 350-6200/1-A	Method Blank	Total/NA	Solid	6020B	6200
MB 350-6200/2-A	Method Blank	Total/NA	Solid	6020B	6200
LCS 350-6200/3-A	Lab Control Sample	Total/NA	Solid	6020B	6200
LCSD 350-6200/4-A	Lab Control Sample Dup	Total/NA	Solid	6020B	6200
570-223210-1 MS	ML-2025-DU1	Total/NA	Solid	6020B	6200
570-223210-1 MSD	ML-2025-DU1	Total/NA	Solid	6020B	6200

General Chemistry

Analysis Batch: 692858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-223210-1	ML-2025-DU1	Total/NA	Solid	9060A	
MB 280-692858/4	Method Blank	Total/NA	Solid	9060A	
LCS 280-692858/3	Lab Control Sample	Total/NA	Solid	9060A	

Lab Chronicle

Client: Moffatt & Nichol
Job ID: 570-223210-2
Project/Site: San Mateo Lagoon

Client Sample ID: ML-2025-DU1
Lab Sample ID: 570-223210-1
Date Collected: 03/12/25 09:40
Matrix: Solid
Date Received: 03/21/25 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			0.2509 g	50 mL	6200	04/15/25 18:51	JS	EET SSM
Total/NA	Analysis	6020B		1			6843	05/15/25 18:46	COW	EET SSM
	Instrument ID: ICPMS9									
Total/NA	Analysis	9060A		10	10.3 mg	10.3 mg	692858	04/22/25 15:38	GMW	EET DEN
	Instrument ID: WC_SHI5									

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SSM = Eurofins Seattle Specialty Metals, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Laboratory: Eurofins Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-26
A2LA	ISO/IEC 17025	2907.01	10-31-26
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	11-30-25
Arizona	State	AZ0713	12-20-25
Arkansas DEQ	State	88-00687	04-02-26
California	State	2513	01-08-26
Colorado	Petroleum Storage Tank Program	2907.01 (A2LA)	10-31-26
Colorado	State	CO00026	06-30-25
Connecticut	State	PH-0686	09-30-26
Florida	NELAP	E87667	06-30-25
Georgia	State	4025	01-08-26
Illinois	NELAP	200017	05-31-26
Iowa	State	370	12-01-26
Kansas	NELAP	E-10166	04-30-25
Kentucky (WW)	State	KY98047	12-31-25
Louisiana	NELAP	30785	06-30-14 *
Louisiana (All)	NELAP	30785	06-30-25
Minnesota	NELAP	1788752	12-31-25
Nevada	State	CO00026	07-31-25
New Hampshire	NELAP	2053	04-28-25
New Jersey	NELAP	230001	06-30-25
New York	NELAP	11964	05-12-25
North Dakota	State	R-034	01-08-25 *
Oklahoma	NELAP	8614	08-31-25
Oregon	NELAP	4025	01-08-26
Pennsylvania	NELAP	68-00664	07-31-25
South Carolina	State	72002001	01-18-25 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183	09-30-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO00026	07-31-25
Virginia	NELAP	460232	06-14-25
Washington	State	C583	05-13-25
West Virginia DEP	State	354	11-30-25
Wisconsin	State	999615430	08-31-25
Wyoming (UST)	A2LA	2907.01	10-31-26

Laboratory: Eurofins Seattle Specialty Metals

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-27
ANAB	Dept. of Defense ELAP	L2236	01-19-27
ANAB	Dept. of Energy	L2236.01	01-19-27
ANAB	ISO/IEC 17025	L2236	01-19-27
California	State	2954	07-07-25
Florida	NELAP	E87575	06-30-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Laboratory: Eurofins Seattle Specialty Metals (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Louisiana (All)	NELAP	03073	06-30-25
Maine	State	WA01273	05-02-26
New Jersey	NELAP	WA014	06-30-25
New York	NELAP	11662	04-01-26
Oregon	NELAP	4167-008	07-07-25
US Fish & Wildlife	US Federal Programs	A20571	06-30-25
USDA	US Federal Programs	525-23-4-22573	01-24-28
Washington	State	C788-23a	07-13-25
Wisconsin	State	399133460	07-31-25

Method Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET SSM
9060A	Organic Carbon, Total (TOC)	SW846	EET DEN
3051A	Preparation, Metals, Microwave Assisted	SW846	EET SSM

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SSM = Eurofins Seattle Specialty Metals, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Moffatt & Nichol
Project/Site: San Mateo Lagoon

Job ID: 570-223210-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-223210-1	ML-2025-DU1	Solid	03/12/25 09:40	03/21/25 10:00

Loc: 570
223210

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECOR

Client Name:	PER
Client Address:	2250 Cordelia Rd. Faifield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Mike McElroy
Project Name:	Moffatt & Nichol: San Mateo Lagoon
PO Number:	39812

REQUESTED ANALYSIS

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	* See Analyte List
1	ML-2025	ML-2025-DU1	3/12/25	9:40	Sed	1	poly bag	X
2	ML-2025	ML-2025-DU1	3/12/25	9:40	Sed	2	glass jar	X
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

570-223210 Chain of Custody

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:

Standard TAT.

RELINQUISHED BY

Signature	Luis Ortega	**Signature:**	NCachuela
Print:	Luis Ortega	**Print:**	Noel Cachuela
Organization:	PER	**Organization:**	ECS
DATE:	3/20/25 **TIME:** 954	**DATE:**	03/20/25 **TIME** 1336

RECEIVED BY

Signature	NCachuela	**Signature:**	
Print:	Noel Cachuela	**Print:**	
Organization:	ECS	**Organization:**	
DATE:	03/20/25 **TIME:** 09:53	**DATE:**	3/21/25 **TIME** 1007

2-7/2.7 12-92

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

UJ6P

5/16/2025

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **Moffatt & Nichol: San Mateo Lagoon**
Project #: 39812
Site #: ML-2025

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B/USEPA 160.3	0.10%	X
Total Organic Carbon	EPA 9060	0.10%	X
Grain Size	ASTM D4464/D422	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Mercury	EPA 7471B	0.02 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Selenium	EPA 7742 or EPA 6020B Mod	0.1 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
2,4'-DDD	EPA 8081B	1 µg/kg	X
2,4'-DDE	EPA 8081B	1 µg/kg	X
2,4'-DDT	EPA 8081B	1 µg/kg	X
4,4'-DDD	EPA 8081B	1 µg/kg	X
4,4'-DDE	EPA 8081B	1 µg/kg	X
4,4'-DDT	EPA 8081B	1 µg/kg	X
Total DDTs	EPA 8081B	-	X
Aldrin	EPA 8081B	1 µg/kg	X
alpha-BHC	EPA 8081B	1 µg/kg	X
beta-BHC	EPA 8081B	1 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	1 µg/kg	X
delta-BHC	EPA 8081B	1 µg/kg	X
Total BHCs	EPA 8081B	-	X
Alpha Chlrodane	EPA 8081B	2 µg/kg	X
Gamma Chlordane	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Total Chlordanes	EPA 8081B	20 µg/kg	X
Cis-nonachlor	EPA 8081B	2 µg/kg	X
Dieldrin	EPA 8081B	1 µg/kg	X
Endosulfan I	EPA 8081B	1 µg/kg	X
Endosulfan II	EPA 8081B	1 µg/kg	X
Endosulfan sulfate	EPA 8081B	1 µg/kg	X
Endrin	EPA 8081B	1 µg/kg	X
Endrin aldehyde	EPA 8081B	1 µg/kg	X
Endrin ketone	EPA 8081B	1 µg/kg	X
Heptachlor	EPA 8081B	1 µg/kg	X
Heptachlor epoxide	EPA 8081B	1 µg/kg	X
Oxychlordane	EPA 8081B	2 µg/kg	X
Trans-nonachlor	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C	1 µg/kg	X
PCB 018	EPA 8270C	1 µg/kg	X
PCB 028	EPA 8270C	1 µg/kg	X
PCB 031	EPA 8270C	1 µg/kg	X
PCB 033	EPA 8270C	1 µg/kg	X
PCB 044	EPA 8270C	1 µg/kg	X
PCB 049	EPA 8270C	1 µg/kg	X
PCB 052	EPA 8270C	1 µg/kg	X
PCB 056	EPA 8270C	1 µg/kg	X
PCB 060	EPA 8270C	1 µg/kg	X
PCB 066	EPA 8270C	1 µg/kg	X
PCB 070	EPA 8270C	1 µg/kg	X
PCB 074	EPA 8270C	1 µg/kg	X
PCB 087	EPA 8270C	1 µg/kg	X
PCB 095	EPA 8270C	1 µg/kg	X
PCB 097	EPA 8270C	1 µg/kg	X
PCB 099	EPA 8270C	1 µg/kg	X
PCB 101	EPA 8270C	1 µg/kg	X
PCB 105	EPA 8270C	1 µg/kg	X
PCB 110	EPA 8270C	1 µg/kg	X
PCB 118	EPA 8270C	1 µg/kg	X
PCB 128	EPA 8270C	1 µg/kg	X
PCB 132	EPA 8270C	1 µg/kg	X
PCB 138	EPA 8270C	1 µg/kg	X

5/16/2025

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **Moffatt & Nichol: San Mateo Lagoon**
Project #: 39812
Site #: ML-2025

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 141	EPA 8270C	1 µg/kg	X
PCB 149	EPA 8270C	1 µg/kg	X
PCB 151	EPA 8270C	1 µg/kg	X
PCB 153	EPA 8270C	1 µg/kg	X
PCB 156	EPA 8270C	1 µg/kg	X
PCB 158	EPA 8270C	1 µg/kg	X
PCB 170	EPA 8270C	1 µg/kg	X
PCB 174	EPA 8270C	1 µg/kg	X
PCB 177	EPA 8270C	1 µg/kg	X
PCB 180	EPA 8270C	1 µg/kg	X
PCB 183	EPA 8270C	1 µg/kg	X
PCB 187	EPA 8270C	1 µg/kg	X
PCB 194	EPA 8270C	1 µg/kg	X
PCB 195	EPA 8270C	1 µg/kg	X
PCB 201	EPA 8270C	1 µg/kg	X
PCB 203	EPA 8270C	1 µg/kg	X
Total PCBs	EPA 8270C	-	X
Acenaphthalene	EPA 8270C	10 µg/kg	X
Acenaphthylene	EPA 8270C	10 µg/kg	X
Anthracene	EPA 8270C	10 µg/kg	X
Benz(a)anthracene	EPA 8270C	10 µg/kg	X
Benzo(a)pyrene	EPA 8270C	10 µg/kg	X
Benzo(e)pyrene	EPA 8270C	10 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	10 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	10 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	10 µg/kg	X
Biphenyl	EPA 8270C	10 µg/kg	X
Chrysene	EPA 8270C	10 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	10 µg/kg	X
Dibenzothiophene	EPA 8270C	10 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	10 µg/kg	X
Fluoranthene	EPA 8270C	10 µg/kg	X
Fluorene	EPA 8270C	10 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	10 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	10 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	10 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	10 µg/kg	X
Naphthalene	EPA 8270C	10 µg/kg	X
Perylene	EPA 8270C	10 µg/kg	X
Phenanthrene	EPA 8270C	10 µg/kg	X
Pyrene	EPA 8270C	10 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	10 µg/kg	X
Total PAHs	EPA 8270C	-	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins	Krone 1989	10 µg/kg	X
Dioxins/Furans	EPA 8290	1 ng/kg	X

QA/QC
Standard TAT.
Samples frozen (except TOC & grain size).

If you have any questions regarding this request as checked, please call Jeff Cotsifas at (707)207-7760

223449
210

Thursday, March 13, 2025 at 11:29:16 Pacific Daylight Time

Subject: RE: San Mateo Lagoon
Date: Wednesday, March 12, 2025 at 12:53:40 PM Pacific Daylight Time
From: Gnusti, Jaclyn
To: Jeffrey Cotsifas
Attachments: image001.gif

TABLE 1:

NOAA STATION ID#9414523 REDWOOD CITY CA		
DATUM	VALUE	DESCRIPTION
MHHW	7.02	MEAN HIGHER-HIGH WATER
MHW	6.39	MEAN HIGH WATER
MSL	3.22	MEAN SEA LEVEL
MLW	0.02	MEAN LOW WATER
NAVD88	0.00	NORTH AMERICAN VERTICAL DATUM OF 1988
MLLW	-1.18	MEAN LOWER-LOW WATER

TABLE 2:

MARINA LAGOON OPERATING LEVELS			
PERIOD	LEVEL ADJUSTMENT	OPERATING RANGE (NAVD88, FT)	COMMENTS
MAY 1 - OCTOBER 31	NONE	1.5 TO 2.0	SUMMER OPERATING LEVEL
NOVEMBER 1 - NOVEMBER 30	-1FT TO -1.5FT	0.5 TO 1.0	PREPARING FOR WINTER RAINS
DECEMBER 1 - APRIL 14	-0.4FT TO -0.9FT	0.1 TO 0.6	WINTER OPERATING LEVEL
APRIL 15 - APRIL 30	+1.0FT TO +1.5FT	0.5 TO 1.0	SPRING INTERMEDIATE LEVEL
MAY 1 - OCTOBER 31	+1.0FT TO +1.5FT	1.5 TO 2.0	SUMMER OPERATING LEVEL

Jaclyn Gnusti, PE
Senior Coastal Engineer

Moffatt & Nichol
2185 N California Boulevard, Suite 500 | Walnut Creek, CA 94596-3500
D +1 (925) 357-9695 | O +1 (925) 944-5411 | M +1 (925) 360-1890

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-435322.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Los Angeles County Sanitation Di California		Job #: 570-223210-1
Address: 2425 New Holland Pike,	Due Date Requested: 4/18/2025			
City: Lancaster	TAT Requested (days): N/A			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			

Analysis Requested

Preservation Codes:

Other: N/A

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8290A/8290_P_Sox 8290 17 + Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	Sediment HT = 6 mo from collection date; remove H qualifier from data before

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	3-27 8-	EC			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver: 10/10/2024

5/16/2025

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-435336.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest L		Accreditations Required (See note): Los Angeles County Sanitation Di California		Job #: 570-223210-1
Address: 5755 8th Street East,	Due Date Requested: 4/14/2025			
City: Tacoma	TAT Requested (days): N/A			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			

Analysis Requested

Preservation Codes:

Other: N/A

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B_ULL/3051A (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3-27 9-	Company EC	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver: 10/10/2024

5/16/2025

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Hollowell, Carla	Carrier Tracking No(s): N/A	COC No: 570-439165.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-223210-2
Address: 4955 Yarrow Street, ,	Due Date Requested: 4/16/2025			Preservation Codes: -
City: Arvada	TAT Requested (days): N/A			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: San Mateo Lagoon	Project #: 57000505			
Site: N/A	SSOW#: N/A			Other: N/A

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9060A/ Solids - TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ML-2025-DU1 (570-223210-1)	3/12/25	09:40 Pacific	G	Solid			X	1	

Analysis Requested

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	4-16 1230	EC			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Moffatt & Nichol

Job Number: 570-223210-2

Login Number: 223210

List Source: Eurofins Calscience

List Number: 1

Creator: Hollowell, Carla

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login.

Login Sample Receipt Checklist

Client: Moffatt & Nichol

Job Number: 570-223210-2

Login Number: 223210
List Number: 4
Creator: Rystrom, Joshua R

List Source: Eurofins Denver
List Creation: 04/17/25 03:38 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login.

Login Sample Receipt Checklist

Client: Moffatt & Nichol

Job Number: 570-223210-2

Login Number: 223210
List Number: 2
Creator: Miller, Darren R

List Source: Eurofins Seattle Specialty Metals
List Creation: 03/28/25 12:33 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login.