

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

CLEANUP AND ABATEMENT ORDER NO. R9-2017-0021

**AN ORDER DIRECTING LOCKHEED MARTIN CORPORATION
TO CLEAN UP AND ABATE THE EFFECTS OF WASTE DISCHARGED
FROM THE FORMER TOW BASIN AND FORMER MARINE TERMINAL AND
RAILWAY FACILITIES AT 3380 NORTH HARBOR DRIVE AND 1160 HARBOR
ISLAND DRIVE TO THE EAST BASIN OF SAN DIEGO BAY,
SAN DIEGO, CALIFORNIA¹**

The California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds that:

1. **Legal and Regulatory Authority.** This Order conforms to and implements policies and requirements of the Porter-Cologne Water Quality Control Act (division 7 of the Water Code, commencing with section 13000) including (1) sections 13267 and 13304; (2) applicable State and federal regulations; (3) all applicable provisions of statewide Water Quality Control Plans adopted by the State Water Resources Control Board (State Water Board) and the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) adopted by the San Diego Water Board including beneficial uses, water quality objectives, and implementation plans; (4) State Water Board policies and regulations, including Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304*, the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality*,² California Code of Regulations (Cal. Code Regs.) Title 23, chapter 16, article 11, and Cal. Code Regs. Title 23, section 3890 et seq.; and (5) relevant standards, criteria, and advisories adopted by other State and federal agencies.

2. **Unauthorized Discharge of Wastes.** The former Tow Basin and former Marine Terminal and Railway contaminated sediment site (Site; Figure 1) is located adjacent to the north and west bank of the Harbor Island East Basin of San Diego Bay. The Site encompasses the area of the East Basin where sediment has been contaminated by discharges from the former Tow Basin and former Marine Terminal and Railway (Railway) facilities. The area of the two former

¹ Pursuant to a settlement agreement reached by the parties in a separate lawsuit, the San Diego Water Board is only issuing this Cleanup and Abatement Order (CAO) to Lockheed Martin Corporation. The San Diego Water Board reserves the right to amend and/or reissue the CAO for any reason.

² http://www.waterboards.ca.gov/water_issues/programs/bptcp/docs/sediment/sed_qlty_part1.pdf

facilities was submerged tideland until 1941 at which time the area was reclaimed by placement of hydraulic fill material (Figure 1).

Five outfalls are located along the north shoreline of the East Basin that discharged wastes to the Site (Figure 1). A 48-inch-diameter reinforced concrete pipe (RCP) storm drain outfall (Outfall No. 1) is located in the northwest corner of the basin and drains the adjacent hotel parking lot and part of an airport parking lot. A 30-inch-diameter RCP closed outfall (Outfall No. 2) is located east of the 48-inch-diameter pipe that is on the former Tow Basin facility. Another active RCP 30-inch-diameter outfall drains the Harbor Police site and adjacent parking lot (Outfall No. 3). The portion of this outfall within the former Tow Basin facility was partially replaced and the remainder of the line and catch basins were cleaned as part of site demolition activities.

- a. **Former Tow Basin Facility (3380 North Harbor Drive).** The former Tow Basin facility parcel is approximately 61,630 square feet in area and included a 13,000-square-foot building. The area has historically been the site of a variety of industrial facilities. An open-top concrete water tank within the building was used to test various hull designs of boats, submersible vehicles, and seaplanes. A steep seawall is located on the south side of the parcel sloping southerly from the Tow Basin property to Harbor Island East Basin. Discharges of polychlorinated biphenyls (PCBs), metals, and other pollutant wastes to San Diego Bay throughout the years have resulted in the accumulation of contaminants in marine sediments along the north shore of central San Diego Bay. Paint samples from the open-top concrete water tank surfaces, inside and out, were reported to contain approximately 3 to 6 percent PCBs (Aroclor 1254).³ PCBs were also detected in the paint that was hydroblasted from the building at the former Tow Basin facility.

Multiple sediment investigations have been conducted in the East Basin adjacent to the former Tow Basin and Railway facilities. The sampling results indicate that PCBs are present in Bay sediments, with the highest concentrations of PCBs located closest to the Tow Basin outfalls (Outfalls Nos. 1 and 2; Figure 1). In September 2010, sediment samples were collected from five stations within the site (see Figure 2). Sediment toxicity, chemistry, and benthic infauna samples collected from the study area were analyzed, and the results integrated using the benthic triad method in the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality* (Bays and Estuaries Plan) to determine whether the benthic community was adversely impacted by exposure to wastes discharged to the sediment. The benthic communities at two of the five

³ CH2M Hill. 1998. PCB Investigation, San Diego Tow Basin. Prepared for Lockheed Martin Missiles and Space, General Dynamics, and San Diego Unified Port District. January.

stations were determined to be likely impacted due to exposure to wastes, and one station was determined to be possibly impacted.⁴

- b. **Former Lockheed Marine Terminal and Railway Facility (1160 Harbor Island Drive).** The former Lockheed Marine Terminal and Railway Facility (Railway facility) consisted of a laboratory building (constructed 1965-1966) and a pier and railway that extended into the East Basin. The Railway facility was the site of a variety of maintenance and industrial activities. Historical use of mercury and other hazardous materials within the laboratory building could have resulted in a release of these materials to the drains within the building. A transformer existed adjacent to the laboratory building that could have leaked fluids containing PCBs. Various wastes (including mercury, waste and mixed oil, halogenated solvents, oxygenated solvents, and organic solids with halogens) were reported to be stored at several locations at the Railway facility including the main pier, as well as inside and outside of the laboratory building.

Pursuant to San Diego Water Board Investigative Order No. R9-2011-0026, sediments at three stations in the vicinity of the Railway facility were sampled and analyzed, and the results integrated using the benthic triad method in the Bays and Estuaries Plan (Figure 3). The benthic communities at each of the three sediment stations were classified as likely impacted to due exposure to wastes. Based on soil, groundwater, catch basin, building material, and sediment sampling results the San Diego Water Board determined the chemicals of concern at the Site to be divalent metals, mercury, and PCBs.⁵

3. **Persons Responsible for the Waste Discharges.**⁶ General Dynamics Corporation, Lockheed Martin Corporation, RMI, Inc., and San Diego Unified Port District (collectively, Dischargers) are responsible for discharges of wastes to sediment in the East Basin of San Diego Bay. Various waste constituents originated at facilities owned and/or operated by these parties and were discharged directly or transported to the East Basin where they cause or threaten to cause a condition of pollution or nuisance.

- a. **General Dynamics Corporation.** General Dynamics Corporation and its subsidiary (Convair) were operators at the Tow Basin site from its

⁴ Haley & Aldrich, Inc. 2011. Report on Sediment Quality Objectives Sampling, Former Tow Basin, East Basin of San Diego Bay, San Diego, California. March 10.

⁵ San Diego Water Board. 2012. Comments on Site Assessment Report for Lockheed Marine Terminal and Railway. June 28.

⁶ Pursuant to a settlement agreement reached by the parties in a separate lawsuit, the San Diego Water Board is only issuing the CAO to Lockheed Martin Corporation. The Board reserves the right to name any additional parties, including any of those parties listed under this section, and to amend and/or reissue the CAO for any reason. This includes, but is not limited to, a scenario in which the work set forth in this CAO is not adequately performed or completed by Lockheed Martin Corporation, in which case the Board reserves the right to amend the CAO and reissue it to all Responsible Parties.

inception in 1954 until 1970. The former Tow Basin facility was used by Electric Boat, a division of Convair, to test and develop hull designs for deep submersible vehicles and seaplanes.

- b. **Lockheed Martin Corporation.** Lockheed Martin Corporation and its various entities (LMC) operated at the former Tow Basin site from 1970 until 1983 and from 1986 to 1991. In 1970, LMC purchased the building and the open-top concrete water tank within the building referred to as the Tow Basin, which was used to test various hull designs of boats, submersible vehicles, and seaplanes, and sublet the property from Convair. LMC continued to use the facility to test hull designs until 1983. LMC leased the facility from the San Diego Unified Port District (Port District) from 1986 to 1991 at which time the facility reverted back to the Port of San Diego.

The Railway facility had been leased by various LMC entities since 1966. Lockheed Aircraft Company began leasing the facility from the Port District in April 1966. In 1966, the facility consisted of a recently constructed building and a pier and railway that extended into the East Basin of San Diego Bay.

A deep submergence vehicle owned by Lockheed Missiles and Space Company began operating from the Railway facility in 1969. In 1971, the site lease was assigned to Lockheed Missiles and Space Company. From 1971 through 2009 deep submergence vehicle and deep submergence rescue vehicle maintenance operations were conducted at the Railway facility. In 1981, the deep submergence rescue vehicle maintenance operations were conducted at the facility. In December 1983, LMC assigned the leases for the Railway facility to Lockheed Advanced Marine Systems. In June 1989, Lockheed Missiles and Space Company assigned the leases for the Railway facility to Lockheed Engineering and Sciences Company. In June 2010, LMC assigned Site operations and the lease obligations to a division of LMC. LMC renewed the lease for five consecutive five-year options beginning in 1990 and ending in 2015.

- c. **RMI, Inc.** In 1983 RMI, Inc. (RMI), purchased the Tow Basin facility structures from LMC and leased the parcel from the Port of San Diego. RMI conducted similar industrial operations to those of LMC until 1986.
- d. **San Diego Unified Port District/Port of San Diego.** In 1986 the Port of San Diego took ownership of the building and the Tow Basin facility when RMI relinquished the facility due to bankruptcy.
4. **Water Quality Standards.** The Basin Plan and the Bays and Estuaries Plan designate the following beneficial uses for San Diego Bay that apply to the East

Basin of San Diego Bay. These uses could be impacted by contaminants discharged from the Dischargers' facilities to the Bay and Bay sediments:

- a. **Human Health**
 - i. Commercial and Sport Fishing (COMM)
 - ii. Shellfish Harvesting (SHELL)
- b. **Aquatic Life – Benthic Community**
 - i. Estuarine Habitat (EST)
 - ii. Marine Habitat (MAR)
- c. **Aquatic-Dependent Wildlife**
 - i. Wildlife Habitat (WILD)
 - ii. Rare, Threatened, or Endangered Species (RARE)

The Bays and Estuaries Plan contains the following sediment quality objectives (SQOs) that support the human health and aquatic life-benthic community beneficial uses.

Human Health. Pollutants shall not be present in sediments at levels that will bioaccumulate in aquatic life to levels that are harmful to human health in bays and estuaries of California.

Aquatic Life – Benthic Community Protection. Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California.

The Basin Plan contains the following toxicity objective that supports aquatic-dependent wildlife beneficial uses:

Toxicity. All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

5. **Human Health Impairment.** San Diego Bay is listed in the 2012 Integrated Report⁷ as impaired for PCBs in fish tissue. The listing is based on all fish tissue samples from the Bay exceeding the Office of Environmental Health Hazard Assessment's screening value of 20 nanograms per gram. Furthermore, the Office of Environmental Health Hazard Assessment published a health advisory and guidelines for fish consumption from San Diego Bay in 2013 warning of unhealthy levels of PCBs and mercury in fish tissue from San Diego Bay.⁸ PCBs and mercury were discharged from the former Tow Basin and Railway facilities to

⁷ 2012 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report).

http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml

⁸ Office of Environmental Health Hazard Assessment, Health Advisory and Guidelines for Eating Fish from San Diego Bay (San Diego County). October 2013.

the East Basin, contributing to the unhealthy levels of these pollutants in San Diego Bay fish tissue.

6. **Benthic Community Impairment.** Five of the eight sediment quality triad-sampling stations at the Site were categorized as having sediment pollutant levels “likely” to adversely affect the health of the benthic community, and one triad station was classified as “possible.” These results are based on the synoptic measures of sediment chemistry, toxicity, and benthic community structure at the Site.
7. **Potential Aquatic-Dependent Wildlife Impairment.** Concentrations of pollutants in the sediment at the Site are at levels that can have an impact on human health and the benthic community. The impact on aquatic-dependent wildlife is unknown. Aquatic-dependent wildlife beneficial uses designated for San Diego Bay could potentially be impaired due to elevated levels of pollutants present in the marine sediment at the Site. An ecological risk assessment is needed to determine if the cleanup levels proposed for protection of human health and the benthic community will also be protective of aquatic-dependent wildlife if alternative cleanup levels greater than established background concentrations are used.
8. **Condition of Pollution.** The concentrations of pollutants in the sediments of the East Basin of San Diego Bay are at levels that may have an impact on human health and the benthic community, and may have an impact on aquatic-dependent wildlife, thus creating a condition of pollution and nuisance in waters of the State.
9. **Basis for Cleanup and Abatement Order.** Water Code section 13304 contains the authority for the San Diego Water Board to require cleanup and/or abatement of the effects of pollution caused by discharges of wastes. Water Code section 13304 requires a person to clean up waste or abate the effects of the waste discharge if so ordered by a regional water board in the event there has been a discharge in violation of waste discharge requirements, or if a person has caused or permitted waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the State and creates or threatens to create a condition of pollution or nuisance. Therefore, based on the findings in this Cleanup and Abatement Order (CAO) the Board is authorized to order the Dischargers identified in Finding 3 to clean up and/or abate the effects of the waste discharged.
10. **Basis for Requiring Technical and Monitoring Reports.** Water Code section 13267 provides that the San Diego Water Board may require dischargers, past dischargers, or suspected dischargers to furnish those technical or monitoring reports as the Board may specify, provided that the burden, including costs, of these reports bears a reasonable relationship to the need for the reports and the

benefits to be obtained from the reports.

11. **Need for and Benefit of Technical and Monitoring Reports.** Technical and monitoring reports are needed to provide information to the San Diego Water Board regarding (a) the nature and extent of the discharge, (b) the nature and extent of pollution conditions in State waters created by the discharge, and (c) appropriate cleanup and abatement measures. The reports will enable the Board to determine the vertical and lateral extents of the discharge, describe appropriate cleanup and abatement measures for the Site, and provide technical information to determine if those cleanup and abatement measures have brought the Site into compliance with applicable water quality standards. Based on the nature and possible consequences of the discharges, the burden of providing the required reports, including the costs, bears a reasonable relationship to the need for the reports, and the benefits to be obtained from the reports.
12. **Cleanup Levels.** State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under California Water Code Section 13304*, sets forth the policies and procedures to be used during an investigation, or cleanup and abatement of a discharge of waste, and requires that cleanup levels be consistent with State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*. Resolution No. 92-49 applies to the cleanup and abatement of the effects of waste discharges at the Site.

Resolution No. 92-49 requires that dischargers clean up and abate the effects of discharges in a manner that promotes the attainment of background water quality, or the best water quality that is reasonable if background water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. For the purposes of this CAO, background concentrations for total PCBs and mercury (contaminants of concern [COCs]) applicable to East Basin sediments are 84 parts per billion and 0.57 parts per million, respectively.⁹ Any alternative cleanup levels greater than established background concentrations must (1) be consistent with the maximum benefit to the people of the State; (2) not unreasonably affect present and anticipated beneficial use of waters of the State; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Water Board.

13. **California Environmental Quality Act Compliance.** The issuance of this CAO is an enforcement action taken by a regulatory agency and is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to section 15321(a)(2), chapter 3, title 14 of the Cal. Code Regs.

⁹ San Diego Water Board. 2015. Updated Background Analysis, Draft Remedial Action Plan – Northwest Portion of the East Basin, San Diego Two Basin and Marine Terminal Sites. September 16.

If the San Diego Water Board later determines that work proposed in the Remedial Action Plan may have a significant effect on the environment, the San Diego Water Board will prepare and adopt an appropriate environmental document prior to approving the Remedial Action Plan in compliance with CEQA.

14. **Public Notice.** The San Diego Water Board has notified all known interested persons and the public of its intent to adopt this CAO, and has provided them with an opportunity to submit written comments, evidence, testimony, and recommendations.
15. **Cost Recovery.** Pursuant to Water Code section 13304, and consistent with other statutory and regulatory requirements, including but not limited to Water Code section 13365, the San Diego Water Board is entitled to, and will seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this CAO.

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13267 and 13304, LMC shall comply with the following directives:

- A. **CLEAN UP AND ABATE THE EFFECTS OF PCB AND MERCURY DISCHARGES.** PCBs and mercury are the COCs present in Site sediments. LMC shall take all corrective actions necessary to clean up and abate COC concentrations in Site sediments to background concentrations or to alternative cleanup levels that meet the SQOs for benthic community protection and human health in the Bays and Estuaries Plan and the toxicity water quality objective in the Basin Plan for the protection of aquatic-dependent wildlife.

For all analyses associated with this project, total PCB concentrations shall be expressed as the sum of the following 41 congeners:

Congeners 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206.

- B. **FEASIBILITY STUDY.** LMC shall prepare a Feasibility Study to evaluate cleanup alternatives capable of attaining background sediment quality. LMC shall submit the Feasibility Study to the San Diego Water Board for review and approval no later than **90 calendar days after CAO adoption**. If LMC proposes a cleanup alternative that attains background sediment quality, the Feasibility Study shall include, but shall not be limited to, the following:
 1. An evaluation of the technical and economic feasibility of cleaning up sediment to background concentrations.

2. An evaluation of remedial alternatives capable of effectively cleaning up sediments to background concentrations.
3. An evaluation of the cost and effectiveness of each alternative for the remediation of the waste constituents to attain a level of sediment cleanup that results in attainment of background sediment quality.
4. A recommended remedial alternative(s) for the cleanup and/or abatement of wastes discharged. The recommended alternative(s) must be capable of achieving the proposed cleanup levels for all waste constituents at all monitoring points and throughout the zone affected by the waste constituents.

If it is not feasible to clean up to background, LMC shall propose alternative cleanup levels less stringent than background that comply with State Water Board Resolution No. 92-49. In addition to the items listed above, which shall be performed with respect to alternative cleanup levels instead of background concentrations, the Feasibility Study shall include an ecological risk assessment to determine the risk to aquatic-dependent wildlife from the presence of pollutants in sediment. The ecological risk assessment is needed to determine if the alternative cleanup levels proposed for protection of human health and the benthic community will also be protective of aquatic-dependent wildlife.

C. **REMEDIAL ACTION PLAN AND IMPLEMENTATION.**

1. **Remedial Action Plan.** LMC shall prepare and submit a Remedial Action Plan (RAP) to the San Diego Water Board for review and approval no later than **90 calendar days after Board approval of the Feasibility Study**. The RAP shall describe the activities needed to clean up PCB and mercury discharges at the Site to background concentrations or to alternative cleanup levels that comply with the SQOs. At a minimum, the RAP shall contain the following information:
 - a. **Introduction.** A brief description of the Site and Site history.
 - b. **Selected Remedy.** A detailed description of all of the remedial activities selected to attain the proposed cleanup levels for total PCBs and mercury.
 - c. **Health and Safety Plan.** A Health and Safety Plan that includes employee training requirements, a list of personal protective equipment for each task, medical surveillance requirements, standard operating procedures, and contingency plans.
 - d. **Community Relations Plan.** A Community Relations Plan for informing the public about (i) activities related to the final remedial design, (ii) the

schedule for the remedial action, (iii) the activities to be expected during construction and remediation, (iv) provisions for responding to emergency releases and spills during remediation, and (v) any potential inconveniences such as excess traffic and noise that may affect the community during the remedial action.

- e. **Quality Assurance Project Plan.** A Quality Assurance Project Plan (QAPP) that describes the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols as they relate to the remedial action.
- f. **Sampling and Analysis Plan.** A Sampling and Analysis Plan (SAP) that defines (i) sample and data collection methods to be used for the project, (ii) a description of the media and parameters to be monitored or sampled during the remedial action, and (iii) a description of the analytical methods to be used and an appropriate reference for each.
- g. **Evaluation of Environmental Impacts.** An evaluation of the potential environmental impacts of implementing the RAP based on the environmental factors in the CEQA checklist. The evaluation must identify levels of significance for environmental impacts, propose mitigation to lessen environmental impacts to less than significant levels, and be adequate to allow the San Diego Water Board to prepare a CEQA Initial Study and an appropriate CEQA document for the RAP.
- h. **Wastes Generated.** A description of the plans for management, treatment, storage, and disposal of all wastes generated by the remedial action.
- i. **Pre-Remedial Studies Workplan.** A workplan for any Pre-Remedial Studies or for the collection of any data needed to optimize the remedial design.
- j. **Design Criteria Report.** A Design Criteria Report that defines in detail the technical parameters upon which the remedial design will be based. Specifically, the Design Criteria Report shall include preliminary design assumptions and parameters, including (i) waste characterization; (ii) volume and types of each medium requiring removal or containment; (iii) removal or containment schemes and rates; (iv) required qualities of waste streams (e.g., input and output rates to stockpiles, influent and effluent qualities of any liquid waste streams such as dredge spoil return water, and potential air emissions); (v) performance standards; (vi) compliance with applicable local, State, and federal regulations; and (vii) technical factors of importance to the design, construction, and implementation of the selected remedy including use of currently

accepted environmental control measures, constructability of the design, and use of currently acceptable construction practices and techniques.

- k. **Equipment, Services, and Utilities.** A list of any elements or components of the selected remedial action that will require custom fabrication or long lead time for procurement. The list shall state the basis for such need and the recognized sources of such procurement.
 - l. **Regulatory Permits and Approvals.** A list of required federal, State, and local permits and approvals needed to conduct the remedial action.
 - m. **Remediation Monitoring Plan.** A Remediation Monitoring Plan consisting of (i) water quality monitoring, (ii) sediment monitoring, (iii) silt curtain monitoring by a qualified biologist, and (iv) disposal monitoring. Water quality monitoring must be sufficient to demonstrate that implementation of the selected remedial activities does not result in violations of water quality standards outside the construction area. Sediment monitoring must be sufficient to confirm that the selected remedial activities have achieved target cleanup levels within the remedial footprint. Silt curtain monitoring must be sufficient to ensure that no aquatic-dependent wildlife is harmed during installation, maintenance, or removal of the curtains. Disposal monitoring must be sufficient to adequately characterize the dredged sediments to identify appropriate disposal options.
 - n. **Site Map.** A site map showing the location of buildings, roads, property boundaries, remedial equipment locations, staging areas, boundaries of remedial activities, and other information pertinent to the remedial action.
 - o. **Contingencies.** A description of any additional items necessary to complete the RAP.
 - p. **Remediation Schedule.** A schedule detailing the sequence of events and activities, and the timeframe for each event and activity based on the shortest practicable time required to complete each activity. Any and all proposed time frames and completion dates are subject to review and revision by the San Diego Water Board.
2. **RAP Implementation.** LMC shall begin implementation of the RAP **60 calendar days after San Diego Water Board approval of the RAP**, unless otherwise directed in writing by the Board. LMC shall carry out the activities in the RAP according to the schedule in the RAP as long as active remedial work can be completed outside of the least tern nesting season (typically April 1 through September 30). If, upon permit approval, work cannot be completed due to the least tern nesting season, corrective actions shall be completed, either (1) within one month following the end of the current

nesting season, or (2) within the number of days following the nesting season that remained for completion upon onset of the nesting season, whichever is greater. Before beginning RAP implementation activities, LMC shall:

- a. Notify the Board of the intention to begin cleanup in accordance with Provision H.6.
- b. Comply with any conditions set by the Board, including mitigation of adverse consequences from cleanup activities.

LMC shall modify or suspend cleanup activities when directed to do so by the Board.

D. CLEANUP AND ABATEMENT COMPLETION VERIFICATION.

LMC shall verify through the submission of a **Cleanup and Abatement Completion Report**, that all RAP activities for the Site have been completed as described in the approved RAP. The report must be received by the San Diego Water Board **within 90 calendar days after completion of the last remedial event or activity on the Remediation Schedule in the RAP**. The Board will review and approve the Cleanup and Abatement Completion Report pending receipt of adequate responses to comments.

E. POST-REMEDIAL MONITORING.

Post-remedial monitoring shall be performed to demonstrate, based on sound technical analysis, that the cleanup levels in the approved RAP have been achieved. Post-remedial monitoring shall consist of the following components:

1. **Post-Remedial Monitoring Plan.** LMC shall prepare and submit a Post-Remedial Monitoring Plan to the San Diego Water Board for review and approval **within 90 calendar days after CAO adoption**. The Post-Remedial Monitoring Plan shall be designed to verify that the remaining COC concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. At a minimum the Post-Remedial Monitoring Plan shall include the following elements:
 - a. **Quality Assurance Project Plan.** A QAPP describing the project objectives and organization, functional activities, and QA/QC protocols for post-remediation monitoring.
 - b. **Sampling and Analysis Plan.** A SAP defining (i) sample and data collection methods to be used for the post-remedial monitoring, (ii) a description of the media and parameters to be monitored or sampled, and (iii) a description of the analytical methods to be used and an appropriate reference for each.

- c. **Sediment Chemistry.** Site-wide post-remedial surface sediment chemistry (PCBs and mercury) for grab samples collected at the stations sampled in the initial delineation of the Site.
 - d. **Activities Completion Schedule.** A schedule detailing the sequence of and timeframe for each activity based on the time reasonably required to complete each activity.
2. **Post-Remedial Monitoring Plan Implementation.** LMC shall implement the Post-Remedial Monitoring Plan (Directive E.1) in accordance with the Activities Completion Schedule contained in the Post-Remedial Monitoring Plan unless otherwise directed in writing by the San Diego Water Board. Before beginning sample collection activities, LMC shall:
- a. Notify the Board in advance of the beginning of sample collection activities in accordance with Provision H.6.
 - b. Comply with any conditions set by the Board with respect to sample collection methods such as providing split samples.

For convenience, post-remediation plans and reports required by this Directive may be submitted in a single document along with the RAP or as separate documents.

F. **QUARTERLY PROGRESS REPORTS.**

LMC shall prepare and provide written quarterly progress reports that:

- Describe the actions that have been taken toward achieving compliance with the CAO during the previous quarter.
- Include all results of sampling and tests, and all other verified or validated data received or generated by or on behalf of LMC during the previous quarter in the implementation of the remedial actions required by the CAO.
- Evaluate and interpret monitoring data. Interpretations and conclusions shall be made regarding the potential presence and chemical characteristics of any newly deposited sediment within the cleanup areas.
- Analysis of whether or not cleanup levels have been attained.
- Show the locations, type, and number of samples on a site map.
- Describe all activities, including data collection and other field activities, that are scheduled for the next two quarters, and provide other information relating to the progress of work, including, but not limited to, a graphical depiction of the progress of the remedial actions.
- Identify any modifications to the RAP or other work plan(s) that LMC submitted to the San Diego Water Board or that have been approved by the Board during the previous quarter.

- Include information regarding all delays encountered or anticipated that may affect the future schedule for completion of the events and activities in the RAP, and a description of all efforts made to mitigate those delays or anticipated delays.

LMC shall submit the quarterly progress reports to the Board for review and approval by the **15th day of March, June, September, and December** of each year following the adoption of the CAO. Submission of these progress reports shall continue until the Board determines that no further action is required by LMC.

- G. **VIOLATION REPORTS.** If LMC violates any requirement of the CAO, then LMC must notify the San Diego Water Board office by telephone and electronic mail as soon as practicable once LMC has knowledge of the violation. The Board may, depending on violation's severity, require LMC to submit a separate technical report addressing the violation within five working days of notification. In addition, a violation may subject LMC to a future enforcement action.
- H. **REPORTS AND WORK PLANS.** LMC shall prepare and submit all required plans and reports described in the CAO to the San Diego Water Board for review and approval. The Board intends to make these plans/reports available to the public for review and will consider public comments prior to approving any plan or report.
- I. **PROVISIONS.**
1. **Waste Management.** LMC shall properly manage, store, treat, and dispose of contaminated marine sediment and associated wastes in accordance with applicable federal, State, and local laws and regulations. The storage, handling, treatment, or disposal of contaminated marine sediment and associated waste shall not create conditions of pollution, contamination, or nuisance as defined in Water Code section 13050. LMC shall, as required by the San Diego Water Board, obtain or apply for waste discharge requirements or a conditional waiver of waste discharge requirements for the removal of waste from the immediate place of release and discharge of the waste (a) to land for treatment, storage, or disposal or (b) to waters of the State. No waste discharge requirements or conditional waiver of waste discharge requirements shall be required for disposal of marine sediment and associated waste in a landfill regulated under existing waste discharge requirements.
 2. **Preliminary Information.** LMC may present data, preliminary interpretations, and preliminary conclusions to the San Diego Water Board as they become available, rather than withholding this information until a final report is prepared. This type of ongoing reporting is encouraged to facilitate and expedite Board approval of reports required by this CAO.

3. **Laboratory Qualifications.** All samples must be analyzed by Environmental Laboratory Accreditation Program-certified laboratories using methods approved by the U.S. Environmental Protection Agency (USEPA) for the type of analysis to be performed. All laboratories must maintain QA/QC records for San Diego Water Board review.
4. **Laboratory Analytical Reports.** Any report presenting new analytical data must include the complete laboratory analytical report(s). The laboratory analytical report(s) must be signed by the laboratory director and contain:
 - Complete sample analytical reports
 - Complete laboratory QA/QC reports
 - A discussion of the sample and QA/QC data
 - A transmittal letter indicating whether or not all the analytical work was supervised by the director of the laboratory, and contain the following statement: “All analyses were conducted at a laboratory certified for such analyses by the Environmental Laboratory Accreditation Program in accordance with current USEPA procedures.”
5. **Duty to Operate and Maintain.** LMC shall, at all times, properly operate and maintain all facilities and systems of treatment, control, storage, disposal, and monitoring (and related appurtenances) that are installed or used by LMC to achieve compliance with the CAO. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities, which would be installed by LMC only when the operation is necessary to achieve compliance the conditions of the CAO.
6. **Field Work Notice.** LMC shall give the San Diego Water Board advance notice of 14 days of all field work or field activities to be performed by LMC pursuant to the CAO. If 14 days of advance notice is impossible for LMC to provide, LMC shall provide notice to the Board of all such field work or activities as far in advance of such work as is possible. In any event, any notification pursuant to this Provision shall be given at least 24 hours prior to the given field activities, unless the Board agrees otherwise.
7. **Duty to Use Registered Professionals.** LMC shall provide documentation that plans and reports required under the CAO are prepared under the direction of appropriately qualified professionals. California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals. A statement of qualifications and license numbers of the responsible lead professionals and all professionals making significant and/or substantive contributions shall be included in all plans and reports submitted by LMC. The lead professional performing engineering and geologic evaluations and judgments shall sign and affix their license stamp to

all technical reports, plans, or documents submitted to the San Diego Water Board.

8. **Corporate Signatory Requirements.** All reports required under the CAO shall be signed and certified by a responsible corporate officer of LMC described in paragraph (a) of this provision or by a duly authorized representative of that person as described in paragraph (b) of this provision.
 - a. **Responsible Corporate Officer(s).** For the purposes of this provision, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - b. **Duly Authorized Representative.** A person is a duly authorized representative only if:
 - i. The authorization is made in writing by a person described in paragraph (a) of this provision.
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual (a duly authorized representative may thus be either a named individual or any individual occupying a named position).
 - iii. The written authorization is submitted to the San Diego Water Board.
 - c. **Changes to Authorization.** If an authorization under paragraph (b) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility or for any activity, a new authorization satisfying the requirements of paragraph (b) of this provision shall be submitted to the San Diego

Water Board prior to or together with any reports or information to be signed by an authorized representative.

- d. **Penalty of Perjury Statement.** All reports shall be signed by LMC's corporate officer or its duly authorized representative, and shall include the following statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

9. **Duty to Submit Other Information.** When LMC becomes aware that it failed to submit any relevant facts in any submittal required under the CAO, or submitted incorrect information in any such report, LMC shall promptly submit in writing such facts or information to the San Diego Water Board.
10. **Document Submittals.** All documents prepared in compliance with this Order shall be submitted to the San Diego Water Board via the Geotracker database. The Board may also request hard copies and/or electronic copies on a CD or other appropriate media, including electronic mail.
- a. **Geotracker Database.** LMC shall submit all documents electronically to the Geotracker database located at:

<https://geotracker.waterboards.ca.gov/esi>

Electronic Reporting Regulations require electronic submission of any report or data required by a regulatory agency from a cleanup site after July 1, 2005. The electronic data shall be uploaded on or prior to the regulatory due dates set forth in the CAO or addenda thereto. Upon receipt of the documents, the San Diego Water Board shall use the email date and time to determine compliance with the regulatory due dates specified in the CAO. Note the following regarding email document submittals:

- i. Addressee. All documents shall include the following addressee information on the cover letter and/or document title page unless

otherwise directed by the Executive Officer:

Executive Officer
California Regional Water Quality Control Board, San Diego Region
2375 Northside Drive, Suite 100
San Diego, California 92108-2700
Attn: Sarah Mearon

- ii. Geotracker Global ID. All documents submitted to the San Diego Water Board shall include the following Geotracker Global ID in the header or subject line: **T10000002323**.
- iii. Document Size. Documents larger than 100 megabytes (MB) shall be divided into separate files at logical places to keep the file sizes under 100 MB.

To comply with these requirements, LMC shall upload all documents, including the following minimum information, to the Geotracker database:

- i. Laboratory Analytical Data. Analytical data (including geochemical data) for all sediment samples in Electronic Deliverable Format (EDF).
 - ii. Locational Data. The latitude and longitude of all sampling locations for which data are reported in EDF.
 - iii. Site Map. The site map shall be a stand-alone document and can be submitted in various electronic formats. An updated site map may be uploaded at any time.
- b. **CEDEN Database**. LMC shall submit study data in the appropriate format for upload into the California Environmental Data Exchange Network (CEDEN), or an alternative State database if directed by the Executive Officer. The CEDEN website (<http://www.ceden.org/>) provides information on procedures for submitting data for upload into CEDEN.
 - c. **Hard Copies and CDs**. If requested by the San Diego Water Board, LMC shall also provide any or all of the following to the Board: a hard copy of the complete document, a hard copy of the cover/transmittal letter, a hard copy of oversized drawings or maps, and an electronic copy (on a CD or other appropriate media) of the complete document.
 - d. **Electronic Mail**. If requested by the San Diego Water Board, LMC shall also submit a complete copy (in a text-searchable PDF file) of all

documents including signed transmittal letters, professional certifications, and all data presented in the documents to:

sandiego@waterboards.ca.gov

Upon receipt of the documents, the Board shall use the email date and time to determine compliance with the regulatory due dates specified in the CAO.

11. **Amendment.** The CAO in no way limits the authority of the San Diego Water Board to institute additional enforcement actions or to require additional investigation and cleanup consistent with the California Water Code. The CAO may be revised by the Board as additional information becomes available.
12. **Time Extensions.** If, for any reason, LMC is unable to perform any activity or submit any documentation in compliance with requirements in the CAO, including the RAP, or in compliance with associated implementation schedules, including the RAP implementation schedule, LMC may request, in writing, an extension of time. The written extension request shall include justification for the delay and shall be received by the San Diego Water Board reasonably (but not less than 15 calendar days) in advance of the deadline sought to be extended. An extension may be granted for good cause, in which case the CAO will be accordingly amended.
13. **Community Relations.** LMC shall cooperate with the San Diego Water Board in providing information regarding remediation of the Site to the public. If requested by the Board, LMC shall participate in the preparation of such information for distribution to the public and in public meetings that may be held or sponsored by the Board to explain activities at or relating to the Site.

J. NOTIFICATIONS.

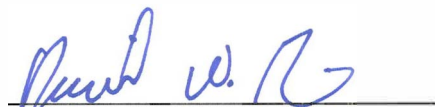
1. **Cost Recovery.** Upon receipt of invoices, and in accordance with instructions therein, LMC shall reimburse the San Diego Water Board for all reasonable costs incurred by the Board to investigate discharge of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action required by the CAO and consistent with the estimation of work, including the cost to prepare CEQA documents. LMC is enrolled in a reimbursement program managed by the State Water Board for the discharge addressed by the CAO, and reimbursement shall be made pursuant to the procedures established in that program.
2. **All Applicable Permits.** The CAO does not relieve LMC of the responsibility to obtain permits or other entitlements to perform necessary remedial

activities. This includes, but is not limited to, actions that are subject to local, State, and/or federal discretionary review and permitting.

3. **Enforcement Discretion.** The San Diego Water Board reserves its right to take any enforcement action authorized by law for violations of the terms and conditions of the CAO.
4. **Enforcement Notification.** Failure to comply with requirements of this CAO may subject LMC to further enforcement action, including but not limited to, administrative enforcement orders requiring LMC to cease and desist from violations, and imposition of administrative civil liability pursuant to Water Code sections 13268 and 13350. Failure to comply may also result in referral to the State Attorney General for injunctive relief and/or referral to the District Attorney for criminal prosecution.
5. **Requesting Administrative Review by the State Water Board.** Any person affected by this action of the San Diego Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and Cal. Code Regs. title 23, section 2050. The petition must be received by the State Water Board, Office of Chief Counsel, within **30 calendar days of CAO adoption**. Copies of the law and regulations applicable to filing petitions will be provided upon request.

This CAO is effective upon the date of signature.

ORDERED BY



DAVID W. GIBSON
Executive Officer

4 April 2017
DATE

Summary of Required Submittals and Due Dates

Directive	Document	Due Date
B	Feasibility Study	Within 90 calendar days of CAO adoption
C.1	Remedial Action Plan	Within 90 calendar days of Board approval of Feasibility Study
C.2	Remedial Action Plan Implementation	Within 60 calendar days of Board approval of Remedial Action Plan as long as active remedial work can be completed outside of the least tern nesting season (typically April 1 through September 30). If, upon permit approval, work cannot be completed due to the least tern nesting season, corrective actions shall be completed (1) within one month following the end of the current nesting season, or (2) within the number of days that remained for such completion upon onset of the nesting season, whichever is greater.
D	Cleanup and Abatement Completion Report	Within 90 calendar days of completion of remediation
E.1	Post-Remedial Monitoring Plan	Within 90 calendar days of CAO adoption
F	Quarterly Progress Reports	March 15, June 15, September 15, and December 15 of each year following completion of remediation

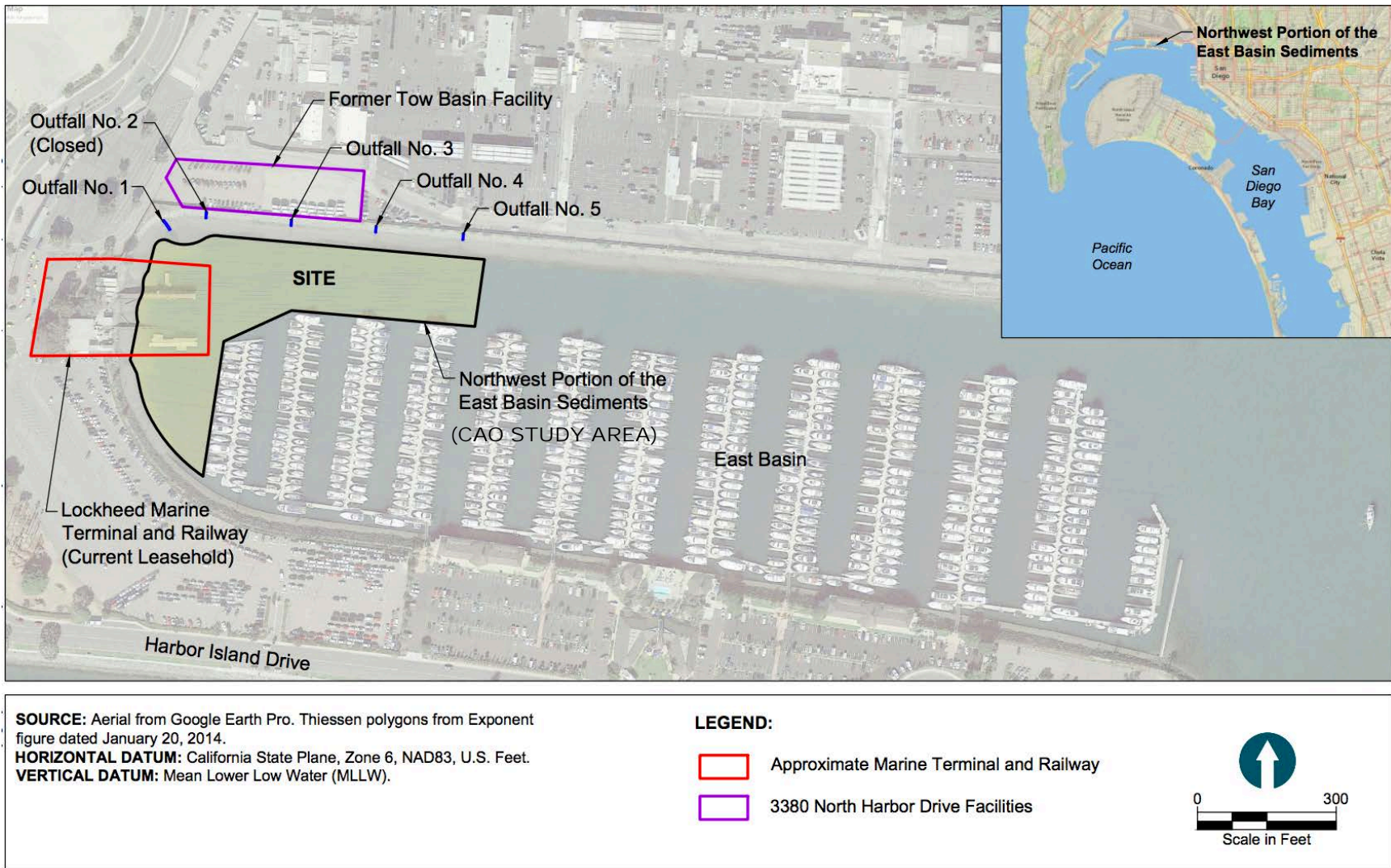


Figure 1 – Northwest Portion of the Harbor Island East Basin.

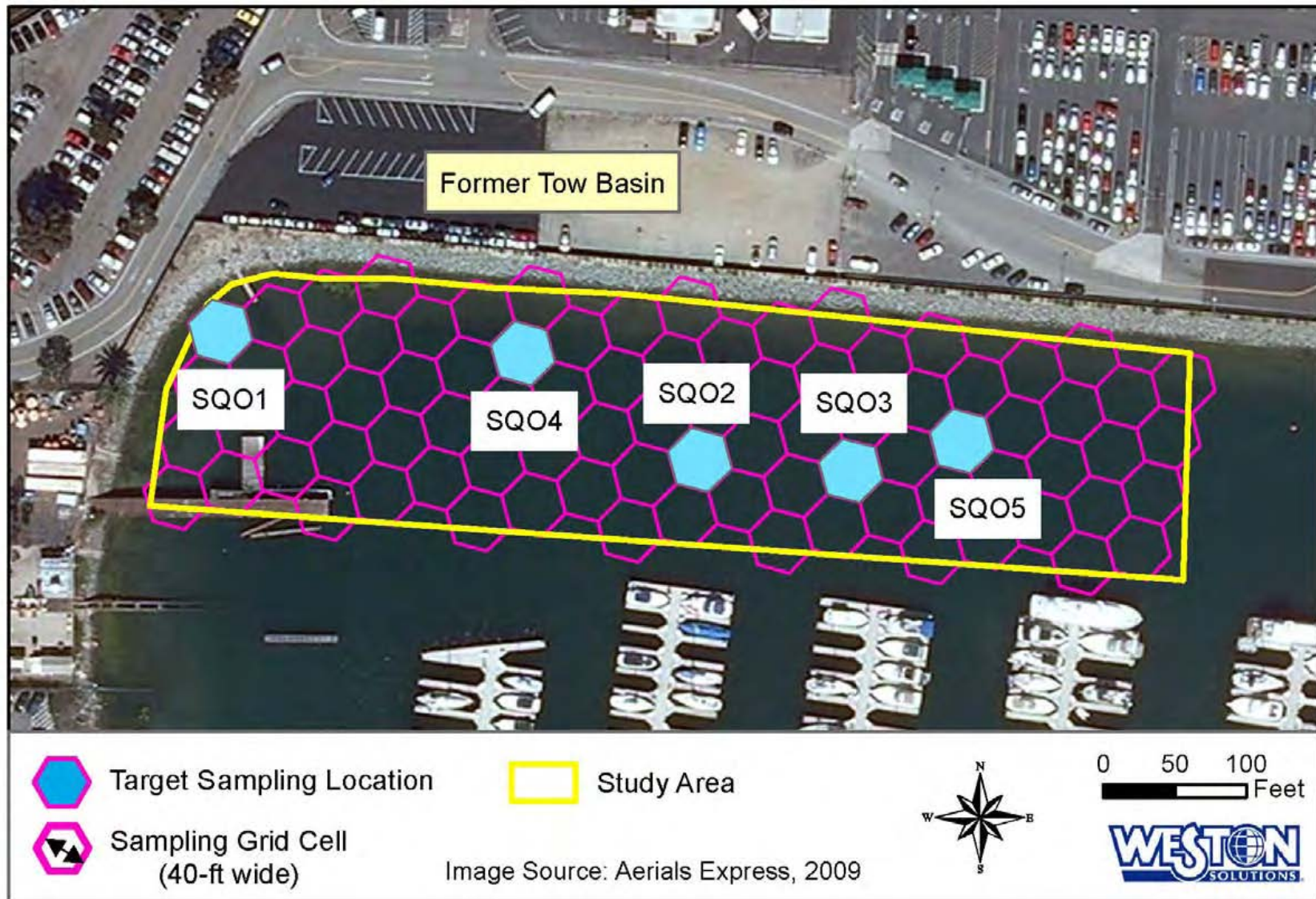


Figure 2 – Locations of Sediment Sample Stations within the Tow Basin Study Area of the East Basin.



Figure 3 – Locations of Sediment Sample Stations within the Lockheed Marine Terminal and Railway Site of the East Basin.