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April 13, 2012
OUR FILE NO. 367420-2

VIA E-MAIL (JBASHAW@WATERBOARDS.GOV)

State Water Resources Control Board
Office of Chief Counsel
Jeannette L. Bashaw, Legal Analyst
P.O. Box 100
Sacramento, CA 95812-0100

Re: Petition for Review of San Diego Regional Water Quality Control Board Cleanup and Abatement Order No. R9-2012-0024; Request for Stay

Dear Ms. Bashaw:

Pursuant to Section 13320 of the California Water Code, and Sections 2050 and 2050.5 of Title 23 of the California Code of Regulations, BAE Systems San Diego Ship Repair Inc. ("BAE Systems" or "Petitioner") respectfully petitions the State Water Resources Control Board ("State Board") to review and amend Cleanup and Abatement Order No. R9-2012-0024 adopted March 14, 2012 (the "Order") consistent with this Petition. Petitioner also requests a stay of enforcement of the Order pending the State Board's consideration of this Petition pursuant to Section 2053 of Title 23 of the California Code of Regulations.

I. PETITION

The information contained in this Petition is organized in accordance with the numbered list posted on the State Board's website and set forth in California Code of Regulations, Title 23, section 2050(a)(1)-(9).

1. Name, address, telephone number and e-mail address (if available) of the petitioner:

   BAE Systems San Diego Ship Repair Inc.
   Attn: Raymond A. Parra, Senior Counsel
   2205 East Belt Street
   San Diego, CA 92113
   Telephone: (619) 238-1000
   E-Mail: raymond.parra@baesystems.com

The Petitioner should be contacted through its counsel of record:

Mike Tracy
DLA Piper LLP (US)
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2. The action or inaction of the Regional Water Board being petitioned, including a copy of the action being challenged or any refusal to act, if available. If a copy of the regional board action is not available, the petitioner must explain why it is not included:

Petitioner challenges the action of the Regional Board in adopting an Order that excludes the majority of the area comprising polygon SW29, while specifically preserving its right to address that area in a separate future regulatory action by the Regional Board. A copy of the Order is attached as Exhibit 1.

3. The date the Regional Water Board acted, refused to act, or was requested to act:

On March 14, 2012, the Regional Board adopted the Order.

4. A statement of the reasons the action or inaction was inappropriate or improper:

The entirety of polygon SW29 is within the Shipyard Sediment Site, and has been investigated as part of the instant proceedings. Yet the Order neither includes it as part of the remedial footprint, nor specifically excludes on the basis of a lack of sufficient impairment. Instead, the Order directs the dischargers to dredge a small portion of SW29, while expressly indicating that "[t]he portion of polygon SW29 not in the dredge footprint may be addressed by the San Diego Water Board under a separate future regulatory action based upon available information." (CAO, Directive G.) The Order, at 33-2 of the Technical Report, provides:

> While polygon SW29 is considered part of the Shipyard Sediment Site for purposes of the CAO, only a portion of SW29 is included in the dredge area. The San Diego Water Board may address the un-dredged portion of SW29 in a separate regulatory proceeding based upon available information even if compliance with the CAO is achieved in the overall remedial footprint, as indicated in Provision G of this CAO.

BAE Systems submits that if the un-dredged portion of SW29 meets the criteria established by the Regional Board for remediation, it should be included within the remedial footprint in the instant Order such that it would be subject to the same remedial standards as the other polygons slated for remediation in the Order.

The Regional Board is in possession of substantial data regarding SW29 conditions and contaminant levels. If the data is insufficient to make a final determination regarding remediation, additional investigation should be undertaken and additional data should be obtained, within the parameters of the current Order. If the available information supports remediation of polygon SW29, it should be done

contemporaneous with the cleanup of the remedial footprint as defined in the Order, rather than put off into the future only to be revisited by the Regional Board and several of the instant Designated Parties in a separate regulatory proceeding. The Order's directive that polygon SW29 may be subject to future regulatory action should be stricken.

Under the current Order, the entire "Shipyard Sediment Site is exempt from Phase I Sediment Quality Objectives." (Order, Technical Report at 15-3.) As such, the entirety of SW29 is exempt from Phase 1 Sediment Quality Objectives. However, it is unclear how future regulatory action regarding the un-dredged portion of SW29 will be evaluated and this could lead to an unwarranted and improper contradiction of investigatory standards.

5. How the petitioner is aggrieved:

Petitioner is aggrieved because it faces significant risk of conflicting remedial standards, and substantially increased costs, that would be associated with unnecessary future separate regulatory action regarding a polygon, SW29, that has been investigated and is specifically a component of the Shipyard Sediment Site. Petitioner is aggrieved by the risk of inconsistent application of remedial standards to the same polygon in separate, successive regulatory actions, which may result in conflicting determinations regarding the appropriateness of remediation of SW29.

Proceeding in the manner currently contemplated will waste significant time and resources of the Regional Board and the affected parties, including Petitioner, who is the current tenant of the premises adjacent to the polygon. A future, separate regulatory action regarding SW29 will compel Petitioner to expend funds and resources to respond to the action, investigate the SW29 area again, and potentially remediate it. Petitioner is entitled to have the remainder of SW29 subjected to the same monitoring program as the rest of the Site.

Furthermore, because the Shipyard Sediment Site (including SW29) is specifically exempt from Phase I Sediment Quality Objectives, application of those standards in future regulatory actions to the currently-excluded portion of SW29 may expose Petitioner to litigation regarding the appropriate and applicable remedial standard.

6. The action the petitioner requests the State Board to take:

Petitioner seeks the following actions:

1) Amend the Order to (a) include an additional directive to the Designated Parties to investigate the remaining portion of SW29 in a manner consistent with the procedures utilized in the

Order, (b) direct the Regional Board to make a final determination regarding whether SW29's impairment warrants inclusion within the remedial footprint, and (c) depending on the results of the aforementioned determination, direct the Regional Board to either amend the Order to include the totality of Polygon SW29 within the remedial footprint, or amend the Order to specifically find that the remainder of Polygon SW29 is not sufficiently impaired to warrant remedial action;

2) Amend the Order to strike out the last sentence of Directive G – No Further Action, and the first paragraph of FN 24 on page 33-2 of the Technical Report, both of which set forth and discuss the Regional Board's reservation of rights to address the remainder of SW29 under a separate future regulatory action;

3) Petitioner requests a stay of the Order pending review of this Petition.

7. A statement of points and authorities for any legal issues raised in the petition, including citations to documents or hearing transcripts that are referred to:

A Regional Board abuses its discretion where it "has not proceeded in the manner required by law, the order or decision is not supported by the findings, or the finding are not supported by the evidence." Cal. Code Civ. Proc. § 1094.5(b). "To survive a challenge of abuse of discretion, Regional Board decisions must be supported by the weight of the evidence." Cal. Water Code § 13330(e); Cal. Code Civ. Proc. § 1094.5(c).)

The Regional Board has abused its discretion by failing to fully evaluate the totality of polygon SW29 to determine whether it should be included, or excluded, from the remedial footprint. Instead the Regional Board has excluded the majority of SW29 from the remedial footprint while simultaneously reserving its alleged right to subject that area (and the parties associated with it, including Petitioner) to separate, future regulatory action.

Moreover, Resolution 92-49 provides that the "Regional Water Board shall ... prescribe cleanup levels which are consistent with appropriate levels set by the Regional Water Board for analogous discharges that involve similar wastes, site characteristics, and water quality considerations." Cal. Water Code § 13000; Resolution 92-49. Here, the Site (including SW29) is exempt from Phase I Sediment Quality Objectives, and the Order applies specific Alternative Cleanup Levels. Future separate regulatory action regarding the remainder of SW29 would involve not just analogous, but identical "discharges that involve similar wastes, site characteristics" to the instant proceedings. However, with no express exemption, that potential future regulatory action regarding the remainder of SW29 may be subject to Phase I Sediment Quality Objectives. Such a result would violate Resolution 92-49's mandates.

Petitioner specifically reserves the right to submit further briefing in support of the issues raised in this Petition and to refer to documents in the administrative record or transcripts of any Regional Board hearing where relevant issues are raised. Cal. Code Regs. Tit. 23, §§ 2050(a)(7), (9).

8. A statement that copies of the petition have been sent to the Regional Water Board and to the discharger, if different from the petitioner:

Petitioner has sent copies of this Petition to David Gibson, Executive Officer, and Chris Carrigan, Director – Office of Enforcement. Petitioner has also sent copies of this Petition to representatives of all Designated Parties in the underlying proceedings.

9. A statement that the issues raised in the petition were presented to the regional board before the regional board acted, or an explanation of why the petitioner could not raise those objections before the regional board:

The Regional Board adopted the Order on March 14, 2012. Petitioner has presented the issues raised in this Petition to the Regional Board before it acted to adopt the Order, including but not limited to (1) presenting them as BAE Systems' comments, legal argument and evidence to the Regional Board at the Public Hearing to consider adoption of the TCAO on November 9, 14, 15 and 15, 2011, (2) presenting them in BAE Systems' Comments Regarding Revisions to TCAO and DTR Released by the Regional Board on February 13, 2012, submitted on February 24, 2012 (attached hereto as Exhibit 2) and (3) presenting them as oral comments to the Regional Board at the Public Hearing to consider adoption of the TCAO on March 14, 2012 (PowerPoint presentation attached hereto as Exhibit 3).

II. REQUEST FOR STAY

Pursuant to Section 2053 of Title 23 of the California Code of Regulations, Petitioner requests the State Board issue a stay of enforcement of the Order pending its review and consideration of this Petition, or until such time as the need for this appeal is otherwise resolved through negotiations at the Regional Board level. As set forth in the Declaration of Shaun Halvax ("Halvax Decl.") filed concurrently, Petitioner has set forth facts establishing that (1) there will be substantial harm to Petitioner if a stay is not granted, (2) there will be no substantial harm to other interested persons and to the public interest if a stay is granted, and (3) there are substantial questions of fact or law regarding the disputed action. Therefore the State Board should issue the requested stay. Cal. Code Regs. Tit. 23 § 2053. Each of these factors is addressed in more detail below.

1) Petitioner will be subject to substantial harm if enforcement of the Order is not stayed during the State Board's consideration of this Petition. The Order requires a detailed Remedial Action Plan

("RAP") to be prepared and submitted jointly by all responsible parties within ninety days of adoption of the Order. Halvax Decl., ¶ 2. Petitioner is already working diligently with the other Designated Parties, and the Regional Board, regarding the terms of the RAP. *Id.* However, the RAP by its very nature is dependent on the terms of the Order, a portion of which Petitioner is appealing. *Id.* Should Petitioner's appeal be granted, the scope of the remedial action would be altered, which would in turn alter the terms of the RAP. *Id.* A variety of components of the RAP would be affected by the granting of the instant Petition. *Id.* Petitioner intends to continue working with the Regional Board and the Designated Parties to address its concerns regarding the RAP and scope of remedial action, and is hopeful that these negotiations will resolve all such issues. In such circumstances, a stay would likely be temporary.

2) There will be no substantial harm to other interested persons and to the public interest if a stay is granted. The underlying proceedings have been ongoing for more than a decade. Halvax Decl., ¶ 3. Although the Regional Board has ordered dredging to remove contaminants, the overwhelming evidence submitted into the record in this matter, and presented at the Public Hearing in November 2011, demonstrate that site conditions do not pose substantial or imminent harm to the public or other interested persons. *Id.* Moreover, the evidence demonstrates that the site is naturally attenuating. *Id.* Nonetheless, Petitioner seeks via this Petition to potentially *add* an additional area to the remedial footprint. *Id.* Alternatively if the Petition is denied, the footprint will remain unchanged, and the Order's remedial directives will remain as they are today. *Id.* Thus, regardless of the outcome of the Petition, no less remedial action will occur than is currently ordered, and therefore no other person or member of the public will be harmed if a stay is granted. Moreover, as discussed infra, the required length of a stay may be temporary.

3) There are substantial questions of fact or law regarding the disputed action. Whether the excluded portion of polygon SW29 is sufficiently impaired under the analyses set forth in the Order and Technical Report to warrant remediation concurrent with the remedial action directed in the Order is a substantial question of fact. Halvax Decl. ¶ 4. The Regional Board has indicated to Petitioner that it lacks sufficient information to fully analyze this portion of SW29. *Id.* Petitioner has proposed to the Regional Board an additional directive to the Order requiring the parties to complete further and sufficient investigation of SW29 to permit the Regional Board to make a final determination regarding its impairment. *Id;* (attached hereto as Exhibit 4). That proposal was not accepted. *Id.* Moreover, the appropriate scope of the RAP depends on the resolution of a variety of pending factual issues that are currently being negotiated by the Regional Board and the Designated Parties, including Petitioner. *Id.* Therefore, substantial questions of fact remain.

Moreover, the Order expressly reserves the Regional Board's claimed right to subject the remainder of SW29 (and Petitioner) to separate future regulatory action. That action may attempt to apply different

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remedial standards – Phase I Sediment Quality Objectives – from which the current Site is expressly exempt. These facts raise substantial questions of law regarding the disputed action.

For the reasons stated herein, the State Board should stay enforcement of the Order during the pendency of the instant Petition, or until such time as the need for this appeal is otherwise resolved through negotiations at the Regional Board level.

Sincerely,

DLA Piper LLP (US)

Mike Tracy
Partner

Admitted to practice in California

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EXHIBIT 1

PETITION OF
BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

CLEANUP AND ABATEMENT ORDER
NO. R9-2012-0024

NATIONAL STEEL AND SHIPBUILDING COMPANY

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.

CITY OF SAN DIEGO

CAMPBELL INDUSTRIES

SAN DIEGO GAS AND ELECTRIC

UNITED STATES NAVY

SAN DIEGO UNIFIED PORT DISTRICT

SHIPYARD SEDIMENT SITE
SAN DIEGO BAY
SAN DIEGO, CALIFORNIA

The California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds as follows, based upon the weight of the evidence in this matter:

JURISDICTION

1. **WASTE DISCHARGE.** Elevated levels of pollutants above San Diego Bay background conditions exist in the San Diego Bay bottom marine sediment along the eastern shore of central San Diego Bay extending approximately from the Sampson Street Extension to the northwest and Chollas Creek to the southeast, and from the shoreline out to the San Diego Bay main shipping channel to the west. This area is hereinafter collectively referred to as the "Shipyard Sediment Site." The National Steel and Shipbuilding Company Shipyard facility (NASSCO), the BAE Systems San Diego Ship Repair Facility (BAE Systems), the City of San Diego, San Diego Marine Construction Company,[1] Campbell Industries (Campbell), San Diego Gas and Electric (SDG&E), the United States Navy, and the San Diego Unified Port District (Port District) have each caused or permitted the discharge of waste to the Shipyard Sediment Site resulting in the accumulation of waste in the marine sediment. The contaminated marine sediment has caused conditions of pollution, contamination or nuisance in San Diego Bay that adversely affect aquatic life, aquatic-dependent wildlife, and human health San Diego Bay beneficial uses. A map of the Shipyard Sediment Area is provided in Attachment 1 to this Order (referred to interchangeably as CAO or Order).

RESPONSIBLE PERSON/DISCHARGER DETERMINATIONS

2. **NATIONAL STEEL AND SHIPBUILDING COMPANY (NASSCO), A SUBSIDIARY OF GENERAL DYNAMICS COMPANY.** The San Diego Water Board finds that NASSCO has caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH).

   NASSCO, a subsidiary of General Dynamics Company, owns and operates a full service ship construction, modification, repair, and maintenance facility on 126 acres of tidelands property leased from the Port District on the eastern waterfront of central San Diego Bay at 2798 Harbor Drive in San Diego. Shipyard operations have been conducted at this site by NASSCO over San Diego Bay waters or very close to the waterfront since at least 1960. Shipyard facilities operated by NASSCO over the years at the Site have included concrete platens used for steel fabrication, a graving dock, shipbuilding ways, and berths on piers or

[1] San Diego Marine Construction Company is not identified as a discharger with responsibility for compliance with this Order because San Diego Marine Construction Company no longer exists and no corporate successor with legal responsibility for San Diego Marine Construction Company's liabilities has been identified. See Finding No. 5 and the Technical Report Section 5.

land to accommodate the berthing of ships. An assortmcnt of waste is generated at the facility including spent abrasive, paint, rust, petroleum products, marine growth, sanitary waste, and general refuse. Based on these considerations NASSCO is referred to as "Discharger(s)" in this Cleanup and Abatement Order (CAO).

3. **BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC., FORMERLY SOUTHWEST MARINE, INC.** The San Diego Water Board finds that BAE Systems caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH.

   From 1979 to the present, Southwest Marine, Inc. and its successor BAE Systems have owned and operated a ship repair, alteration, and overhaul facility on approximately 39.6 acres of tidelands property on the eastern waterfront of central San Diego Bay. The facility, currently referred to as BAE Systems San Diego Ship Repair, is located on land leased from the Port District at 2205 East Belt Street, foot of Sampson Street in San Diego, San Diego County, California. Shipyard facilities operated by BAE Systems over the years have included concrete platens used for steel fabrication, two floating dry docks, five piers, and two marine railways. An assortment of waste has been generated at the facility including spent abrasive, paint, rust, petroleum products, marine growth, sanitary waste, and general refuse. Based on these considerations BAE Systems is referred to as "Discharger(s)" in this CAO.

4. **CITY OF SAN DIEGO**. The San Diego Water Board finds that the City of San Diego caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. From the early 1900s through February 1963, when the relevant tideland areas were transferred from the City of San Diego to the Port District, the City was the trustee of and leased to various operators, all relevant portions of the Shipyard Sediment Site. The wastes the City of San Diego caused or permitted to be discharged, or to be deposited where they were discharged into San Diego Bay through its ownership of the Shipyard Sediment Site contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH.

   The City of San Diego also owns and operates a municipal separate storm sewer system (MS4) through which it discharges waste commonly found in urban runoff to San Diego Bay subject to the terms and conditions of a National Pollutant Discharge Elimination System (NPDES) Storm Water Permit. The San Diego Water Board finds that the City of San Diego has discharged urban storm water containing waste directly to San Diego Bay at the Shipyard Sediment Site. The waste includes metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), total suspended solids, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes.

The San Diego Water Board finds that the City of San Diego has also discharged urban storm water containing waste through its MS4 to Chollas Creek resulting in the exceedances of chronic and acute California Toxics Rule copper, lead, and zinc criteria for the protection of aquatic life. Studies indicate that during storm events, storm water plumes toxic to marine life emanate from Chollas Creek up to 1.2 kilometers into San Diego Bay, and contribute to pollutant levels at the Shipyard Sediment Site. The urban storm water containing waste that has discharged from the on-site and off-site MS4 has contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay. Based on these considerations the City of San Diego is referred to as "Discharger(s)" in this CAO.

5. **STAR & CRESCENT BOAT COMPANY.** The San Diego Water Board finds that between 1914 and 1972, San Diego Marine Construction Company operated a ship repair, alteration, and overhaul facility on what is now the BAE Systems leasehold at the foot of Sampson Street in San Diego. Shipyard operations were conducted at this site over San Diego Bay water or very close to the waterfront. An assortment of waste was generated at the facility, including spent abrasive blast waste, paint, rust, petroleum products, marine growth, sanitary waste and general refuse. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH. In July 1972, San Diego Marine Construction Company sold its shipyard operations to Campbell Industries, and changed its corporate name, effective July 14, 1972, to Star & Crescent Investment Co. On March 19, 1976, Star & Crescent Boat Company (Star & Crescent), was incorporated in California and on April 9, 1976, Star & Crescent Investment Co. (formerly San Diego Marine Construction Company) transferred some portion of its assets and liabilities to Star & Crescent. The San Diego Water Board's Cleanup Team and several other designated parties allege that Star & Crescent Investment Co. (formerly San Diego Marine Construction Company) transferred all of its liabilities and assets to Star & Crescent. Accordingly, these parties allege that Star & Crescent is the corporate successor of and responsible for the conditions of pollution or nuisance caused or permitted by San Diego Marine Construction Company. Star & Crescent denies that it is the corporate successor to San Diego Marine Construction Company's and denies any responsibility for San Diego Marine Construction Company's discharges of waste to the San Diego Bay Shipyard Sediment Site from 1914 to 1972.

The San Diego Water Board finds that San Diego Marine Construction Company caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. San Diego Marine Construction Company is no longer in existence. The San Diego Water Board declines to decide the legal and factual questions necessary to determine whether Star & Crescent is the corporate successor to and therefore liable for San Diego Marine Construction Company's discharges. Due to Star & Crescent's uncertain legal status and due to the pending federal court litigation to which Star & Crescent is a party and that the San Diego Water Board expects will address allocation issues associated with this Order, the San Diego Water Board does not name Star & Crescent as a Discharger under this

Order. The San Diego Water Board retains the authority to exercise its discretion to add Star & Crescent as a Discharger under this Order in the future. If the federal court determines that Star & Crescent is the corporate successor to San Diego Marine Construction Company (later Star & Crescent Investment Company), the San Diego Water Board directs the Cleanup Team to reevaluate whether it is appropriate to amend the Order to add Star & Crescent as a Discharger.

6. **CAMPBELL INDUSTRIES**. The San Diego Water Board finds that Campbell caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH. From July 1972 through 1979, Campbell's wholly owned subsidiaries MCCSD and later San Diego Marine Construction Corporation operated a ship repair, alteration, and overhaul facility on what is now the BAE Systems leasehold at the foot of Sampson Street in San Diego. Shipyard operations were conducted at this site by Campbell over San Diego Bay waters or very close to the waterfront. An assortment of waste was generated at the facility including spent abrasive blast waste, paint, rust, petroleum products, marine growth, sanitary waste, and general refuse. Based on these considerations, Campbell is referred to as "Discharger(s)" in this CAO.

7. **CHEVRON, A SUBSIDIARY OF CHEVRONTEXACO**. Chevron, a subsidiary of ChevronTexaco (hereinafter, Chevron) owns and operates the Chevron Terminal, a bulk fuel storage facility currently located at 2351 East Harbor Drive in the City of San Diego adjacent to the NASSCO and BAE Systems leaseholds. Fuel products containing petroleum hydrocarbons have been stored at the Chevron Terminal since the early 1900s at both the currently operating 7 million gallon product capacity upper tank farm and the closed 5 million gallon capacity lower tank farm. Based on the information that the San Diego Water Board has reviewed to date, there is insufficient evidence to find that discharges from the Chevron Terminal contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, which create, or threaten to create, conditions of pollution or nuisance. Accordingly, Chevron is not referred to as "Discharger(s)" in this CAO.

8. **BP AS THE PARENT COMPANY AND SUCCESSOR TO ATLANTIC RICHFIELD**. BP owns and operates the Atlantic Richfield Company (ARCO) Terminal, a bulk fuel storage facility with approximately 9 million gallons of capacity located at 2295 East Harbor Drive in the City of San Diego. Fuel products containing petroleum hydrocarbons and related constituents such as PAHs have been stored at ARCO Terminal since the early 1900s. ARCO owned and operated ancillary facilities include a wharf, fuel pier (currently BAE Systems Pier 4), and a marine fueling station used for loading and unloading petroleum products and fueling from 1925 to 1978, and five pipelines connecting the terminal to the pier and wharf in use from 1925 to 1978. Storm water flows from ARCO Terminal enter a City of San Diego MS4 storm drain that terminates in San Diego Bay in the Shipyard Sediment Site approximately 300 feet south of the Sampson Street extension. Based on the information that the San Diego Water Board has reviewed

to date, there is insufficient evidence to find that discharges from the ARCO Terminal contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, which create, or threaten to create, conditions of pollution or nuisance. Accordingly, BP and ARCO are not referred to as "Discharger(s)" in this CAO.

9. **SAN DIEGO GAS AND ELECTRIC, A SUBSIDIARY OF SEMPRA ENERGY.** SDG&E owned and operated the Silver Gate Power Plant along the north side of the BAE Systems leasehold from approximately 1943 to the 1990s. SDG&E utilized an easement to San Diego Bay along BAE Systems' north property boundary for the intake and discharge of cooling water via concrete tunnels at flow rates ranging from 120 to 180 million gallons per day. SDG&E operations included discharging waste to holding ponds above the tunnels near the Shipyard Sediment Site.

   The San Diego Water Board finds that SDG&E has caused or permitted waste (including metals [chromium, copper, lead, nickel, and zinc], PCBs, PAHs, and total petroleum hydrocarbons [TPH-d and TPH-h]) to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. Based on these considerations SDG&E is referred to as "Discharger(s)" in this CAO.

10. **UNITED STATES NAVY.** The San Diego Water Board finds that the United States Navy (hereinafter "U.S. Navy") caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. The U.S. Navy owns and operates a municipal separate storm sewer system (MS4) at Naval Base San Diego (NBSD), formerly Naval Station San Diego or NAVSTA, through which it has caused or permitted the discharge of waste commonly found in urban runoff to Chollas Creek and San Diego Bay, including excessive concentrations of copper, lead, and zinc in violation of waste discharge requirements. Technical reports by the U.S. Navy and others indicate that Chollas Creek outflows during storm events convey elevated sediment and urban runoff chemical pollutant loading and its associated toxicity up to 1.2 kilometers into San Diego Bay over an area including the Shipyard Sediment Site.

    The San Diego Water Board finds that the U.S. Navy has caused or permitted marine sediment and associated waste to be resuspended into the water column as a result of shear forces generated by the thrust of propellers during ship movements at NBSD. The resuspended sediment and pollutants can be transported by tidal currents and deposited in other parts of San Diego Bay, including the Shipyard Sediment Site. The above discharges have contributed to the accumulation of pollutants in marine sediment at the Shipyard Sediment Site to levels that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay.

    Also, from 1921 to the present, the U.S. Navy has provided shore support and pier-side berthing services to U.S. Pacific fleet vessels at NBSD located at 3445 Surface Navy Boulevard in the City of San Diego. NBSD currently occupies 1,029 acres of land and 326

water acres adjacent to San Diego Bay to the west, and Chollas Creek to the north near Pier 1. Between 1938 and 1956, the NBSD leasehold included a parcel of land within the Shipyard Sediment Site referred to as the 28th Street Shore Boat Landing Station, located at the south end of the present day NASSCO leasehold at the foot of 28th Street and including the 28th Street Pier. The San Diego Water Board finds that the U.S. Navy caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance at this location when it conducted operations similar in scope to a small boatyard, including solvent cleaning and degreasing of vessel parts and surfaces, abrasive blasting and scraping for paint removal and surface preparations, metal plating, and surface finishing and painting. Prevailing industry-wide boatyard operational practices employed during the 1930s through the 1980s were often not sufficient to adequately control or prevent pollutant discharges, and often led to excessive discharges of pollutants and accumulation of pollutants in marine sediment in San Diego Bay. The types of pollutants found in elevated concentrations at the Shipyard Sediment Site (metals, butyltin species, PCBs, PCTs, PAHs, and TPH) are associated with the characteristics of the waste the U.S. Navy operations generated at the 28th Street Shore Boat Landing Station site. Based on the preceding considerations, the U.S. Navy is referred to as "Discharger(s)" in this CAO.

11. **SAN DIEGO UNIFIED PORT DISTRICT**. The San Diego Water Board finds that the Port District caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. The Port District is a special government entity, created in 1962 by the San Diego Unified Port District Act, California Harbors and Navigation Code Appendix I, in order to manage San Diego Harbor, and administer certain public lands along San Diego Bay. The Port District holds and manages as trust property on behalf of the People of the State of California the land occupied by NASSCO, BAE Systems, and the cooling water tunnels for SDG&E's former Silver Gate Power Plant. The Port District is also the trustee of the land formerly occupied by the San Diego Marine Construction Company and by Campbell at all times since 1963 during which they conducted shipbuilding and repair activities.[2] The Port District's own ordinances, which date back to 1963, prohibit the deposit or discharge of any chemicals or waste to the tidelands or San Diego Bay and make it unlawful to discharge pollutants in non-storm water directly or indirectly into the storm water conveyance system.

The wastes the Port District caused or permitted to be discharged, or to be deposited where they were discharged into San Diego Bay through its ownership of the Shipyard Sediment Site contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH.

The San Diego Water Board has the discretion to name the Port District in its capacity as the State's trustee as a "discharger" and does so in the Shipyard Sediment site CAO. The Port District asserts that its status as a lessor and State's trustee as well as other factors

[2] San Diego Marine Construction Company and Campbell Industries owned and operated ship repair and construction facilities in past years prior to BAE Systems San Diego Ship Repair, Inc.'s occupation of the leasehold. See Sections 5 and 6 of the Technical Report.

should only give rise to secondary and not primary liability as a discharger under this Order. Allocation of responsibility has not been determined and there is insufficient evidence to establish that present and former Port District tenants at the Site each have sufficient financial resources to perform all of the remedial activities required by this Order. In addition, cleanup is not underway at this time. Under these circumstances, it is not appropriate to accord the Port District secondary liability status it seeks.

The Port District also owns and operates a municipal separate storm sewer system (MS4) through which it discharges waste commonly found in urban runoff to San Diego Bay subject to the terms and conditions of an NPDES Storm Water Permit. The San Diego Water Board finds that the Port District has discharged urban storm water containing waste directly or indirectly to San Diego Bay at the Shipyard Sediment Site. The waste includes metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), total suspended solids, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs).

The urban storm water containing waste that has discharged from the on-site and off-site MS4 has contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay. Based on these considerations the San Diego Unified Port District is referred to as "Discharger(s)" in this CAO.

FACTUAL BACKGROUND

12. **CLEAN WATER ACT SECTION 303(d) LIST**. The San Diego Bay shoreline between Sampson and 28th Streets is listed on the Clean Water Act section 303(d) List of Water Quality Limited Segments for elevated levels of copper, mercury, zinc, PAHs, and PCBs in the marine sediment. These pollutants are impairing the aquatic life, aquatic-dependent wildlife, and human health beneficial uses designated for San Diego Bay and are causing the Bay's narrative water quality objective for toxicity to not be attained. The Shipyard Sediment Site occupies this shoreline. Issuance of a CAO (in lieu of a Total Maximum Daily Load program) is the appropriate regulatory tool to use for correcting the impairment at the Shipyard Sediment Site.

13. **SEDIMENT QUALITY INVESTIGATION.** NASSCO and BAE Systems conducted a detailed sediment investigation at the Shipyard Sediment Site in San Diego Bay within and adjacent to the NASSCO and BAE Systems leaseholds. Two phases of fieldwork were conducted, Phase I in 2001 and Phase II in 2002. The results of the investigation are provided in the Exponent report *NASSCO and Southwest Marine Detailed Sediment Investigation, September 2003 (Shipyard Report, Exponent 2003*). Unless otherwise explicitly stated, the San Diego Water Board's finding and conclusions in this CAO are based on the data and other technical information contained in the Shipyard Report prepared by NASSCO's and BAE Systems' consultant, Exponent.

The Shipyard Sediment Site is exempt from the Phase I Sediment Quality Objectives

promulgated by the State Water Board because a site assessment (the Shipyard Report) was completed and submitted to the San Diego Water Board on October 15, 2003. See State Water Board, *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality*, II.B.2 (August 25, 2009).

IMPAIRMENT OF AQUATIC LIFE BENEFICIAL USES

14. **AQUATIC LIFE IMPAIRMENT**. Aquatic life beneficial uses designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site. Aquatic life beneficial uses include: Estuarine Habitat (EST), Marine Habitat (MAR), and Migration of Aquatic Organisms (MIGR). This finding is based on the considerations described below in this *Impairment of Aquatic Life Beneficial Uses* section of the CAO.

15. **WEIGHT-OF-EVIDENCE APPROACH**. The San Diego Water Board used a weight-of-evidence approach based upon multiple lines of evidence to evaluate the potential risks to aquatic life beneficial uses from pollutants at the Shipyard Sediment Site. The approach focused on measuring and evaluating exposure and adverse effects to the benthic macroinvertebrate community and to fish using data from multiple lines of evidence and best professional judgment. Pollutant exposure and adverse effects to the benthic macroinvertebrate community were evaluated using sediment quality triad measurements, and bioaccumulation analyses, and interstitial water (i.e., pore water) analyses. The San Diego Water Board evaluated pollutant exposure and adverse effects to fish using fish histopathology analyses and analyses of PAH breakdown products in fish bile.

16. **SEDIMENT QUALITY TRIAD MEASURES**. The San Diego Water Board used lines of evidence organized into a sediment quality triad, to evaluate potential risks to the benthic community from pollutants present in the Shipyard Sediment Site. The sediment quality triad provides a "weight-of-evidence" approach to sediment quality assessment by integrating synoptic measures of sediment chemistry, toxicity, and benthic community composition. All three measures provide a framework of complementary evidence for assessing the degree of pollutant-induced degradation in the benthic community.

17. **REFERENCE SEDIMENT QUALITY CONDITIONS.** The San Diego Water Board selected a group of reference stations from three independent sediment quality investigations to contrast pollution conditions at the Shipyard Sediment Site with conditions found in other relatively cleaner areas of San Diego Bay not affected by the Shipyard Sediment Site: (1) Southern California Bight 1998 Regional Monitoring Program (Bight 98), (2) 2001 Mouth of Chollas Creek and Mouth of Paleta Creek TMDL studies, and (3) 2001 NASSCO and BAE Systems Detailed Sediment Investigation. Stations from these studies were selected to represent selected physical, chemical, and biological characteristics of San Diego Bay. Criteria for selecting acceptable reference stations included low levels of anthropogenic pollutant concentrations, locations remote from pollution sources, similar biological habitat to the Shipyard Sediment Site, sediment total organic carbon (TOC) and grain size profiles similar to the Shipyard Sediment Site, adequate sample size for statistical analysis, and sediment quality data comparability. The

reference stations selected for the Reference Sediment Quality Conditions are identified below.

Reference Stations Used To Establish Reference Sediment Quality Conditions

2001 Chollas/Paleta Reference Station Identification Number	2001 NASSCO/BAE Systems Reference Station Identification Number	1998 Bight'98 Reference Station Identification Number
2231	2231	2235
2243	2243	2241
2433	2433	2242
2441	2441	2243
2238		2256
		2257
		2258
		2260
		2265

18. **SEDIMENT QUALITY TRIAD RESULTS.** The San Diego Water Board categorized 6 of 30 sediment quality triad sampling stations at the Shipyard Sediment Site as having sediment pollutant levels "Likely" to adversely affect the health of the benthic community. The remaining triad stations were classified as "Possible" (13) and "Unlikely" (11). These results are based on the synoptic measures of sediment chemistry, toxicity, and benthic community structure at the Shipyard Sediment Site.

19. **BIOACCUMULATION**. The San Diego Water Board evaluated initial laboratory bioaccumulation test data to ascertain the bioaccumulation potential of the sediment chemical pollutants at the Shipyard Sediment Site. Examination of laboratory test data on the chemical pollutant concentrations in tissue of the clam *Macoma nasuta* relative to the pollutant concentrations in sediment indicates that bioaccumulation of chemical pollutants is occurring at the Shipyard Sediment Site. The data indicates for several chemical pollutants that concentrations in *Macoma nasuta* tissue increase proportionally as chemical pollutant concentrations in sediment increase. Statistically significant relationships were found for arsenic, copper, lead, mercury, zinc, tributyltin (TBT), PCBs, and high molecular weight polynuclear aromatic hydrocarbons (HPAHs). These chemical pollutants have a bioaccumulation potential at the Shipyard Sediment Site and are therefore considered bioavailable to benthic organisms. No statistically significant relationships were found for cadmium, chromium, nickel, selenium, silver, or PCTs.

20. **INDICATOR SEDIMENT CHEMICALS.** The San Diego Water Board evaluated the relationships between sediment chemical pollutants and biological responses to identify

indicator chemical pollutants that may be impacting aquatic life and would therefore be candidates for assignment of cleanup levels or remediation goals. A two-step process was conducted. The first step in the selection of indicator chemicals was to identify chemicals representative of the major classes of sediment pollutants: metals, butyltins, PCBs and PCTs, PAHs, and petroleum hydrocarbons. The second step was the evaluation of relationships between these chemicals and biological responses. Results of the three toxicity tests, benthic community assessment, and bioaccumulation testing conducted in Phase 1 of the Shipyard study were all used to evaluate the potential of such relationships. Chemical pollutants were selected as indicator chemicals if they had any statistically significant relationship with amphipod mortality, echinoderm fertilization, bivalve development, total benthic macroinvertebrate abundance, total benthic macroinvertebrate richness, or tissue chemical concentrations in *Macoma nasuta*. Chemical pollutants selected as indicator chemicals include arsenic, copper, lead, mercury, zinc, TBT, total PCB homologs, diesel range organics (DRO), and residual range organics (RRO).

IMPAIRMENT OF AQUATIC-DEPENDENT WILDLIFE BENEFICIAL USES

21. **AQUATIC-DEPENDENT WILDLIFE IMPAIRMENT.** Aquatic-dependent wildlife beneficial uses designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site. Aquatic-dependent wildlife beneficial uses include: Wildlife Habitat (WILD), Preservation of Biological Habitats of Special Significance (BIOL), and Rare, Threatened, or Endangered Species (RARE). This finding is based on the considerations described below in the *Impairment of Aquatic-Dependent Wildlife Beneficial* Uses section of this CAO.

22. **RISK ASSESSMENT APPROACH FOR AQUATIC-DEPENDENT WILDLIFE.** The San Diego Water Board evaluated potential risks to aquatic-dependent wildlife from chemical pollutants present in the sediment at the Shipyard Sediment Site based on a two-tier approach. The Tier I screening level risk assessment was based on tissue data derived from the exposure of the clam *Macoma nasuta* to site sediments for 28 days using the protocols specified by American Society of Testing Material (ASTM). The Tier II baseline comprehensive risk assessment was based on tissue data derived from resident fish and shellfish caught within and adjacent to the Shipyard Sediment Site.

23. **TIER I SCREENING LEVEL RISK ASSESSMENT FOR AQUATIC-DEPENDENT WILDLIFE.** The Tier I risk assessment objectives were to determine whether or not Shipyard Sediment Site conditions pose a potential unacceptable risk to aquatic-dependent wildlife receptors of concern and to identify whether a comprehensive, site-specific risk assessment was warranted (i.e., Tier II baseline risk assessment). The receptors of concern selected for the assessment include: California least tern (*Sterna antillarum brownie*), California brown pelican (*Pelecanus occidentalis californicus*), Western grebe (*Aechmophorus occidentalis*), Surf scoter (*Melanitta perspicillata*), California sea lion (*Zalophus californianus*), and East Pacific green turtle (*Chelonia mydas agassizii*). Chemical pollutant concentrations measured in clam tissue derived from laboratory bioaccumulation tests were used to estimate chemical exposure to these receptors of concern. Based on the Tier I screening level risk assessment results, there is a potential

risk to all receptors of concern ingesting prey caught at the Shipyard Sediment Site. The chemical pollutants in *Macoma* tissue posing a potential risk include arsenic, copper, lead, zinc, benzo[a]pyrene (BAP), and total PCBs. The results of the Tier I risk assessment indicated that a Tier II baseline comprehensive risk assessment was warranted.

24. **TIER II BASELINE COMPREHENSIVE RISK ASSESSMENT FOR AQUATIC-DEPENDENT WILDLIFE**. The Tier II risk assessment objective was to more conclusively determine whether or not Shipyard Sediment Site conditions pose an unacceptable risk to aquatic-dependent wildlife receptors of concern. The receptors of concern selected for the assessment include: California least tern (*Sterna antillarum brownie*), California brown pelican (*Pelecanus occidentalis californicus*), Western grebe (*Aechmophorus occidentalis*), Surf scoter (*Melanitta perspicillata*), California sea lion (*Zalophus californianus*), and East Pacific green turtle (*Chelonia mydas agassizii*). Based on the Tier I screening level risk assessment results, there is a potential risk to all receptors of concern ingesting prey caught at the Shipyard Sediment Site and so a Tier II assessment was conducted. To focus the risk assessment, prey items were collected within four assessment units at the Shipyard Sediment Site and from a reference area located across the bay from the site. Chemical concentrations measured in fish were used to estimate chemical exposure for the least tern, western grebe, brown pelican, and sea lion and chemical concentrations in benthic mussels and eelgrass were used to estimate chemical pollutant exposure for the surf scoter and green turtle, respectively. Based on the Tier II risk assessment results, ingestion of prey items caught within all four assessment units at the Shipyard Sediment Site poses an increased risk above reference to all receptors of concern (excluding the sea lion). The chemicals in prey tissue posing a risk include BAP, PCBs, copper, lead, mercury, and zinc.

IMPAIRMENT OF HUMAN HEALTH BENEFICIAL USES

25. **HUMAN HEALTH IMPAIRMENT**. Human health beneficial uses for Shellfish Harvesting (SHELL), and Commercial and Sport Fishing (COMM) designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site. This finding is based on the considerations described below in this *Impairment of Human Health Beneficial Uses* section of the CAO.

26. **RISK ASSESSMENT APPROACH FOR HUMAN HEALTH**. The San Diego Water Board evaluated potential risks to human health from chemical pollutants present in the sediment at the Shipyard Sediment Site based on a two-tier approach. The Tier I screening level risk assessment was based on tissue data derived from the exposure of the clam *Macoma nasuta* to site sediments for 28 days using ASTM protocols. The Tier II baseline comprehensive risk assessment was based on tissue data derived from resident fish and shellfish caught within and adjacent to the Shipyard Sediment Site. Two types of receptors (i.e., members of the population or individuals at risk) were evaluated:

    a. Recreational Anglers – Persons who eat the fish and/or shellfish they catch recreationally; and

b. Subsistence Anglers – Persons who fish for food, for economic and/or cultural reasons, and for whom the fish and/or shellfish caught is a major source of protein in their diet.

27. **TIER I SCREENING LEVEL RISK ASSESSMENT FOR HUMAN HEALTH**. The Tier I risk assessment objectives were to determine whether or not Shipyard Sediment Site conditions potentially pose an unacceptable risk to human health and to identify if a comprehensive, site-specific risk assessment was warranted (i.e., Tier II baseline risk assessment). The receptors of concern identified for Tier I are recreational anglers and subsistence anglers. Recreational anglers represent those who eat the fish and/or shellfish they catch recreationally and subsistence anglers represent those who fish for food, for economic and/or cultural reasons, and for whom the fish and/or shellfish caught is a major source of protein in the diet. Chemical concentrations measured in *Macoma nasuta* tissue derived from laboratory bioaccumulation tests were used to estimate chemical exposure for these receptors of concern. Based on the Tier I screening level risk assessment results, there is a potential risk greater than that in reference areas to recreational and subsistence anglers ingesting fish and shellfish caught at the Shipyard Sediment Site. The chemicals in *Macoma* tissue posing a potential risk include arsenic, BAP, PCBs, and TBT.

28. **TIER II BASELINE COMPREHENSIVE RISK ASSESSMENT FOR HUMAN HEALTH**. The Tier II risk assessment objective was to more conclusively determine whether Shipyard Sediment Site conditions pose unacceptable cancer and non-cancer health risks to recreational and subsistence anglers. Fish and shellfish were collected within four assessment units at the Shipyard Sediment Site and from two reference areas located across the bay from the Shipyard Site. Chemical concentrations measured in fish fillets and edible shellfish tissue were used to estimate chemical exposure for recreational anglers and chemical concentrations in fish whole bodies and shellfish whole bodies were used to estimate chemical exposure for subsistence anglers. Based on the Tier II risk assessment results, ingestion of fish and shellfish caught within all four assessment units at the Shipyard Sediment Site poses a theoretical increased cancer and non-cancer risk greater than that in reference areas to recreational and subsistence anglers. The chemicals posing theoretical increased cancer risks include inorganic arsenic and PCBs. The chemicals posing theoretical increased non-cancer risks include cadmium, copper, mercury, and PCBs.

EVALUATING FEASIBILITY OF CLEANUP TO BACKGROUND SEDIMENT QUALITY CONDITIONS

29. **CHEMICALS OF CONCERN AND BACKGROUND SEDIMENT QUALITY**. The San Diego Water Board derived sediment chemistry levels for use in evaluating the feasibility of cleanup to background sediment quality conditions from the pool of San Diego Bay reference stations described in Finding 17. The background sediment chemistry levels based on these reference stations are as follows:

Table 1. Background Sediment Chemistry Levels

Chemicals of Concern	Units (dry weight)	Background Sediment Chemistry Levels[1]
Primary COCs		
Copper	mg/kg	121
Mercury	mg/kg	0.57
HPAHs[2]	µg/kg	663
PCBs[3]	µg/kg	84
Tributyltin	µg/kg	22
Secondary COCs		
Arsenic	mg/kg	7.5
Cadmium	mg/kg	0.33
Lead	mg/kg	53
Zinc	mg/kg	192

1. Equal to the 2005 Reference Pool's 95% upper predictive limits shown in Section 18 of the *Technical Report for Cleanup and Abatement Order No.R9-2012-0024*. The background levels for metals are based on the %fines:metals regression using 50% fines, which is conservative because the mean fine grain sediment at the Shipyard Investigation Site is 70% fines.
2. HPAHs = sum of 6 PAHs: Fluoranthene, Perylene, Benzo[a]anthracene, Chrysene, Benzo[a]pyrene, and Dibenzo[a,h]anthracene.
3. PCBs = sum of 41 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.

The San Diego Water Board identified constituents of primary concern (primary COCs), which are associated with the greatest exceedance of background and highest magnitude of potential risk at the Shipyard Sediment Site. A greater concentration relative to background suggests a stronger association with the Shipyard Sediment Site, and a higher potential for exposure reduction via remediation. Secondary contaminants of concern (secondary COCs) are contaminants with lower concentrations relative to background, and are highly correlated with primary COCs and would be addressed in a common remedial footprint. Based on these criteria, the primary COCs for the Shipyard Sediment Site are copper, mercury, HPAHs,[3] PCBs, and TBT, and the secondary COCs are arsenic, cadmium, lead, and zinc.

[3] Petroleum hydrocarbons, including TPH, RRO, DRO, and other PAHs were eliminated as primary and secondary COCs for the following reasons. HPAHs, a primary COC, are considered to be the most recalcitrant, bioavailable, and toxic compounds present in the complex mixture of petroleum hydrocarbons. Other measures of petroleum hydrocarbons are generally correlated with HPAHs such that remedial measures to address HPAHs will also address

30. **TECHNOLOGICAL FEASIBILITY CONSIDERATIONS.** Although there are complexities and difficulties that would need to be addressed and overcome (e.g. removal and handling of large volume of sediment; obstructions such as piers and ongoing shipyard operations; transportation and disposal of waste), it is technologically feasible to cleanup to the background sediment quality levels utilizing one or more remedial and disposal techniques. Mechanical dredging, subaqueous capping, and natural recovery have been successfully performed at numerous sites, including several in San Diego Bay, and many of these projects have successfully overcome the same types of operational limitations present at the Shipyard Sediment Site, such as piers and other obstructions, ship movements, and limited staging areas. Confined aquatic disposal or near-shore confined disposal facilities have also been employed in San Diego Bay and elsewhere, and may be evaluated as project alternatives for the management of sediment removed from the Shipyard Sediment Site.

31. **ECONOMIC FEASIBILITY CONSIDERATIONS.** Under State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*, determining "economic feasibility" requires an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions. Resolution No. 92-49 provides that "[e]conomic feasibility does not refer to the dischargers' ability to finance cleanup." When considering appropriate cleanup levels under Resolution No. 92-49, the San Diego Water Board is charged with evaluating "economic feasibility" by estimating the costs to remediate constituents of concern at a site to background and the costs of implementing other alternative remedial levels. An economically feasible alternative cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits.

    The San Diego Water Board evaluated a number of criteria to determine risks, costs, and benefits associated with no action, cleanups to background sediment chemistry levels, and alternative cleanup levels greater than background concentrations. The criteria included factors such as total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife, and human health). The San Diego Water Board then compared these cost criteria against the benefits gained by diminishing exposure to the primary COCs to estimate the incremental benefit gained from reducing exposure based on the incremental costs of doing so. As set forth in detail herein, this comparison revealed that the incremental benefit of cleanup diminishes significantly with additional cost beyond a certain cleanup level, and asymptotically approaches zero as remediation approaches background. Based on these considerations, cleaning up to background sediment chemistry levels is not economically feasible.

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environmental concerns associated with elevated levels of low molecular weight PAHs (LPAHs), total PAHs, TPH, RRO and DRO.

ALTERNATIVE SEDIMENT CLEANUP LEVELS

32. **ALTERNATIVE CLEANUP LEVELS.** Under State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304*, the San Diego Water Board may prescribe alternative cleanup levels less stringent than background sediment chemistry concentrations if attainment of background concentrations is technologically or economically infeasible. Resolution No. 92-49 requires that alternative levels must result in the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on the waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. Resolution No. 92-49 further requires that any alternative cleanup level shall: (1) be consistent with maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial uses of such water; and (3) not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

The San Diego Water Board is prescribing the alternative cleanup levels for sediment summarized in the table below to protect aquatic life, aquatic-dependent wildlife, and human health based beneficial uses consistent with the requirements of Resolution No. 92-49. Compliance with alternative cleanup levels will be determined using the monitoring protocols summarized in Finding 34 and described in detail of Section 34 of the Technical Report.

Table 2. Alternative Cleanup Levels: Shipyard Sediment Site

Aquatic Life	Aquatic Dependent Wildlife and Human Health	
Remediate all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community.	Surface Weighted Average Concentrations (site-wide)	
	Copper	159 mg/kg
	Mercury	0.68 mg/kg
	HPAHs[1]	2,451 µg/kg
	PCBs[2]	194 µg/kg
	Tributyltin	110 µg/kg

1. HPAHs = sum of 10 PAHs: Fluoranthene, Pyrene, Benz[a]anthracene, Chrysene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Indeno[1,2,3-c,d]pyrene, Dibenz[a,h]anthracene, and Benzo[g,h,i]perylene.

2. PCBs = sum of 41 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.

In approving alternative cleanup levels less stringent than background the San Diego Water Board has considered the factors contained in Resolution No. 92-49 and the California Code of Regulations, Title 23, section 2550.4, subdivision (d):

Alternative Cleanup Levels are Appropriate. Cleaning up to background sediment quality levels at the Shipyard Sediment Site is economically infeasible. The alternative cleanup levels established for the Shipyard Sediment Site are the lowest levels that are technologically and economically achievable, as required under the California Code of Regulations Title 23 section 2550.4(e).

Alternative Cleanup Levels are Consistent with Water Quality Control Plans and Policies. The alternative cleanup levels provide for the reasonable protection of San Diego Bay beneficial uses and will not result in water quality less than prescribed in water quality control plans and policies adopted by the State Water Board and the San Diego Water Board. While it is impossible to determine the precise level of water quality that will be attained given the residual sediment pollutant constituents that will remain at the Site, compliance with the alternative cleanup levels will markedly improve water quality conditions at the Shipyard Sediment Site and result in attainment of water quality standards at the site.

Alternative Cleanup Levels Will Not Unreasonably Affect Present and Anticipated Beneficial Uses of the Site. The level of water quality that will be attained upon remediation of the required cleanup at the Shipyard Sediment Site will not unreasonably affect San Diego Bay beneficial uses assigned to the Shipyard Sediment Site represented by aquatic life, aquatic-dependent wildlife, and human health.

Alternative Cleanup Levels are Consistent with the Maximum Benefit to the People of the State. The proposed alternative cleanup levels are consistent with maximum benefit to the people of the State based on the San Diego Bay resource protection, mass removal and source control, and economic considerations. The Shipyard Sediment Site pollution is located in San Diego Bay, one of the finest natural harbors in the world. San Diego Bay is an important and valuable resource to San Diego and the Southern California Region. The alternative cleanup levels will result in significant contaminant mass removal and therefore risk reduction from San Diego Bay. Remediated areas will approach reference area sediment concentrations for most contaminants. Compared to cleaning up to background cleanup levels, cleaning up to the alternative cleanup levels will cause less diesel emission, less greenhouse gas emission, less noise, less truck traffic, have a lower potential for accidents, and less disruption to the local community. Achieving the alternative cleanup levels also requires less barge and crane movement on San Diego Bay, has a lower risk of re-suspension of contaminated sediments, and reduces the amount of landfill capacity required to dispose of the sediment wastes. The alternative cleanup levels properly balance reasonable protection of San Diego Bay beneficial uses with the significant economic and service activities provided by the City of San Diego, the NASSCO and BAE Systems Shipyards and the U.S. Navy.

33. **PROPOSED REMEDIAL FOOTPRINT AND PRELIMINARY REMEDIAL DESIGN.** Polygonal areas were developed around the sampling stations at the Shipyard Sediment Site using the Thiessen Polygon method to facilitate the development of the remedial footprint. The polygons targeted for remediation are shown in red and green in

Attachment 2. The red areas are where the proposed remedial action is dredging. The areas shown in green represent inaccessible or under-pier areas that will be remediated by one or more methods other than dredging. Portions of polygons NA20, NA21, and NA22 as shown in Attachment 2 were omitted from this analysis because it falls within an area that is being evaluated as part of the TMDLs for Toxic Pollutants in Sediment at the Mouth of Chollas Creek TMDL and is not considered part of the Shipyard Sediment Site for purposes of the CAO.

The polygons were ranked based on a number of factors including likely impaired stations, composite surface-area weighted average concentration for the five primary COCs, Site-Specific Median Effects Quotient (SS-MEQ)[4] for non-Triad stations, and highest concentration of individual primary COCs. Based on these rankings, polygons were selected for remediation on a "worst first" basis.

In recognition of the methodologies and limitations of traditional mechanical dredging, the irregular polygons were converted into uniform dredge units. Each dredge unit (sediment management unit or "SMU") was then used to develop the dredge footprint. The conversion from irregular polygons to SMUs is shown in Attachments 3 and 4. These attachments show the remedial footprint, inclusive of areas to be dredged ("dredge remedial area," in red) and under-pier areas ("under-pier remedial area," in green) to be remediated by other means, most likely by sand cover. Together, the dredge remedial area and the under-pier remedial area constitute the remedial footprint.

Upland source control measures in the watershed of municipal separate storm sewer system outfall SW-4 are also needed to eliminate ongoing contamination from this source, if any, and ensure that recontamination of cleaned up areas of the Shipyard Sediment Site from this source does not occur.

34. **REMEDIAL MONITORING PROGRAM**. Monitoring during remediation activities is needed to document that remedial actions have not caused water quality standards to be violated outside of the remedial footprint, that the target cleanup levels have been reached within the remedial footprint, and to assess sediment for appropriate disposal. This monitoring should include water quality monitoring, sediment monitoring, and disposal monitoring.

Post-remediation monitoring is needed to verify that remaining pollutant concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. Post-remediation monitoring should be initiated two years after remedy implementation has been completed and continue for a period of up to 10 years after remediation. For human health and aquatic dependent wildlife beneficial uses, post-remediation monitoring should include sediment chemistry monitoring to ensure that post-remediation SWACs are maintained at the site following cleanup. A subset of samples should undergo bioaccumulation testing using *Macoma*. For aquatic life beneficial uses, post-remediation

[4] The SS-MEQ is a threshold developed to predict likely benthic community impairments based on sediment chemistry at the Shipyard Sediment Site. The development, validation, and application of the SS-MEQ are described in Section 32.5.2 of the Technical Report.

monitoring should include sediment chemistry, and toxicity bioassays to verify that post-remedial conditions have the potential to support a healthy benthic community. In addition, post-remediation monitoring should include benthic community condition assessments to evaluate the overall impact of remediation on the benthic community re-colonization activities.

Environmental data has natural variability which does not represent a true difference from expected values. Therefore, if remedial monitoring results are within an acceptable range of the expected outcome, the remedial actions will be considered successful.

35. **REMEDIAL ACTION IMPLEMENTATION SCHEDULE**. The Dischargers have proposed a remedial action implementation schedule and a description of specific remedial actions they intend to undertake to comply with this CAO. The remedial action implementation schedule will begin with the adoption of this CAO and end with the submission of final reports documenting that the alternative sediment cleanup levels have been met. From start to finish, remedial action implementation is expected to take approximately 5 years to complete.

The proposed remedial actions have a substantial likelihood to achieve compliance with the requirements of this CAO within a reasonable time frame. The proposed schedule is as short as possible, given 1) the scope, size, complexity, and cost of the remediation, 2) industry experience with the time typically required to implement similar remedial actions, 3) the time needed to secure other regulatory agency approvals and permits before remediation can start, and 4) the need to conduct dredging in a phased manner to prevent or reduce adverse effects to the endangered California Least Tern. Therefore, the remedial action implementation schedule proposed by the Dischargers is consistent with the provisions in Resolution No. 92-49 for schedules for cleanup and abatement.

36. **LEGAL AND REGULATORY AUTHORITY**. This Order is based on (1) section 13267 and Chapter 5, Enforcement, of the Porter-Cologne Water Quality Control Act (Division 7 of the Water Code, commencing with section 13000), commencing with section 13300; (2) applicable state and federal regulations; (3) all applicable provisions of statewide Water Quality Control Plans adopted by the State Water Resources Control 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 for water quality control, including State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California* and Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code section 13304*; and (5) relevant standards, criteria, and advisories adopted by other state and federal agencies.

37. **CALIFORNIA ENVIRONMENTAL QUALITY ACT**. In many cases, an enforcement action such as this could be exempt from the provisions of the California Environmental Quality Act ("CEQA"; Public Resources Code, section 21000 et seq.), because it would fall within Classes 7, 8, and 21 of the categorical exemptions for projects that have been

determined not to have a significant effect on the environment under section 21084 of CEQA.[5] In Resolution No. R9-2010-0115 adopted on September 8, 2010, the San Diego Water Board found that because the tentative CAO presents unusual circumstances and there is a reasonable possibility of a significant effect on the environment due to the unusual circumstances, the tentative CAO is not exempt from CEQA and that an EIR analyzing the potential environmental effects of the tentative CAO should be prepared.

As the lead agency for the tentative CAO, the San Diego Water Board prepared an EIR that complies with CEQA. The San Diego Water Board has reviewed and considered the information in the EIR and certified the EIR, adopting a statement of overriding considerations, in Resolution No. R9-2012-0025.

38. **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.

39. **PUBLIC HEARING**. A lengthy procedural history preceded adoption of this CAO. The San Diego Water Board has considered all comments, evidence and testimony pertaining to this CAO submitted to the San Diego Water Board in writing, or by oral presentations at the public hearing held on November 9, 14, 15, and 16, 2011, and March 14, 2012. Responses to many relevant comments have been incorporated into the Technical Report for this CAO and/or are provided in the Response to Comments Report, as revised, prepared by the San Diego Water Board Cleanup Team.

40. **TECHNICAL REPORT**. The "*Technical Report for Cleanup and Abatement Order No. R9-2012-0024 for the Shipyard Sediment Site, San Diego Bay, San Diego, CA*" is hereby incorporated as a finding in support of this CAO as if fully set forth here verbatim.

41. **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 and the State Water Board are entitled to, and will seek reimbursement for, all reasonable costs actually incurred by the San Diego Water Board and the State Water 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 Order.

Unreimbursed reasonable costs actually incurred by the San Diego Water Board and the State Water Board for the development and issuance of this Cleanup and Abatement Order are as follows:

a. Contracts funded by the State Water Board Cleanup and Abatement Account or other San Diego Water Board contract funds for services in support of the development and issuance of this Cleanup and Abatement Order.

[5] Title 14 CCR sections 15307, 15308, and 15321

i. DM Information Services, Inc. produced the electronic administrative record. This work was paid for with Cleanup and Abatement Account funds and San Diego Water Board contract funds in the amount of $109,908.

ii. The Department of Fish and Game provided technical consultation services on the fish histopathology and bile studies, and the wildlife risk assessments. This work was paid for with Cleanup and Abatement Account funds in the amount of $43,287.

iii. The Office of Environmental Health Hazard Assessment provided technical consultation services on the human health risk assessments. This work was paid for with San Diego Water Board contract funds in the amount of $12,009.

b. Filing fees for CEQA documents. Pursuant to Fish and Game Code Section 711.4, the San Diego Water Board must pay to the Department of Fish and Game a filing fee to defray the costs of managing and protecting California's vast fish and wildlife resources. The filing fee for the Environmental Impact Report is $2,919 and the County Clerk Processing fee is 50.00 for a total of $2,969.

The amount of past and future recoverable staff costs will be determined through the process set forth in Water Code section 13365. The Chair may designate an individual qualified under Water Code section 13365, subdivision (c)(4) to resolve dischargers' disputes about the reasonableness of past and future oversight costs the San Diego Water Board seeks to recover from the dischargers to this Order. Under Water Code section 13365, the determination of the reasonableness of oversight costs can include, but is not limited to, evaluation of documentary support (including information not already in the record) for requested oversight costs. The Assistant Executive Officer is authorized to amend this Order as necessary to include any undisputed oversight cost amounts or amounts derived through the dispute resolution process identified in Water Code section 13365, subdivision (c)(4) and determined to be owed by the discharger(s).

42. **PROCEDURAL MATTERS.** At the public hearing, the San Diego Water Board Cleanup Team objected to argument made by counsel for SDG&E during SDG&E's presentation as mischaracterizing Cleanup Team witnesses' deposition testimony. The Cleanup Team's objections are overruled. The San Diego Water Board has considered the deposition testimony and counsel's legal argument. The transcripts speak for themselves. Counsel's characterization of the Cleanup Team witnesses' deposition testimony took some of the deposition testimony out of context, but counsel was making legal argument and not testifying. Accordingly, it is not necessary to strike any portion of counsel's presentation. All exhibits introduced and marked during the hearing were accepted and are included in the administrative record.

ORDER DIRECTIVES

IT IS HEREBY ORDERED *that, pursuant to sections 13267 and 13304 of the Water Code, National Steel and Shipbuilding Company; BAE Systems San Diego Ship Repair Inc.; the City of San Diego; Campbell Industries; San Diego Gas and Electric; the United States Navy; and the*

San Diego Unified Port District (hereinafter Dischargers), shall comply with the following directives:

A. CLEANUP AND ABATE

1. **Illicit Discharges**. The Dischargers shall terminate all illicit discharges, if any, to the Shipyard Sediment Site (see Attachment 1) in violation of waste discharge requirements or other order or prohibition issued by the San Diego Water Board.

2. **Corrective Action**. The Dischargers shall take all corrective actions necessary to remediate the contaminated marine bay sediment at the Shipyard Sediment Site as described below: Corrective action design details shall be included in the Remedial Action Plan required by Directive B.

   a. ***Dredge Remedial Areas***. The sediments in the dredge remedial areas shown on Attachments 3 and 4 shall be dredged. This dredging shall remediate the sediment in the dredge remedial area to the concentrations in the table below for primary COCs, pursuant to confirmatory testing:

Primary COCs	Post-Remedial Dredge Area Concentrations (Background[1])
Copper	121 mg/kg
Mercury	0.57 mg/kg
HPAHs[2]	663 µg/kg
PCBs[3]	84 µg/kg
Tributyltin	22 µg/kg

1. See Finding 29, Table 1.
2. HPAHs = High Molecular Weight Polynuclear Aromatic Hydrocarbons, sum of 6 PAHs: Fluoranthene, Perylene, Benzo(a)anthracene, Chrysene, Benzo(a)pyrene, and Dibenzo(a,h)anthracene.
3. PCBs = Polychlorinated Biphenyls, sum of 41 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.

If the concentration of any primary COC in subsurface sediments (deeper than the upper 5 cm) is above 120 percent of the post-remedial dredge area concentration after completion of initial dredging, then additional sediments shall be dredged by performing an additional "pass" with the equipment. If concentrations of primary

COCs in subsurface sediments are below 120 percent of post-remedial dredge area concentrations, then the dredging is sufficient and may stop.

b. ***Under-Pier Remedial Areas.*** The sediments in the under pier areas shown on Attachments 3 and 4 and other locations where significant impacts to infrastructure may occur shall be remediated by dredging, sand covering or other means.

c. ***Post Remedial Surface-Area Weighted Average Concentrations.*** The Shipyard Sediment Site as shown in Attachment 2 shall be remediated to attain the following post remedial surface-area weighted average concentrations ("SWACs"):

Primary COCs	Predicted Post-Remedial SWACs
Copper	159 mg/kg
Mercury	0.68 mg/kg
HPAHs[1]	2,451 µg/kg
PCBs[2]	194 µg/kg
Tributyltin	110 µg/kg

1. HPAHs = sum of 10 PAHs: Fluoranthene, Pyrene, Benz[a]anthracene, Chrysene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, indeno[1,2,3-c,d]pyrene, Dibenz[a,h]anthracene, and Benzo[g,h,i]perylene.

2. PCBs = sum of 41 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.

3. **MS4 Interim Mitigation Measures.** Immediately after adoption of the CAO, the City of San Diego and the San Diego Unified Port District within the tideland area shall take interim remedial actions, as necessary, to abate or correct the actual or potential effects of releases from the MS4 system that drains to outfall SW4. Interim remedial actions can occur concurrently with any phase of corrective action. Before taking interim remedial actions, the City and the Port District shall notify the San Diego Water Board of the proposed action and shall comply with any requirements that the San Diego Water Board sets.

4. **MS4 Investigation and Mitigation Plan.** The City of San Diego and the San Diego Unified Port District within the tideland area shall prepare and submit a municipal separate storm sewer system (MS4) Investigation and Mitigation Plan (Plan) within 90 days after adoption of the CAO. The Plan shall be designed to identify, characterize, and

mitigate pollutants and pollutant sources in the watershed that drains to the MS4 outfall SW-4 at the Shipyard Sediment Site and contain, at a minimum, the following information:

a. ***Site Conceptual Model.*** The Plan shall contain a site conceptual model showing all of the current and former potential pollutant sources and pathways for pollutants to potentially enter the watershed that drains to the MS4 outfall SW-4.

b. ***Map.*** A detailed map to scale showing the location and all elements of, and potential pollutant sources within, the MS4 system within the watershed that drains to the outfall SW-4.

c. ***Sampling and Analyses.*** The Plan shall include sampling and analysis of the residual sediments within the MS4 system at key locations sufficient to characterize the sediments that will potentially be discharged to the Shipyard Sediment Site. The suite of chemical analyses must be adequate to identify the full range of site-specific waste constituents including, at a minimum, total PCB congeners, copper, mercury, lead, zinc, TPH, and HPAHs.

d. ***Sample Locations.*** At a minimum, samples must be collected within all catch basins and similar junctions where accessible, and at intervals adequate to detect potential sources and no greater than approximately 500 feet within the streets in the storm water infrastructure within the SW-4 watershed. In addition, samples must be collected at locations designed to assess contributions from potential pollutant sources such as businesses with industrial activities or other pollutant-generating activities within the current SW-4 watershed. The Plan shall identify the number and location of the proposed sampling locations, and provide justification for the sampling intervals within the streets.

e. ***Sampling Protocols and Quality Assurance Project Plan (QAPP).*** The Plan shall include the planned sampling protocols and a Quality Assurance Project Plan (QAPP) to assure that all environmental data generated scientifically valid and of acceptable quality to meet the Plan's objectives.

f. ***Mitigation.*** The Plan shall include, at a minimum, the following mitigation activities:

    1. Removal and characterization of residual sediments in the MS4 system.

    2. Installation of structural treatment control best management practices (BMPs), where necessary and feasible, in the MS4 system to prevent or mitigate the entry of pollutants into the storm drains to the maximum extent practicable.

    3. Maintenance of BMPs, as necessary, to prevent degradation of their performance.

g. ***Activity Completion Schedule***: The Plan shall include a reasonable schedule for completion of all activities and submission of a final MS4 Investigation and Mitigation Report described in DirectiveA.5.

5. **MS4 Investigation and Mitigation Implementation and Report**

a. ***Implementation.*** The City of San Diego and the San Diego Unified Port District within the tideland area shall implement the MS4 Investigation and Mitigation Plan according to the Activity Completion Schedule described in Directive 4.g.

b. ***MS4 Investigation and Mitigation Report.*** The MS4 Investigation and Mitigation Report shall include the following:

1. Sampling protocols implemented.

2. Location, type, and number of samples shown on detailed site maps and tables.

3. Concentration and interpreted lateral extent of each constituent.

4. Mass of residual sediments removed from the MS4 system.

5. Interpretations regarding the potential for the pollutants within the MS4 system to contaminate or re-contaminate the Shipyard Sediment Site during or after the remedial activities.

6. Evaluation of the effectiveness of the mitigation activities implemented.

7. Recommendations for additional investigation and mitigation activities.

B. REMEDIAL ACTION PLAN AND IMPLEMENTATION

1. **Remedial Action Plan.** The Dischargers shall prepare and submit a Remedial Action Plan (RAP) to the San Diego Water Board no later than 90 days after adoption of the CAO. The RAP shall be complete and contain the following information

a. *Introduction.* A brief description of the Shipyard Sediment Site and Site History.

b. *Selected Remedy.* A detailed description of all of the remedial activities selected to attain all cleanup levels in Directive A.2.

c. *Health and Safety Plan.* A Health and Safety Plan including employee training, protective equipment, 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) shall be included describing the project objectives and organization, functional activities, and quality assurance/quality control protocols as they relate to the remedial action

f. *Sampling and Analysis Plan.* A Sampling and Analysis Plan defining (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 utilized and an appropriate reference for each.

g. *Wastes Generated.* A description of the plans for management, treatment, storage and disposal of all wastes generated by the remedial action.

h. *Pilot Testing.* The results of bench scale or pilot scale studies or other data collected to provide sizing and operations criteria to optimize the remedial design.

i. *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 the 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 (i.e., input and output rates to stockpiles, influent and effluent qualities of any liquid waste streams such as dredge spoil return water, potential air emissions, and so forth): (v) performance standards; (v) compliance with applicable local, State and federal regulations; (vi) 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.

j. *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.

k. *Regulatory Permits and Approvals.* A list of required federal, State and local permits or approvals to conduct the remedial action.

l. *Remediation Monitoring Plan.* A Remediation Monitoring Plan consisting of (i) water quality monitoring, (ii) sediment monitoring, and (iii) disposal monitoring consistent with Section 34.1 of the Technical Report. The water quality monitoring must be sufficient to demonstrate that implementation of the selected remedial activities do not result in violations of water quality standards outside the construction area. The sediment monitoring must be sufficient to confirm that the selected

remedial activities have achieved target cleanup levels within the remedial footprint specified in Directive A.2 The disposal monitoring must be sufficient to adequately characterize the dredged sediments in order to identify appropriate disposal options.

m. *Site Map.* A site map showing the location of buildings, roads, property boundaries, remedial equipment locations and other information pertinent to the remedial action.

n. *Contingencies.* A description of any additional items necessary to complete the RAP.

o. *Remediation Schedule.* A schedule detailing the sequence of events and time frame for each activity based on the shortest practicable time required to complete each activity. The initiation and completion of each activity must be no longer than the durations described in Attachment 5.

2. **RAP Implementation.** In the interest of promoting prompt cleanup, the Discharger may begin implementation of the RAP 60 calendar days after submittal to the San Diego Water Board, unless otherwise directed in writing by the San Diego Water Board. The Dischargers shall complete implementation of the RAP based on the schedule in the RAP. Before beginning RAP implementation activities, the Dischargers shall:

   a. Notify the San Diego Water Board of its intention to begin cleanup; and

   b. Comply with any conditions set by the San Diego Water Board, including mitigation of adverse consequences from cleanup activities.

   c. The Dischargers shall modify or suspend cleanup activities when directed to do so by the San Diego Water Board.

C. CLEANUP AND ABATEMENT COMPLETION VERIFICATION

Final Cleanup and Abatement Completion Report. The Dischargers shall submit a final Cleanup and Abatement Completion Report verifying completion of the RAP activities for the Shipyard Sediment Site within 90 days of completion of remediation. The report shall provide a demonstration, based on a sound technical analysis, that sediment quality cleanup levels in Directive A.2 have been achieved.

D. POST REMEDIAL MONITORING

1. **Post Remedial Monitoring Plan.** The Dischargers shall prepare and submit a Post Remedial Monitoring Plan to the San Diego Water Board no later than 90 days after adoption of this CAO. The Post Remedial Monitoring Plan shall be designed to verify that the remaining pollutant 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 Quality Assurance Project plan (QAPP) describing the project objectives and organization, functional activities, and quality assurance/quality control protocols for the post remediation monitoring.

b. *Sampling and Analysis Plan.* A Sampling and Analysis Plan defining (i) sample and data collection methods to be used for the post radiation monitoring, (ii) a description of the media and parameters to be monitored or sampled, and (iii) a description of the analytical methods to be utilized and an appropriate reference for each.

c. ***Sediment Chemistry.*** Site-wide post-remedial SWACs for the five primary COCs (copper, mercury, TBT, PCBs, and HPAH) shall be confirmed through composite sampling of the entire Shipyard Sediment Site. Samples shall be collected at all 65 sampling stations used to develop Thiessen polygons and composited on a surface area weighted basis into 6 polygon groups as shown in Attachment 6.

1. To prepare the composite samples, the 65 station locations within the six polygon groups shall be sampled. The volume of the sample at each station shall be proportional to the area of the polygon the station represents. These samples shall be collected from the 0-2 cm depth interval. Two (2) grab samples shall be composited in the field at each station.

2. The individual samples shall be combined into six (6) composite samples representing the six (6) polygon groups as shown in Attachment 6. Three (3) replicates shall be taken from each of these six (6) composite samples and analyzed for PCBs, copper, mercury, HPAHs, and TBT, and sediment conventional parameters (e.g., grain size, TOC, ammonia). See Attachment 7 for the required list of PCB and HPAH analytes.

3. The average concentration of each of the six (6) composites shall be calculated from the analytical results of the replicates for each COC. The average concentrations represent SWACs for each of the six (6) polygon groups.

4. The three replicate sub-samples of composite samples provide an estimate of variances in the compositing process. Sample material from the 65 station-specific composite samples shall be archived for potential future analysis.

5. The mean concentration for each of the six (6) composite groups shall be used to calculate Site-Wide SWACs for each COC.

6. SWAC trigger concentrations shall be used to evaluate whether Site-Wide SWACs exceed the Predicted Post-Remedial SWACs, and whether further action is needed. These concentrations represent the surface-area weighted average concentration expected after cleanup, accounting for the variability in measured concentrations throughout the area. If the Site-Wide SWAC after remediation is below the trigger concentration then remediation shall be considered successful. Exceedance of the trigger concentration shall result in further evaluation of the site-specific conditions to determine if the remedy was successful as detailed in Directive D.3. The trigger concentrations for the primary COCs are listed below.

Primary COCs	Trigger Concentrations
Copper	185 mg/kg
Mercury	0.78 mg/kg
HPAHs[1]	3,208 µg/kg
PCBs[2]	253 µg/kg
Tributyltin	156 µg/kg

1. HPAHs = sum of 6 PAHs: Fluoranthene, Perylene, Benzo[a]anthracene, Chrysene, Benzo[a]pyrene, and Dibenzo[a,h]anthracene.
2. PCBs = sum of 41 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.

d. ***Bioaccumulation Testing.*** Nine (9) sediment samples shall undergo bioaccumulation testing using the 28-day *Macoma nasuta* test. The samples selected for bioaccumulation testing shall be from stations SW04, SW08, SW13, SW21, SW28, and NA06, NA11, NA12, and NA20. Tissue samples shall be analyzed for arsenic, cadmium, copper, lead, mercury, zinc, HPAHs, and PCBs. See Attachment 7 for the required list of PCB and HPAH analytes.

e. ***Sediment Chemistry for Benthic Exposure.*** Samples shall be collected for chemical analyses at the following five station locations: SW04, SW13, SW22, SW23 and NA19. . Sediments shall be analyzed for sediment conventional parameters (e.g., grain size, TOC, ammonia) and the following: arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, TBT, PCBs, and PAHs. See Attachment 7 for the required list of PCB and PAH analytes. Results from the chemical analyses shall be evaluated in accordance with the flow diagram in Attachment 8 to determine if further evaluation or action is necessary based on benthic effects indicators. SS-MEQ values shall be determined for each station and compared to the 0.9 SS-MEQ threshold. The sediment chemistry results shall be compared to the 60% LAET thresholds.

f. ***Sediment Toxicity.*** Sediment samples shall be collected for toxicity analyses at the following five station locations: SW04, SW13, SW22, SW23, and NA19. Two types of sediment toxicity tests shall be conducted in accordance with protocols recommended by the San Diego Water Board: (1) 10-day amphipod survival test using *Eohaustorius estuarius* exposed to whole sediment, and (2) 48-hour bivalve larva development test using the mussel *Mytilus galloprovincialis* exposed to whole sediment at the sediment-water interface. Results from the toxicity analyses shall be evaluated in accordance with the flow diagram in Attachment 9 to determine if further evaluation or action is necessary based on benthic effects indicators.

g. ***Benthic Community Assessment.*** Samples shall be collected to evaluate benthic communities at five randomly selected stations within the remediation footprint, excluding stations NA19, SW04, SW13, SW22, and SW23, at years 3 and 4 following completion of remediation activities. The random samples shall be stratified to assure two to three samples are collected from each of the NASSCO and BAE Systems areas. The benthic community analyses shall consist of full taxonomic analyses at the lowest feasible taxa level. This sampling shall be conducted only to evaluate the development of the benthic community following remediation.

h. ***Schedule.*** Sampling and analyses for sediment chemistry and toxicity, and for bioaccumulation assessment shall occur at two and five years post-remediation. If the remedial goals described in Directive D.3.c.2 are not met, the sampling and analyses shall also occur at ten years post remediation. The Post Remedial Monitoring Plan shall include a schedule detailing the sequence of sampling events and time frame for each activity. The schedule shall also include the dates for submittal of the Post-Cleanup Monitoring annual progress reports as detailed in Directive E and final report as detailed in Directive D.3. below.

2. **Post Remedial Monitoring Plan Implementation.** The Dischargers shall implement the Post Remedial Monitoring Plan in accordance with the schedule contained in the Post Remedial Monitoring Plan unless otherwise directed in writing by the San Diego Water Board. Before beginning sample collection activities, the Dischargers shall:

   a. Notify the San Diego Water Board in advance of the beginning of sample collection activities in accordance with Provision G.6.; and

   b. Comply with any conditions set by the San Diego Water Board with respect to sample collection methods such as providing split samples.

3. **Post Remedial Monitoring Reports.** The Dischargers shall submit Post Remedial Monitoring Reports containing the following information:

   a. An evaluation, interpretation and tabulation of monitoring data including interpretations and conclusions regarding the potential presence and chemical characteristics of any newly deposited sediment within the cleanup areas, and interpretations and conclusions regarding the health and recovery of the benthic communities.

   b. The locations, type, and number of samples shall be identified and shown on a site map.

   c. An analysis of whether or not the remedial goals described below have been attained:

1. **Year 2 Remedial Goals**

   - Composite site-wide SWACs below the Trigger Concentrations identified in D.1.c.6. above; and

   - Sediment chemistry below SS-MEQ and 60%LAET thresholds; and

   - Toxicity not significantly different from conditions at the reference stations described in Finding 17 and in the *Technical Report for Cleanup and Abatement Order No. R9-2012-0024 for the Shipyard Sediment Site, San Diego Bay, San Diego, CA*; and

   - The average of stations sampled shows bioaccumulation levels below the pre-remedial levels.

2. **Year 5 Remedial Goals**

   - Composite site-wide SWACs below the Trigger Concentrations identified in D.1.c.6. above; and

   - Sediment chemistry below SS-MEQ and 60%LAET thresholds; and

   - Toxicity not significantly different from conditions at the reference stations described in Finding 17 and as defined in the *Technical Report for Cleanup and Abatement Order No. R9-2012-0024 for the Shipyard Sediment Site, San Diego Bay, San Diego, CA*; and

   - The average of stations sampled shows bioaccumulation levels continuing to decrease below the pre-remedial levels and equal to or below the Year 2 post-remedial monitoring sampling event levels.

3. **Confirm remedial goals are maintained at year 10 (if goals were not met in year 5)**

   - Composite site-wide SWACs below the Trigger Concentrations identified in D.1.c.6. above; and

   - Sediment chemistry below SS-MEQ and 60%LAET thresholds; and

   - Toxicity not significantly different from conditions at the reference stations described in Finding 17 and defined in the *Technical Report for Cleanup and Abatement Order No. R9-2012-0024 for the Shipyard Sediment Site, San Diego Bay, San Diego, CA*; and

   - The average of stations sampled shows bioaccumulation levels below the pre-remedial levels and equal to or below the Year 5 post-remedial monitoring sampling event levels.

4. **SWAC Trigger Concentration, SS-MEQ Threshold, or 60% LAET Threshold Exceedance Investigation and Characterization.** Post remediation monitoring may indicate exceedance of one or more of the post-remediation Site-Wide SWAC trigger concentrations, SS-MEQ thresholds, or 60% LAET thresholds. In that event the Dischargers shall conduct an Exceedance Investigation and Characterization study to determine the cause(s) of the exceedance. There are several lines of investigation that may be pursued, individually or in combination, depending upon the type, scope, and scale of the exceedance(s) and site-specific conditions. The following approaches may be considered and implemented for the investigation and characterization effort:

   a. Recalculation of the 95% UCL incorporating more recent sampling data (e.g. the dredge performance monitoring data, pre-remediation monitoring data from July, 2009, the most recent post remediation verification monitoring data etc.).

   b. Identification of the specific subarea(s) that caused the excursion(s) using surrounding post remediation monitoring data and historical data as appropriate.

   c. Evaluation of changes in site conditions as a result of disturbances since the previous sampling event from spills, major storm events, construction activities, newly discovered pollutant sources or other causes.

   d. Analysis of the archived samples used to comprise the composite sample for the specific COC(s) exceeding the 95% UCL as a basis to understand which polygons have higher concentrations than expected. The data from this analysis could be used as a basis for spatial weighting of the data before recalculating 95% UCLs using interpolation methods such as inverse distance weighting.

5. **Exceedance Investigation and Characterization Report.** The Dischargers shall prepare and submit an adequate Exceedance Investigation and Characterization Report describing the final results of the investigation and characterization study to the San Diego Water Board. If the exceedances are found to be significant, the Report shall include a recommended approach, or combination of approaches, for addressing the exceedance(s) by additional sampling of the affected area, re-dredging, natural recovery, reanalysis following the next scheduled monitoring event, or other appropriate methods. The Report shall be due within 90 days of discovery of the exceedance or as otherwise directed by the San Diego Water Board.

E. QUARTERLY PROGRESS REPORTS

The Dischargers shall prepare and provide written quarterly progress reports which: (1) describe the actions which have been taken toward achieving compliance with this CAO during the

previous quarter; (2) include all results of sampling, tests, and all other verified or validated data received or generated by or on behalf of the Dischargers during the previous quarter in the implementation of the remedial actions required by this CAO; (3) describe all activities including, data collection and other field activities which 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; (4) identify any modifications to the Remedial Action Plan or other work plan(s) that the Dischargers proposed to the San Diego Water Board or that have been approved by San Diego Water Board during the previous quarter; and (5) include information regarding all delays encountered or anticipated that may affect the future schedule for completion of the remedial actions required , and a description of all efforts made to mitigate those delays or anticipated delays. These progress reports shall be submitted to the San Diego Water Board by the (15th) day of March, June, September, and December of each year following the effective date of this CAO. Submission of these progress reports shall continue until submittal of the final Cleanup and Abatement Completion Report verifying completion of the Remedial Action Plan (RAP) for the Shipyard Sediment Site (see Directive C).

F. REPORTS AND WORKPLANS

The Dischargers shall prepare and submit all required plans and reports described in Directives B, C, and D of this Order to the San Diego Water Board for review and approval. The San Diego Water Board shall make these plans/reports available to the public for comment. If comments or concerns on these plans and reports are not resolved informally, then the Assistant Executive Officer will schedule the item for San Diego Water Board consideration at a public meeting.

G. NO FURTHER ACTION

Upon approval by the San Diego Water Board of the Final Cleanup and Abatement Completion Report (Directive C) and the Post Remedial Monitoring Reports (Directive D.3) remedial actions and monitoring will be complete and compliance with this CAO will be achieved. At that time the San Diego Water Board will inform the Dischargers and other interested persons in writing that, based on available information, no further remedial work is required. However, the portion of polygon SW29 not in the dredge footprint may be addressed by the San Diego Water Board under a separate future regulatory action based upon available information.

H. PROVISIONS

1. **Cost Recovery**. The Dischargers shall reimburse the State of California for all reasonable costs actually incurred by the San Diego Water Board and State Water Board to investigate, oversee, and monitor cleanup and abatement actions required by this CAO, including the cost to prepare CEQA documents according to billing statements prepared from time to time by the State Water Board. If the Dischargers are enrolled in a reimbursement program managed by the State Water Board for the discharge addressed by this CAO, reimbursement shall be made pursuant to the procedures established in that program.

Within 60 days of the adoption of this CAO, the Dischargers shall reimburse the State of California in the amount of $168,173 for the unreimbursed costs actually incurred by the San Diego Water Board and State Water Board as described in Finding 41 of this Order.

Within 30 days of the adoption of this CAO, the Dischargers shall identify to the San Diego Water Board an entity or party, including contact information, authorized by the Dischargers to receive and pay future invoices issued by the State Water Board Cost Recovery Program for staff oversight costs incurred by the San Diego Water Board to investigate, oversee, and monitor cleanup and abatement actions required by this CAO.

2. **Waste Management**. The Dischargers 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. The Dischargers shall, as required by the San Diego Water Board, obtain, or apply for coverage under, 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 to (a) land for treatment, storage, or disposal or (b) 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.

3. **Request to Provide Information**. The Dischargers may present characterization data, preliminary interpretations and conclusions as they become available, rather than waiting until a final report is prepared. This type of on-going reporting can facilitate a consensus being reached between the Dischargers and the San Diego Water Board and may result in overall reduction of the time necessary for regulatory approval.

4. **Waste Constituent Analysis**. Unless otherwise permitted by the San Diego Water Board, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. Specific methods of analysis must be identified. If the Dischargers propose to use methods or test procedures other than those included in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846" (U.S. Environmental Protection Agency) or 40 CFR 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Procedures for Detection and Quantification", the exact methodology must be submitted for review and must be approved by the San Diego Water Board prior to use. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports submitted to the San Diego Water Board.

   Any report presenting new analytical data is required to include the complete Laboratory Analytical Report(s). The Laboratory Analytical Report(s) must be signed by the laboratory director and contain:

- A complete sample analytical report.
- A complete laboratory quality assurance/quality control (QA/QC) report.
- A discussion of the sample and QA/QC data.
- A transmittal letter that must indicate 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 California Department of Health Services in accordance with current USEPA procedures."

5. **Duty to Operate and Maintain**. The Dischargers shall, at all times, properly operate and maintain all facilities and systems of treatment, control, storage, disposal and monitoring (and related appurtenances) which are installed or used by the Dischargers to achieve compliance with this 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 are installed by the Dischargers only when the operation is necessary to achieve compliance the conditions of this CAO.

6. **Field Work Notice**. The Dischargers shall give the San Diego Water Board at least fourteen (14) days advance notice of all field work or field activities to be performed by the Dischargers pursuant to this CAO; provided, however, that in a given instance, if it is impossible for the Dischargers to provide such notice, the Dischargers shall provide notice to the San Diego Water 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 twenty-four (24) hours prior to the given field activities, unless the San Diego Water Board agrees otherwise.

7. **Duty to Use Registered Professionals**. The Dischargers shall provide documentation that plans and reports required under this 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 registered professionals. A statement of qualifications and registration numbers of the responsible lead professionals shall be included in all plans and reports submitted by the Dischargers. The lead professional shall sign and affix their registration stamp to the report, plan or document.

8. **Corporate Signatory Requirements**. All reports required under this Order shall be signed and certified by a responsible corporate officers of the Dischargers described in paragraph 5.a. of this provision or by a duly authorized representative of that person as described in paragraph 5.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 which 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

1. The authorization is made in writing by a person described in paragraph (a) of this provision;

2. 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.); and

3. 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, a new authorization satisfying the requirements of paragraph (b) of this provision must 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. ***Certification Statement***. Any person signing a document under paragraph a. or b. of this provision shall make the following certification:

"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 the Dischargers become aware that it failed to submit any relevant facts in any report required under this CAO, or submitted incorrect

information in any such report, the Dischargers shall promptly submit such facts or information to the San Diego Water Board.

10. **Electronic and Paper Media Reporting Requirements**. The Dischargers shall submit both electronic and paper copies of all reports required under this CAO including work plans, technical reports, and monitoring reports. Larger documents shall be divided into separate files at logical places in the report to keep file sizes under 150 megabytes. The Discharger shall continue to provide a paper transmittal letter, a paper copy of all figures larger than 8.5 inches by 14 inches (legal size), and an electronic copy (on CD or other appropriate media) of all reports to the San Diego Water Board. All paper correspondence and documents submitted to the San Diego Water Board must include the following identification numbers in the header or subject line: Geotracker Site ID: T10000003580. The Dischargers shall comply with the following reporting requirements for all reports and plans (and amendments thereto) required by this Order:

    a. ***Reports and Plans Required by this Order.*** The Dischargers shall submit one paper and one electronic, searchable PDF copy of all technical reports, monitoring reports, progress reports, and plans required by this Order. The PDF copy of all the reports shall also be uploaded into the Geotracker database, as required by Provision G.10(b)(4) below.

    b. ***Electronic Data Submittals for Sediment Chemistry***. All information submitted to the San Diego Water Board in compliance with this Order is required to be submitted electronically via the Internet into the Geotracker database http://geotracker.waterboards.ca.gov/ (Geotracker Site ID. T10000003580). The electronic data shall be uploaded on or prior to the regulatory due dates set forth in the Order or addenda thereto. To comply with these requirements, the Dischargers shall upload to the Geotracker database the following minimum information:

        1. Laboratory Analytical Data: Analytical data (including geochemical data) for all sediment and water samples in Electronic Data File (EDF) format. Water, sediment, and soil include analytical results of samples collected from: dredging equipment, monitoring wells, boreholes, gas and vapor wells or other collection devices, surface water, groundwater, piezometers, and stockpiles.

        2. Locational Data: The latitude and longitude of any permanent monitoring location (surface water or sediment sampling location) for which data is reported in EDF format, accurate to within 1 meter and referenced to a minimum of two reference points from the California Spatial Reference System (CSRS-H), if available.

        3. Site Map: Site map or maps which display discharge locations, streets bordering the facility, and sampling locations for all sediment, soil, and water samples. The site map is a stand-alone document that may be submitted in various electronic formats. A site map must also be uploaded to show the maximum extent of any sediment and water pollution. An update to the site map may be uploaded at any time.

4. Electronic Report: A complete copy (in searchable PDF format) of all workplans, assessment, cleanup, and monitoring reports including the signed transmittal letters, professional certifications, and all data presented in the reports.

11. **Report Submittals**. All monitoring and technical reports required under this CAO shall be submitted to

    Executive Officer
    California Regional Water Quality Control Board
    San Diego Region
    9174 Sky Park Court, Suite 100
    San Diego, CA 92123-4340

12. **Amendment.** This CAO in no way limits the authority of this San Diego Water Board to institute additional enforcement actions or to require additional investigation and cleanup consistent with the California Water Code. This CAO may be revised by the San Diego Water Board as additional information becomes available.

13. **Time Extensions.** If, for any reason, the Dischargers are unable to perform any activity or submit any documentation in compliance with requirements in this CAO, including the RAP, or in compliance with associated implementation schedules, including the RAP implementation schedule, the Dischargers 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 this CAO will be accordingly amended.

14. **Community Relations.** The Dischargers shall cooperate with the San Diego Water Board in providing information regarding the remediation of the Shipyard Sediment Site to the public. If requested by the San Diego Water Board, the Dischargers shall participate in the preparation of such information for distribution to the public and in public meetings which may be held or sponsored by the San Diego Water Board to explain activities at or relating to the Shipyard Sediment Site.

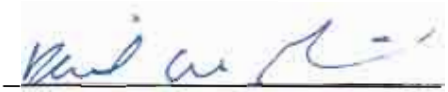
I. NOTIFICATIONS

1. **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 this CAO.

2. **Enforcement Notification**. The Porter-Cologne Water Quality Control Act commencing with Chapter 5, Enforcement and Implementation, section 13308, provides that if there is a threatened or continuing violation of a CAO, the San Diego Water Board may issue a Time Schedule Order prescribing a civil penalty in an amount not to exceed $10,000 per day for each day compliance is not achieved in accordance with that time schedule. Section 13350 provides that any person may be assessed administrative civil liability by the San Diego Water Board for violating a CAO in an amount not to exceed $5,000 for

each day the violation occurs, or on a per gallon basis, not to exceed $10 for each gallon of waste discharged. Alternatively the court may impose civil liability in an amount not to exceed $15,000 for each day the violation occurs, or on a per gallon basis, not to exceed $20 for each gallon of waste discharged. Section 13385 provides that any person may be assessed administrative civil liability by the San Diego Water Board for violating a CAO for an activity subject to regulation under Division 7, Chapter 5.5 of the Water Code, in an amount not to exceed the sum of both of the following: (1) $10,000 for each day in which the violation occurs; and (2) where there is a discharge, any portion of which is not susceptible to cleanup or is not cleaned up, and the volume discharged but not cleaned up exceeds 1,000 gallons, an additional liability not to exceed $10 multiplied by the number of gallons by which the volume discharged but not cleaned up exceeds 1,000 gallons. Alternatively the civil liability may be imposed by the court in an amount not to exceed the sum of both of the following: (1) $25,000 for each day in which the violation occurs; and (2) where there is a discharge, any portion of which is not susceptible to cleanup or is not cleaned up, and the volume discharged but not cleaned up exceeds 1,000 gallons, an additional liability not to exceed $25 multiplied by the number of gallons by which the volume diseharged but not cleaned up exceeds 1,000 gallons.

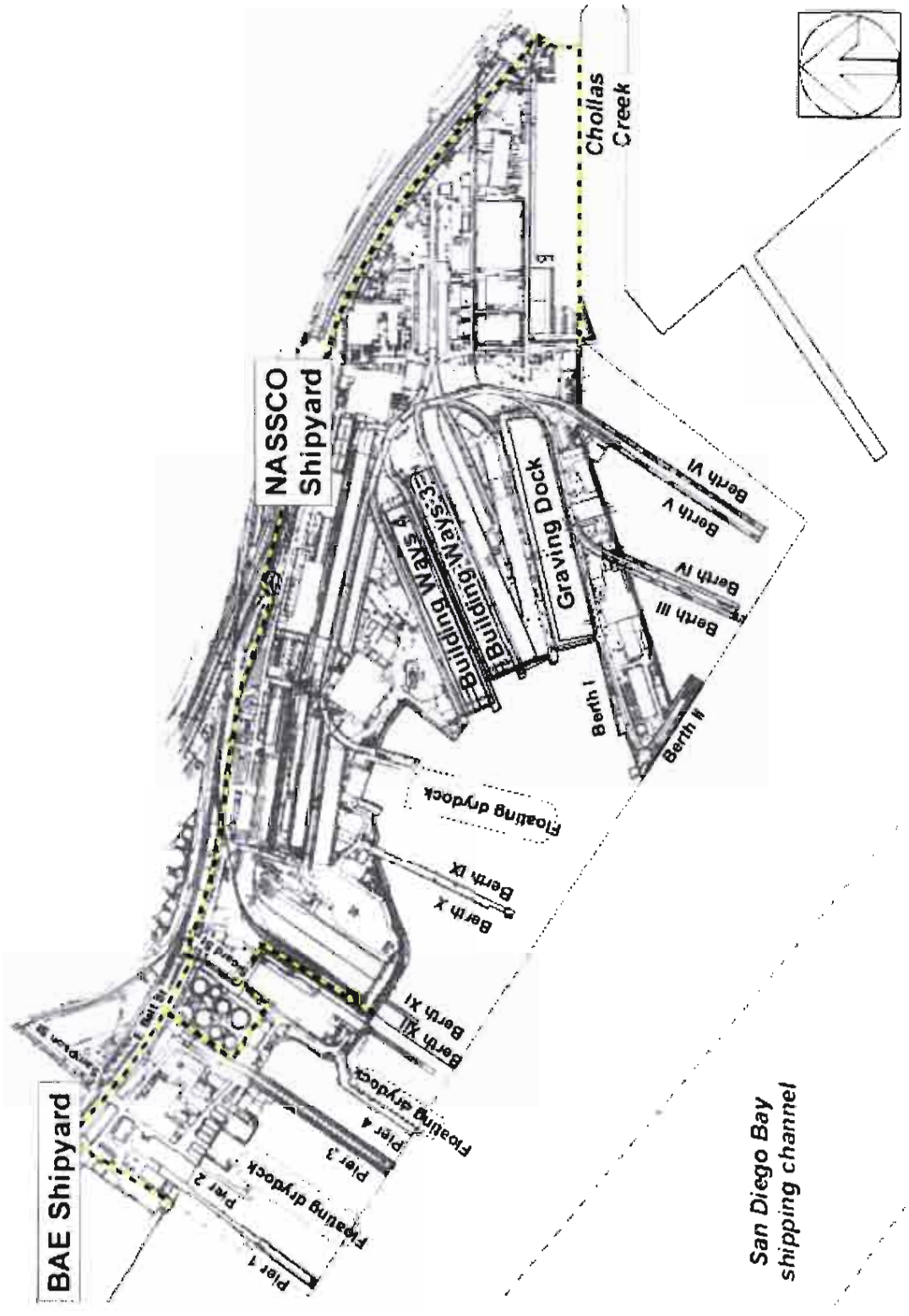
I, David W. Gibson, Executive Officer, do hereby certify the forgoing is a full, true, and correct copy of a CAO issued on ***March 14, 2012.***



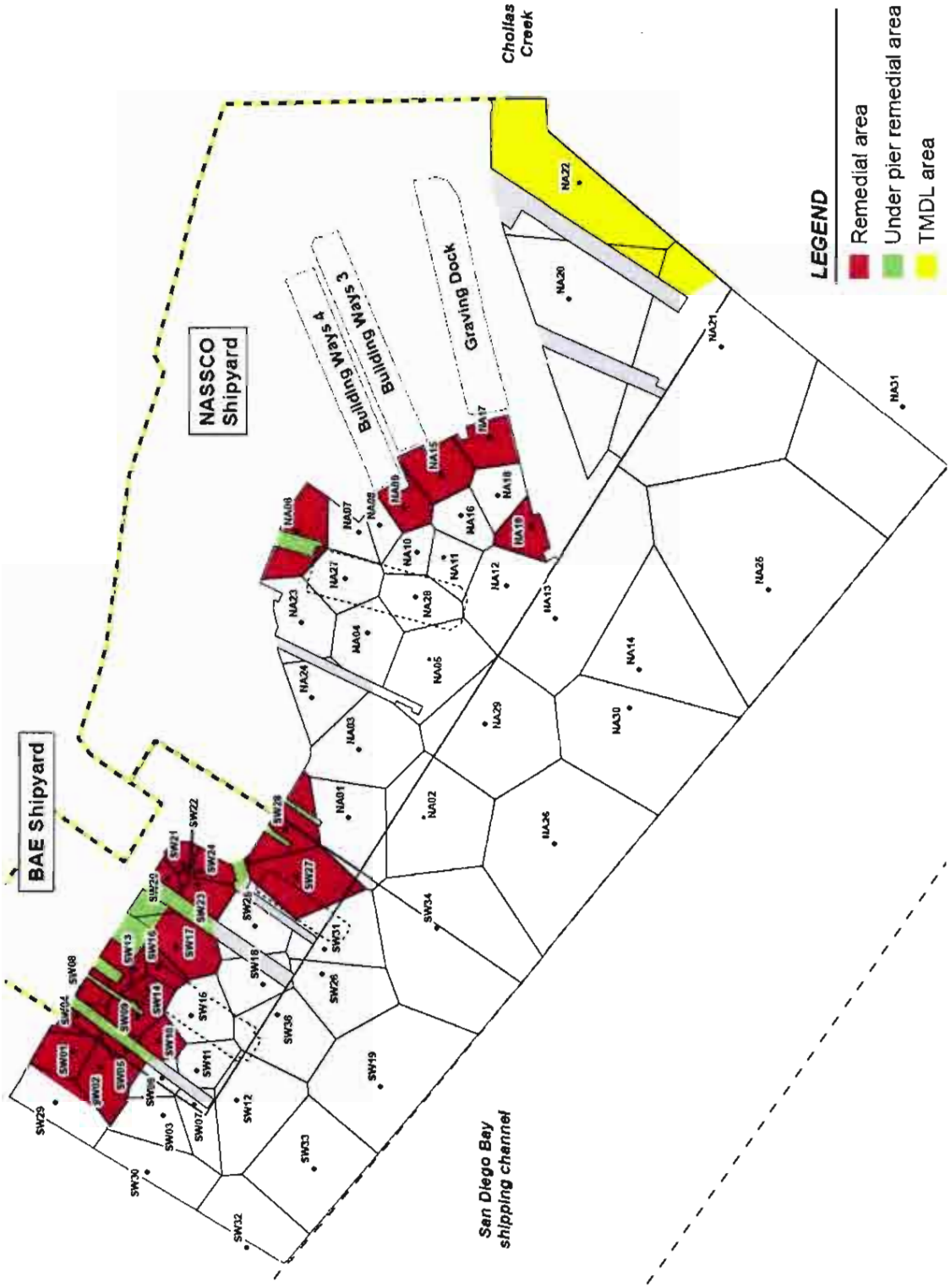
David W. Gibson

Executive Officer

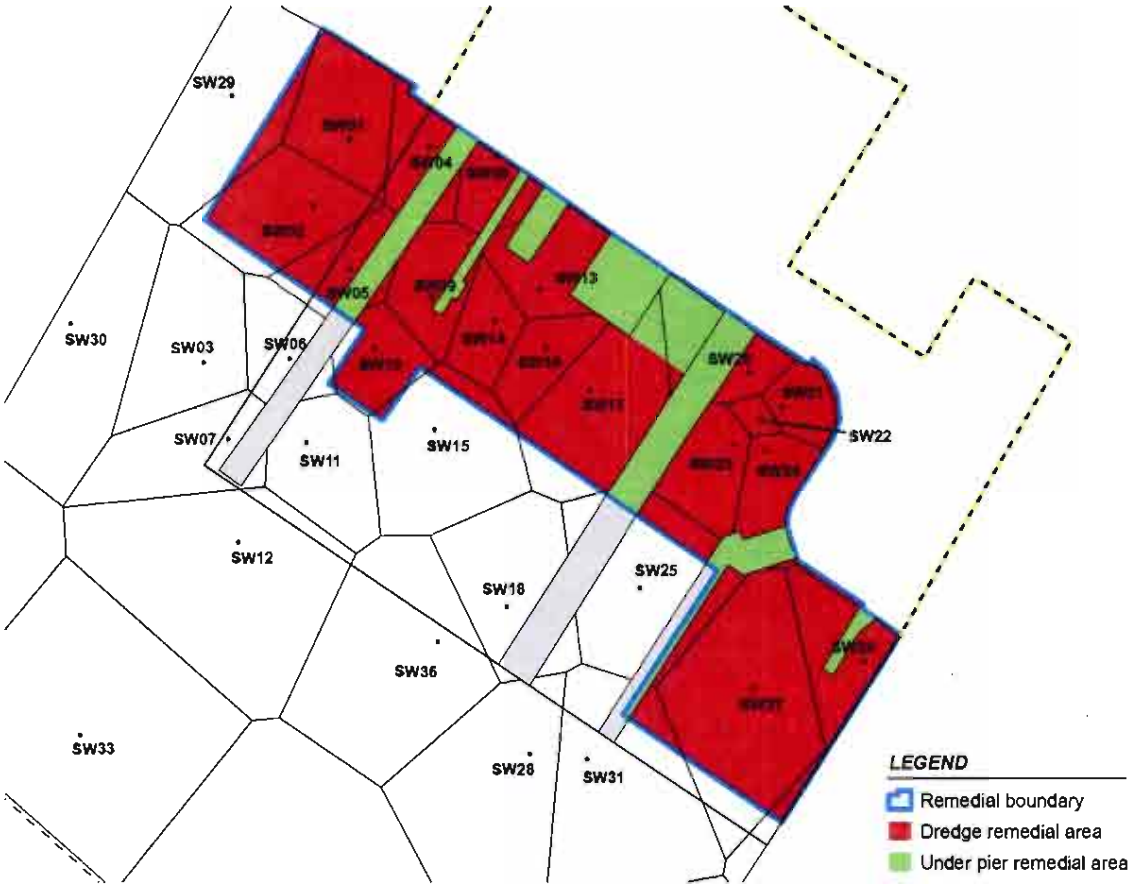
Attachment 1. Shipyard Sediment Area



Attachment 2. Polygons Targeted for Remediation



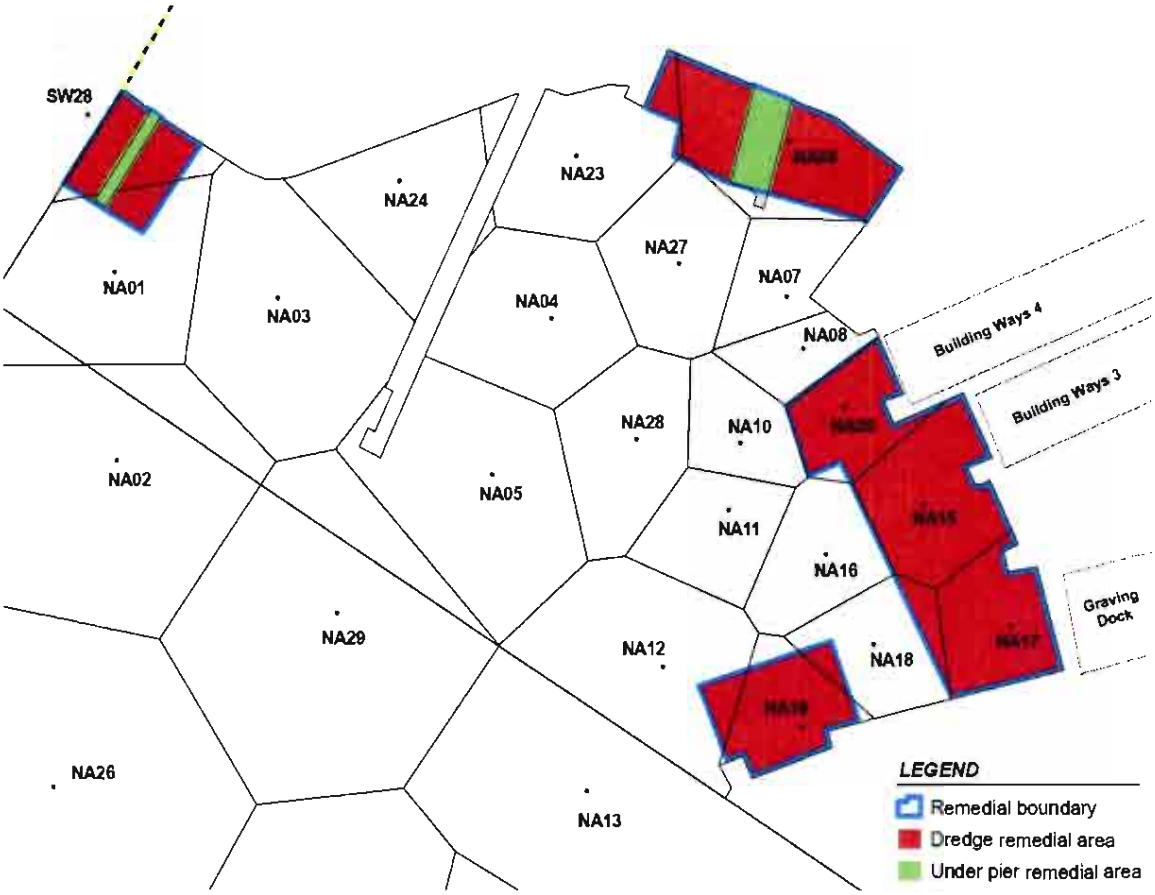
Attachment 3. Remedial Footprint Based on Sediment Management Units for BAE Shipyard



Remedial Site (North)	
Dredge remedial Area (ft^2)	438,300
Under pier remedial area (ft^2)	89,980
Total Remedial Area (ft^2)	528,295
Dredge Volume (yd^3)	90,800

Note: Presumed remedy within the remedial boundary is dredging, except for under pier remedial areas.

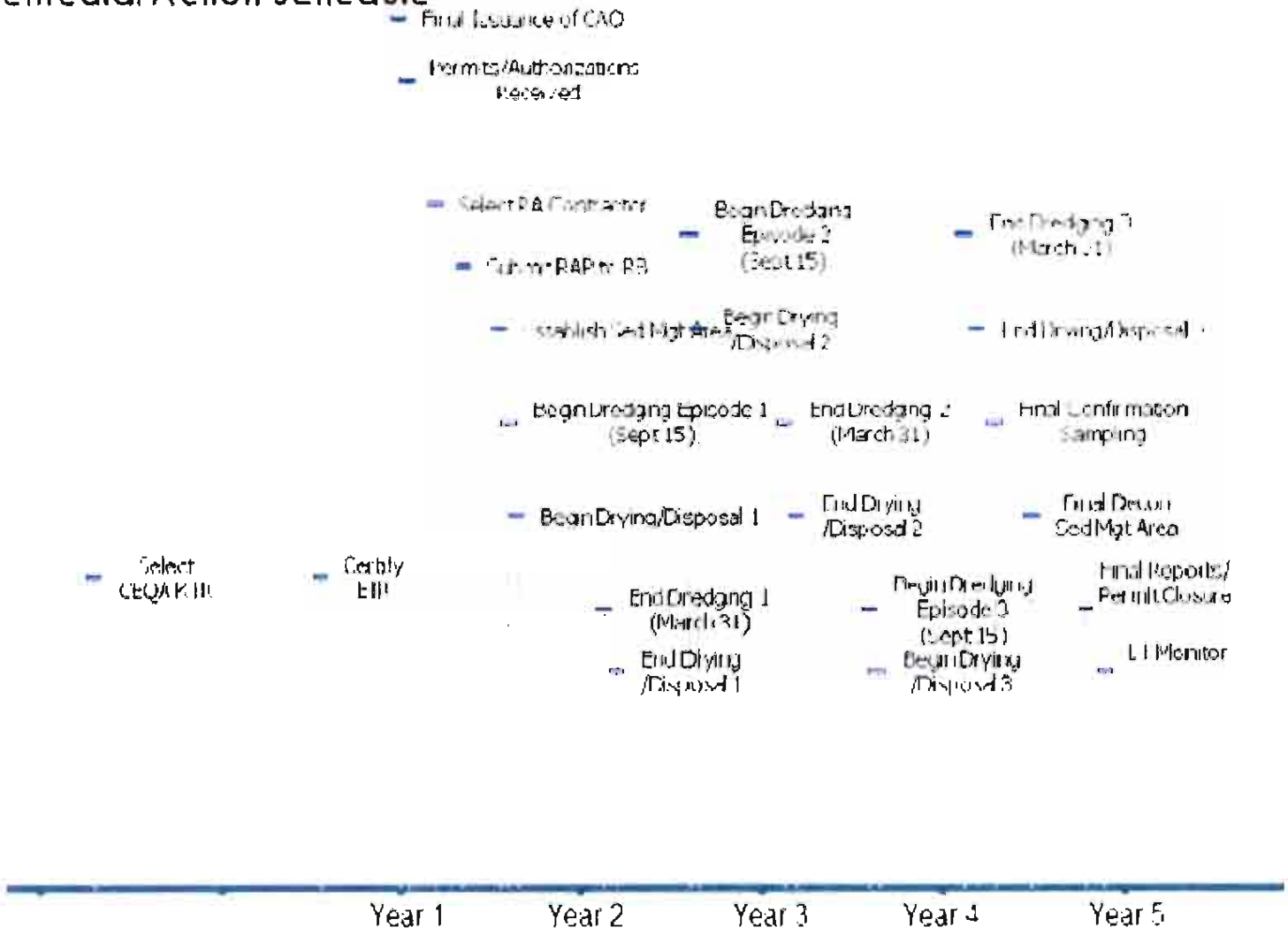
Attachment 4. Remedial Footprint Based on Sediment Management Units for NASSCO Shipyard



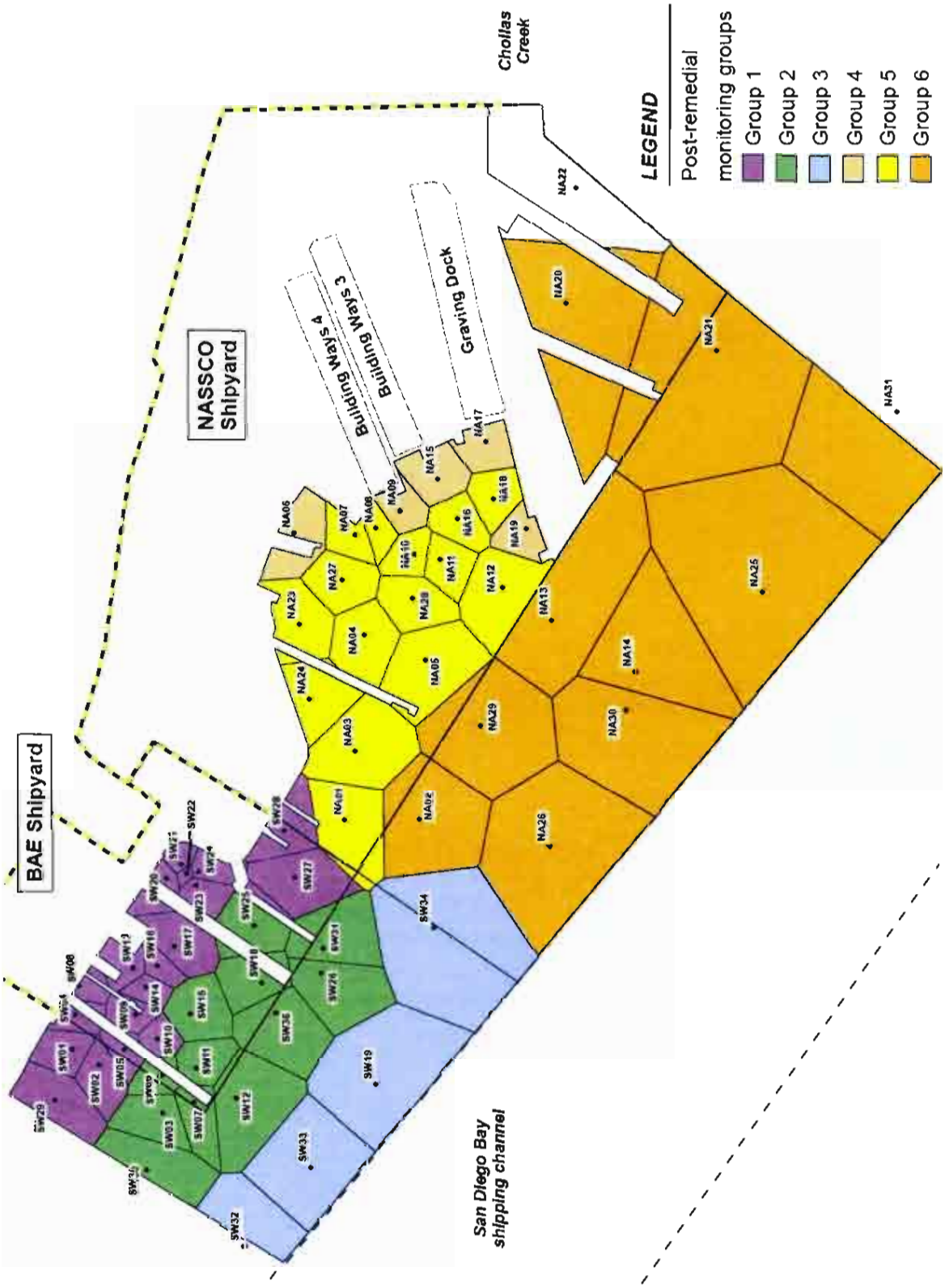
Remedial Site (South)	
Dredge remedial Area (ft^2)	217,800
Under pier remedial area (ft^2)	13,725
Total Remedial Area (ft^2)	231,495
Volume (yd^3)	52,600
TMDL area (ft^2)	218,060

Note: Presumed remedy within the remedial boundary is dredging, except for under pier remedial areas.

Remedial Action Schedule



Attachment 6. Composite Sampling Area for Post-Remedial Monitoring



Attachment 7. Summed list of PCB and PAH analytes measured in bulk sediments.

PAH	Identifier	PAH	Identifier
Naphthalene	C0N	Pyrene	PYR
C1-Naphthalenes	C1N	C1-Fluoranthenes/pyrenes	C1F/P
C2-Naphthalenes	C2N	C2-Fluoranthenes/pyrenes	C2F/P
C3-Naphthalenes	C3N	C3-Fluoranthenes/pyrenes	C3F/P
C4-Naphthalenes	C4N	Benzo[a]anthracene	BAA
Acenaphthylene	ACEY	Chrysene	C0C
Acenaphthene	ACE	C1-Chrysenes	C1C
Biphenyl	BIP	C2-Chrysenes	C2C
Fluorene	C0F	C3-Chrysenes	C3C
C1-Fluorenes	C1F	C4-Chrysenes	C4C
C2-Fluorenes	C2F	Benzo[b]fluoranthene	BBF
C3-Fluorenes	C3F	Benzo[k]fluoranthene	BKF
Anthracene	C0A	Benzo[e]pyrene	BEP
Phenanthrene	C0P	Benzo[a]pyrene	BAP
C1-Phenanthrenes/anthracenes	C1P/A	Perylene	PER
C2-Phenanthrenes/anthracenes	C2P/A	Indeno[1,2,3,-c,d]pyrene	INDENO
C3-Phenanthrenes/anthracenes	C3P/A	Dibenzo[a,h]anthracene	DAH
C4-Phenanthrenes/anthracenes	C4P/A	Benzo[g,h,i]perylene	BGP
Dibenzothiophene	C0D	Total PAH[1]	TPAH
C1-Dibenzothiophenes	C1D	Priority Pollutant PAH[2]	PPPAH
C2-Dibenzothiophenes	C2D	Low Molecular Weight PAH[3]	LMWPAH
C3-Dibenzothiophenes	C3D	High Molecular Weight PAH[4]	HMWPAH
Fluoranthene	FLANT		

SCCWRP and U.S. Navy, 2005b

[1]Total PAH = sum of all listed PAH analytes

[2]Priority pollutant PAH = sum of C0N, ACEY, ACE, C0F, C0A, C0P, FLANT, PYR, BAA, C0C, BBF, BKF, BAP, INDENO, DAH, BGP

[3]Low Molecular Weight PAH = sum of C0N, C2N, ACEY, ACE, C0F, C0A, C0P

[4]High Molecular Weight PAH = sum of FLANT, PYR, BAA, C0C, BAP, DAH

Attachment 7 (continued). Summed list of PCB and PAH analytes measured in bulk sediments.

PCB Congener	Congener Number	PCB Congener	Congener Number
2,2',5-Trichlorobiphenyl (Cl3)	18	2,2',3,3',4,4'-Hexachlorobiphenyl (Cl6)	128
2,4,4'-Trichlorobiphenyl (Cl3)	28	2,2',3,4,4',5'-Hexachlorobiphenyl (Cl6)	138
3,4,4'-Trichlorobiphenyl (Cl3)	37	2,2',3,4',5',6-Hexachlorobiphenyl (Cl6)	149
2,2',3,5'-Tetrachlorobiphenyl (Cl4)	44	2,2',3,5,5',6-Hexachlorobiphenyl (Cl6)	151
2,4,4',5'-Tetrachlorobiphenyl (Cl4)	49	2,2',4,4',5,5'-Hexachlorobiphenyl (Cl6)	153
2,2',5,5'-Tetrachlorobiphenyl (Cl4)	52	2,3,3',4,4',5-Hexachlorobiphenyl (Cl6)	156
2,3',4,4'-Tetrachlorobiphenyl (Cl4)	66	2,3,3',4,4',5'-Hexachlorobiphenyl (Cl6)	157
2,3',4',5 - Tetrachlorobiphenyl (Cl4)	70	2,3,3',4,4',6-Hexachlorobiphenyl (Cl6)	158
2,4,4',5 -Tetrachlorobiphenyl (Cl4)	74	2,3',4,4',5,5'-Hexachlorobiphenyl (Cl6)	167
3,4,4',5 -Tetrachlorobiphenyl (Cl4)	81	2,3',4,4',5',6-Hexachlorobiphenyl (Cl6)	168
3,3',4,4'-Tetrachlorobiphenyl (Cl4)	77	3,3',4,4',5,5'-Hexachlorobiphenyl (Cl6)	169
2,2'3,4,5'-Pentachlorobiphenyl (Cl5)	87	2,2',3,3',4,4',5-Heptachlorobiphenyl (Cl7)	170
2,2',4,4',5-Pentachlorobiphenyl (Cl5)	99	2,2',3,3',4,5',6-Heptachlorobiphenyl (Cl7)	177
2,2',4,5,5'-Pentachlorobiphenyl (Cl5)	101	2,2',3,4,4',5,5'-Heptachlorobiphenyl (Cl7)	180
2,3,3',4,4'-Pentachlorobiphenyl (Cl5)	105	2,2',3,4,4',5',6-Heptachlorobiphenyl (Cl7)	183
2,3,3',4',6-Pentachlorobiphenyl (Cl5)	110	2,2',3,4',5,5',6-Heptachlorobiphenyl (Cl7)	187
2,3,4,4',5-Pentachlorobiphenyl (Cl5)	114	2,3,3',4,4',5,5'-Heptachlorobiphenyl (Cl7)	189
2,3',4,4',5-Pentachlorobiphenyl (Cl5)	118	2,2',3,3',4,4',5,5'-Octachlorobiphenyl (Cl8)	194
2,3',4,4',6-Pentachlorobiphenyl (Cl5)	119	2,2',3,3',4,5',6,6'-Octachlorobiphenyl (Cl8)	201
2,3',4,4',5'-Pentachlorobiphenyl (Cl5)	123	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (Cl9)	206
3,3',4,4',5-Pentachlorobiphenyl (Cl5)	126	Total PCB[1]	TPCB

SCCWRP and U.S. Navy, 2005b
[1]Total PCB = sum of all listed PCB congeners.

Attachment 8. Flow Diagram for the Sediment Chemistry Ranking Criteria (Low, Moderate, and High)

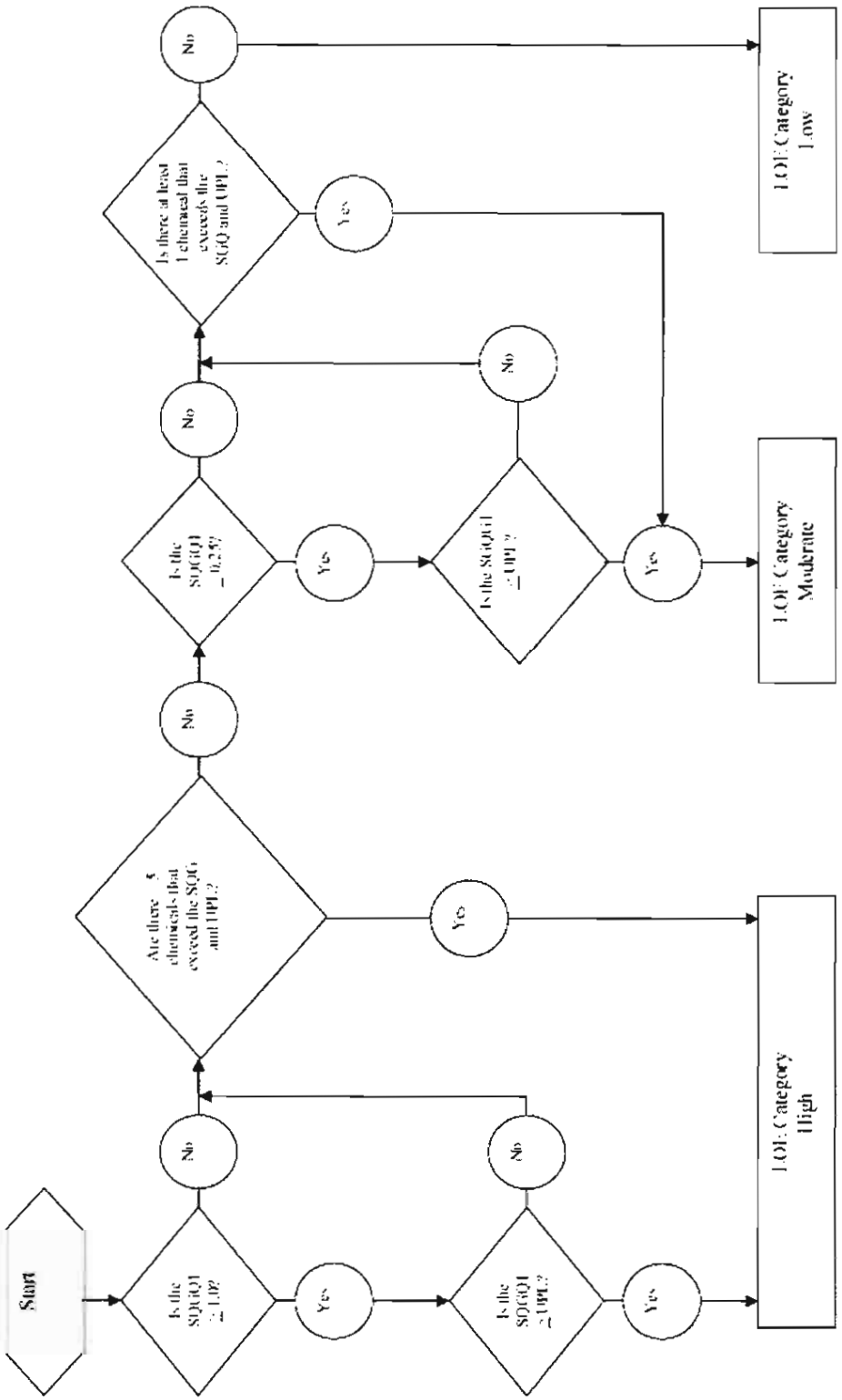


EXHIBIT 2

PETITION OF
BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.

MICHAEL S. TRACY (Bar No. 101456)
MATTHEW B. DART (Bar No. 216429)
AMANDA C. FITZSIMMONS (Bar No. 258888)
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Matthew.dart@dlapiper.com
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Tel: 619.699.3620
Fax: 619.699.2701

Attorneys for Designated Party
BAE Systems San Diego Ship Repair Inc.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

IN RE TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2012-0024 (formerly R9-2011-0001)	**BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S COMMENTS REGARDING REVISIONS TO TCAO AND DTR RELEASED BY THE REGIONAL BOARD ON FEBRUARY 13, 2012** Presiding Officer: Grant Destache

Pursuant to the February 13, 2012 Notice of Public Hearing, and the relevant procedural orders, with respect to Tentative Cleanup and Abatement Order No. R9-2012-0024 ("TCAO") and its associated Draft Technical Report ("DTR") for the San Diego Bay Shipyard Sediment Site, San Diego County ("Shipyard Sediment Site" or "Site"), Designated Party BAE Systems San Diego Ship Repair Inc. ("BAE Systems") respectfully submits these written comments regarding the revisions to the TCAO and DTR released on February 13, 2012. According to the Notice of Public Hearing, these revisions to the TCAO and DTR are recommended by the panel of the Regional Water Quality Control Board, San Diego Region that conducted the evidentiary hearing of this matter in November, 2011.

I. COMMENTS REGARDING REVISIONS TO THE TCAO AND DTR MADE BY THE CLEANUP TEAM AND RELEASED ON FEBRUARY 13, 2012

BAE Systems provides certain comments regarding the revisions recommended by the panel that conducted the evidentiary hearing of this matter in November, 2011. The comments are organized to track the organization of topics set forth in the TCAO and DTR.

A. Revised Finding 5 - Removal of Star & Crescent Boat Co.

The revised TCAO "removes Star & Crescent Boat Company as a Discharger or Responsible Party pending a determination on the issue of successor liability in the federal district court litigation." (Notice of Public Hearing dated 2-13-12, at p. 2.) The revisions reflect the panel's recommendation that the Regional Board decline to decide the legal and factual questions necessary to determine whether Star & Crescent is the legal successor to San Diego Marine Construction Co., as asserted by several designated parties as well as the Cleanup Team. (TCAO, Finding 5; CUT 8/23/11 Response to Comments Report, Response 5.1.) The recommendation is expressly based in part on the panel's expectation that the Federal District Court will address that successor issue following issuance of a final order. (TCAO, Finding 5.)

This recommendation should be rejected for two reasons. First, it does not comport with the standard for naming responsible parties in cleanup and abatement orders. To be named a discharger, all that is required is "sufficient evidence" of responsibility. *See* The State Water Board Quality Enforcement Policy, No. 2002-0040 (Feb. 19, 2002.) "Generally speaking it is appropriate and responsible for a Regional Board to name all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility." *See, e.g., Exxon Co. USA et al,* Order No. 85-7, at 11 (SWRCB, 1985). The "State Water Board requires that the Regional Boards name in a CAO all dischargers who contributed to a condition of pollution or nuisance to the maximum extent of the law." (CUT 8/23/11 Response to Comments Report, at 1-23). Here, several parties submitted extensive evidence and argument regarding the Star & Crescent successor issues, and the Cleanup Team after dutifully wading through all of it, concluded:

> In light of the comments received by the Designated Parties, as set forth in detail below, the Cleanup Team continues to recommend that Star & Crescent be named as a discharger in the TCAO as the corporate successor of SDMCC and Invest Co.

(*Id.* at 5-2.) BAE Systems submits that the Cleanup Team's judgment and recommendation in this regard should be followed by the Regional Board.

Second, as the Regional Board is well aware, the parties, including Star & Crescent are engaged in mediation with the aim of resolving all allocation issues and settling the matter in its entirety. Thus it is far from certain that the District Court will have the opportunity to, and in fact will, address the Star & Crescent successor issues. Under the current recommendation from the panel, without that finding the Regional Board will likely not have grounds to amend the order to add Star & Crescent as a discharger. To avoid these uncertainties, and protect the other named Dischargers from responsibility for Star & Crescent's share of liability, Star & Crescent should remain a named Discharger unless and until the District Court finds otherwise.

B. Revised Finding 12; DTR Section 12.1

TCAO Finding 12, and DTR Section 12.1, pertain to Clean Water Act, Section 303(d) Listing. The second sentence of TCAO Finding 12 has been revised to add the underscored portion of the following sentence:

> These pollutants are impairing the aquatic life, aquatic-dependent wildlife, and human health beneficial uses designated for San Diego Bay and are causing the Bay's narrative water quality objective for toxicity to not be attained.

(TCAO Finding 12). Similarly, DTR § 12.1 has been revised to add the following new statement:

> These pollutants are impairing the aquatic life, aquatic-dependent wildlife, and human health beneficial uses designated for San Diego Bay, and are causing the Bay's narrative water quality objective for toxicity to not be attained.

(DTR § 12.1.)

BAE Systems submits that these additions are inappropriate and not supported. The TCAO and DTR are based primarily upon the results of the detailed sediment investigation BAE and NASSCO conducted at the Site in 2001-2002 in accordance with guidelines established by the Regional Board. (*See* TCAO, Finding 13.) The results of this highly detailed and exhaustive investigation found that risks to human health and aquatic-dependent wildlife at the Site "are well within acceptable levels," that certain risks are attributable to pesticides rather than any of the primary COCs at issue, and concluded that active dredging would provide minimal incremental

benefit at a very high cost. (2003 Exponent Report, at 19-1, 19-13.) And yet the current TCAO and DTR continue find impairment of aquatic life, aquatic-dependent wildlife, and human health beneficial uses, and provide for extensive active dredging as the primary remedy. To reach these conclusions, the TCAO and DTR rely upon overly protective and unsupportable assumptions. These issues have been thoroughly set forth by Designated Parties' expert reports, briefing and evidence, and largely have been acknowledged by the Cleanup Team. The expert testimony and evidence presented at the November evidentiary hearing by experts Dreas Nielsen, Scott Becker, Tom Ginn, and Brent Finley, further established and confirmed the lack of impairment.

Thus, BAE Systems submits it is inappropriate and unsupported to add further new language to the TCAO and DTR asserting impairment to the identified beneficial uses and the alleged causing of the Bay's narrative water quality objective for toxicity to not be attained.

C. Revised TCAO Finding 32

The revised TCAO proposes to delete the sentence "Cleanup of the remedial footprint will restore any injury, destruction or loss of natural resources." BAE submits that the sentence was appropriate, supported, and should remain in the TCAO. It was included in several prior iterations of the TCAO going back several years. The parties submitted mountains of written comments and expert reports over the last two years, and among those comments and reports, only the Environmental Parties took issue with that statement. (*See* Cleanup Team's 8/23/11 Response to Comments Report, at 1-21.) BAE and NASSCO persuasively rebutted that alleged issue, arguing that Regional Board is empowered by the Water Code and relevant law to evaluate whether cleanup of the instant Remedial Footprint will improve environmental conditions such that natural resources will benefit from the cleanup. (*Id.*) Accordingly it is appropriate and reasonable for the Regional Board to consider whether the cleanup will restore any injury, destruction or loss of natural resources. (*Id.*)

The Cleanup Team, after assessing, analyzing and responding to all such comments and reports, issued its Response to Comments Report on August 23, 2011, which does not find support for the assertion of the Environmental Parties that the statement at issue should be removed from the TCAO:

> The TCAO and the DTR discuss the general concept of restoration of natural resources in the context of the San Diego Water Board's duty under Resolution No. 92-49 to ensure that any alternative cleanup levels above background must not unreasonably impact, and must reasonably protect, beneficial uses. The Cleanup Team expresses no opinion with regard to EHC's and Coastkeeper's statement that the San Diego Water Board lacks the authority to "conduct natural resource damage assessments" since the TCAO and DTR do not undertake a natural resource damage assessment in this case.

(CUT 8/23/11 Response to Comments Report, at No. 1.4.)

The panel conducted an evidentiary hearing of this matter in November, 2011. However this issue was not raised, and no evidence regarding the natural resources issue was presented by any party.

On January 12, 2012, long after the deadline for submission of written comments, and two months after the evidentiary hearing took place, the Department of the Interior sent an untimely written comment letter to Senior Staff Counsel Catherine Hagan requesting that the instant sentence be deleted from the TCAO.

BAE reiterates its previous written arguments and contention that the instant sentence is appropriate and reasonable for inclusion in this TCAO in the context in which it was previously made – under Resolution 92-49. The statement existed in the prior versions of the TCAO, the Cleanup Team has not recommended or proposed removing that statement, and no evidence or argument was heard by the panel regarding this issue.

D. <u>Revised DTR Page 33-2; TCAO Directive G</u>

The hearing panel's recommended revisions to the TCAO and DTR would "(5) clarify that SW29 not proposed to be dredged may be addressed by a separate regulatory action by the San Diego Water Board." (Notice of Public Hearing dated 2-13-12, at p. 2.) The revised DTR states:

> While polygon SW29 is considered part of the Shipyard Sediment Site for purposes of the CAO, only a portion of SW29 is included in the dredge area. The San Diego Water Board may address the un-dredged portion of SW29 in a separate regulatory proceeding based upon available information even if compliance with the CAO is achieved in the overall remedial footprint, as indicated in Provision G of this CAO.

(DTR, at 33-2.) Similarly, revised CAO Directive G states that "[t]he portion of polygon SW29

not in the dredge footprint may be addressed by the San Diego Water Board under a separate future regulatory action based upon available information." (TCAO, Directive G.)

BAE submits that if the remainder of SW29 meets the criteria established by the Regional Board for remediation, it should be included within the remedial footprint in the instant TCAO proceeding such that all of BAE's leasehold would be subject to the same remedial standards.

The Board is in possession of substantial data regarding SW29 conditions and contaminant levels. If the data is insufficient to make that determination, additional data should be obtained. The instant order is near finalization and the dischargers will proceed with remediation thereafter. If the available information supports remediation of polygon SW29, it should be done contemporaneous with the cleanup of the currently-defined Remedial Footprint, rather than put off into the future only to be revisited by the Board and the parties in a separate regulatory proceeding. Proceeding in the manner currently contemplated would waste significant time and resources of the Board and the parties.

E. Revised Finding 41; Directive H-1

With respect to the cost recovery provisions, the Cleanup Team previously agreed that the parties' "request for documentation of the costs sought for reimbursement is reasonable." (CUT 11/2/11 Responses to Selected Written Comments, at 3.) The Cleanup Team has provided such documentation for certain past unreimbursed costs. BAE Systems requests that the TCAO be revised to reflect this agreement by the Cleanup Team, and order that such documentation must be provided for all costs for which reimbursement is sought.

F. Preservation of All Prior Objections, Argument and Evidence

BAE Systems expressly preserves, and does not waive, any and all objections to those technical issues, evidence or legal argument to which BAE Systems does not address herein, as well as any and all argument and evidence submitted into the record in this matter.

Dated: February 24, 2012 DLA PIPER LLP (US)

By /s/ Michael S. Tracy
MICHAEL S. TRACY
Attorneys for BAE Systems San Diego Ship Repair Inc.

EXHIBIT 3

PETITION OF
BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.

DLA PIPER

EVERYTHING MATTERS

TCAO No. R9-2012-0024

Shipyard Sediment Site

BAE Systems San Diego Ship Repair Inc.

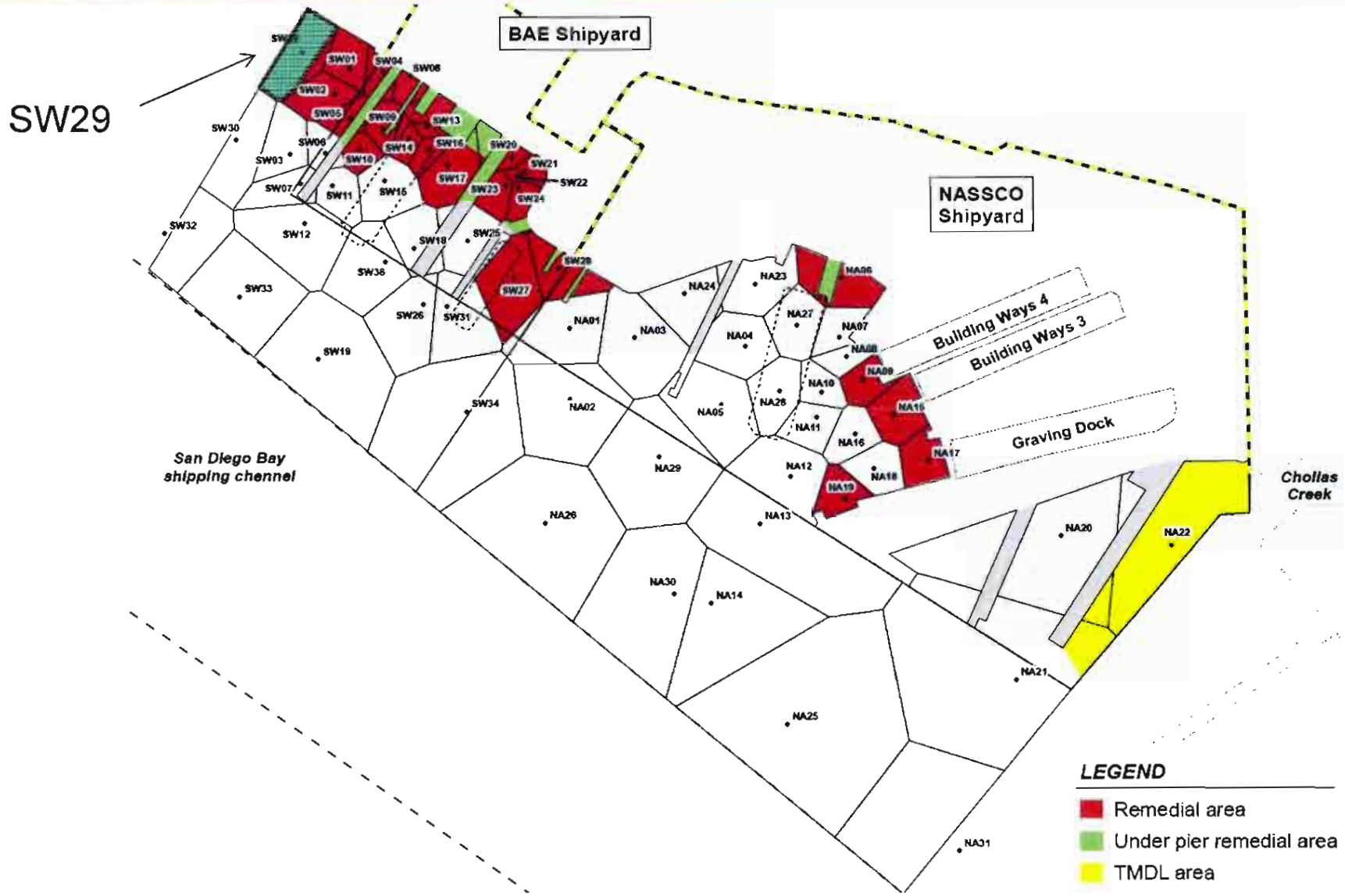
March 14, 2012

Current DTR regarding Polygon SW29

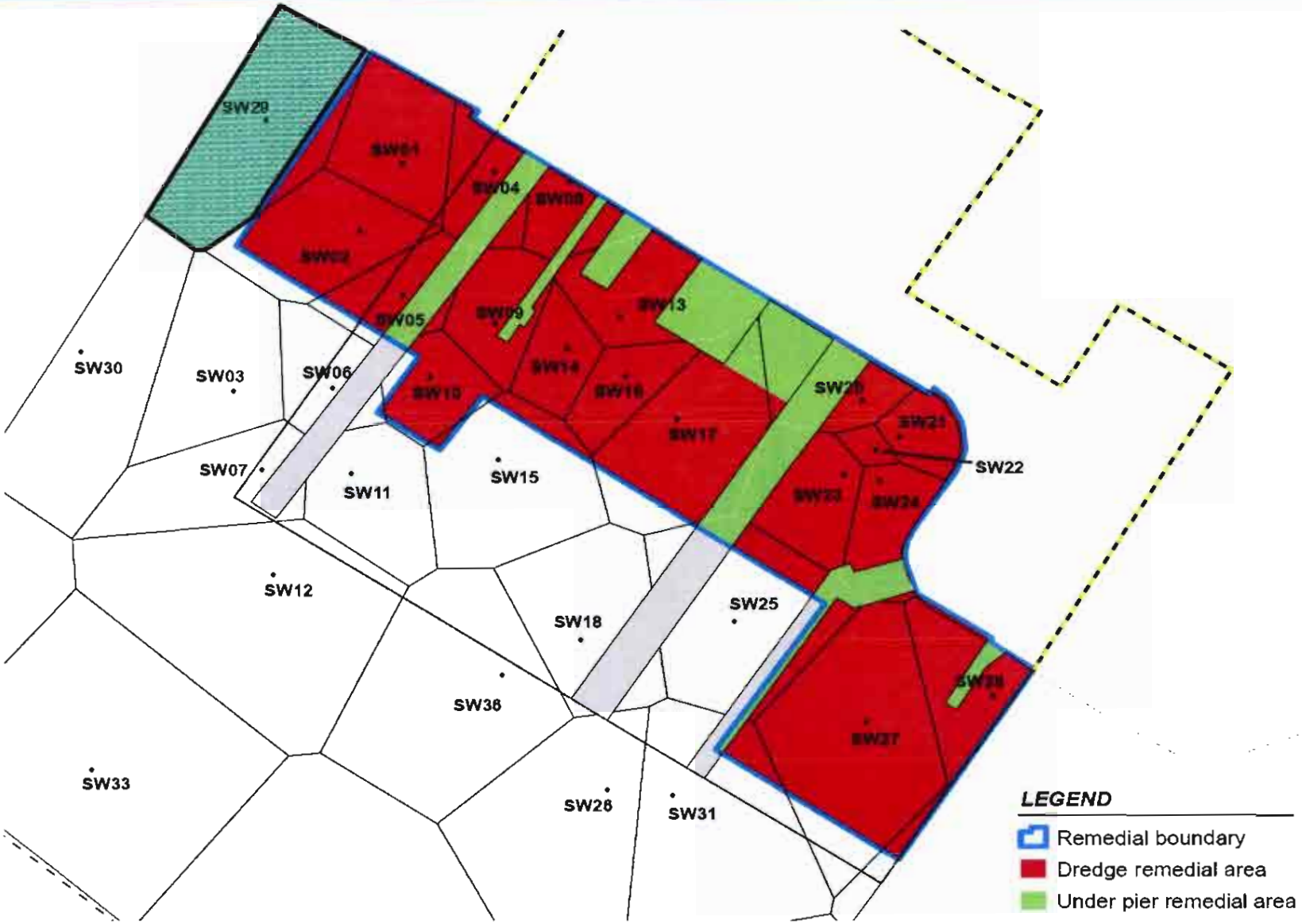
DTR at 33-2:

- "While polygon SW29 is considered part of the Shipyard Sediment Site for purposes of the CAO, only a portion of SW29 is included in the dredge area. The San Diego Water Board may address the un-dredged portion of SW29 in a separate regulatory proceeding based upon available information even if compliance with the CAO is achieved in the overall remedial footprint, as indicated in Provision G of this CAO."

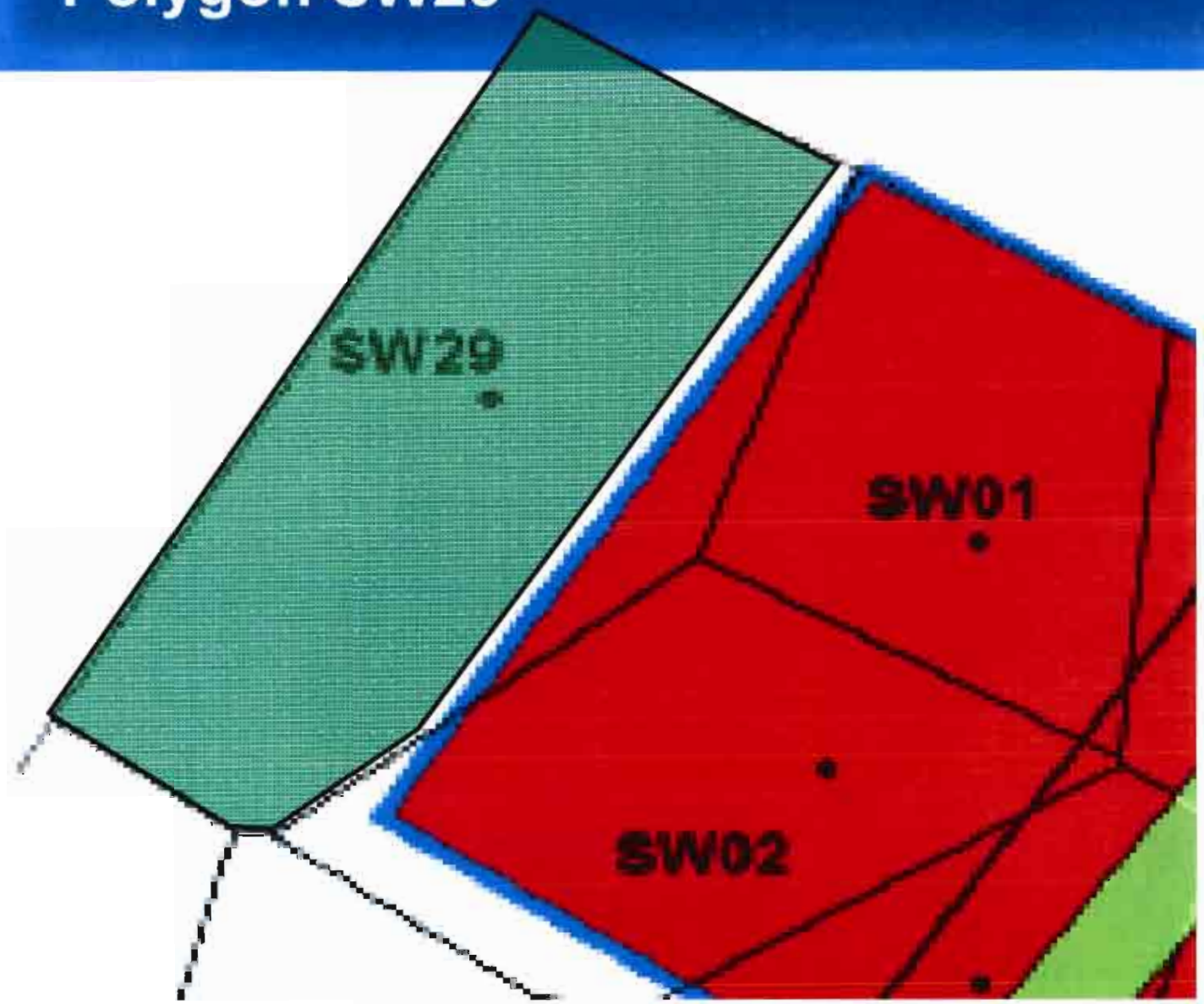
Polygon SW29



Polygon SW29



Polygon SW29



Remainder of SW29 to be evaluated:

46,521 Square Feet

All of SW29 should be addressed in this CAO

Legal and remedial consistency:

- "SW29 is considered part of the Shipyard Sediment Site for purposes of the CAO" (DTR, 33-2)
- "Shipyard Sediment Site is exempt from Phase I Sediment Quality Objectives" (DTR, 15-3)
- Addressing SW29 now ensures all polygons are subject to the same remedial standards
- Avoids potential litigation over applicable cleanup standards

Efficiency:

- Delay in addressing remainder of SW29 via a separate proceeding wastes Board's and multiple parties' resources
- Momentum exists now

Proposal to address remainder of SW29

Add Order Directive to CAO:

- A. Cleanup and Abate
  - 6. Investigation of Remaining SW29: within 60 days of CAO adoption dischargers submit a plan to conduct additional investigation in accordance with procedures used in the DTR
    - Sampling and Analysis Plan
    - Triad Approach
    - Sample Collection
    - Analysis
    - Supplemental Characterization Report

EXHIBIT 4

PETITION OF
BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.

Draft language regarding additional assessment of SW29.

ORDER DIRECTIVES

A. CLEANUP AND ABATE

6. **Investigation of Remaining SW29** Thiessen Polygon Not Within the Remedial Footprint (the "Remaining SW29 Thiessen Polygon"). The north end of the Shipyard Sediment Site lacks sufficient characterization to determine whether additional remediation is necessary to protect beneficial uses north of the current remedial footprint. Elevated levels of Primary COCs may exist that cause or threaten to cause a condition of pollution that may harm aquatic life, aquatic-dependant wildlife, or human health risks from exposure to the sediment in this area. Therefore, the dischargers shall submit a plan to conduct additional investigation in this area to determine the extent of the distribution of COCs and the biological effects that may exist in accordance with the procedures used in the DTR.

    a. **Sampling and analysis Plan.** A sampling and analysis plan (SAP) shall be submitted to the Water Board within 60 days of adoption of the Order.

    b. **Triad Approach.** A "weight-of-evidence" approach shall be used by integrating synoptic measures of sediment chemistry, toxicity, and benthic community composition to evaluate the sediment quality within the remaining portion of Thiessen Polygon SW29 not within the Remedial Footprint.

    c. **Sample Collection.** Samples shall be collected to evaluate the spatial distribution of COCs and biological conditions shoreward, Bayward, and alongshore to the northwest of the existing sample station SW29.

    d. **Analysis.** Samples shall be analyzed in accordance with methodology utilized in the Technical Report for Tentative Cleanup and Abatement Order No. R9-2012-0024.

    e. **Supplemental Characterization Report.** Dischargers shall prepare and submit a report that summarizes the analysis of the Remaining SW29 Thiessen Polygon. If the analysis of SW29 reveals a need for further characterization or remedial action the dischargers shall include in the report those actions that are recommended to further evaluate the sediment quality within the Remaining SW29 Thiessen Polygon or to restore the beneficial uses within the area of the Remaining SW29 Thiessen Polygon.

Need to delete language in CAO section G (page 34)

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

IN RE CLEANUP AND ABATEMENT ORDER NO. R9-2012-0024

DECLARATION OF SHAUN HALVAX IN SUPPORT OF BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S REQUEST FOR STAY OF ENFORCEMENT OF ORDER NO. R9-2012-0024

I, Shaun Halvax, declare:

1. I am the Manager Environmental Programs (West) for BAE Systems San Diego Ship Repair Inc. ("BAE Systems"). I make this declaration in support of BAE Systems' Request for Stay of Enforcement of Order No. R9-2012-0024 ("Order"). I have personal knowledge of the matters set forth herein and, if called to testify, could and would competently testify thereto.

2. The Order requires a detailed Remedial Action Plan ("RAP") to be prepared and submitted jointly by all responsible parties within ninety days of adoption of the Order. BAE Systems is already working diligently with the other Designated Parties, and the Regional Board, regarding the terms of the RAP. However, the RAP by its very nature is dependent on the terms of the Order, a portion of which BAE Systems is appealing. Should BAE Systems' appeal be granted, the scope of the remedial action would be altered, which would in turn alter the terms of the RAP. A variety of components of the RAP would be affected by the granting of the instant Petition. BAE Systems intends to continue working with the Regional Board and the Designated Parties to address its concerns regarding the RAP and scope of remedial action, and is hopeful that these negotiations will resolve all such issues.

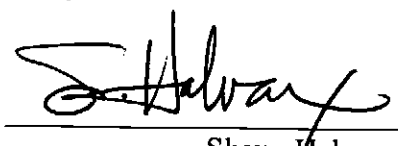
3. The underlying proceedings have been ongoing for more than a decade, and I have been intimately involved for the duration of this matter. Although the Regional Board has ordered dredging to remove contaminants, the overwhelming evidence submitted into the record in this matter, and presented at the Public Hearing in November 2011, demonstrate that site conditions do not pose substantial or imminent harm to the public or other interested persons. Moreover, the evidence demonstrates that the site is naturally attenuating. Nonetheless, BAE Systems seeks via this Petition to potentially *add* an additional area to the remedial footprint. Alternatively if the Petition is denied, the footprint will remain unchanged, and the Order's remedial directives will remain as they are today.

4. Whether the excluded portion of polygon SW29 is sufficiently impaired under the analyses set forth in the Order and Technical Report to warrant remediation concurrent with the remedial action directed in the Order is a substantial question of fact. The Regional Board has indicated that it lacks sufficient information to fully analyze this portion of SW29. BAE Systems

has proposed to the Regional Board an additional directive to the Order requiring the parties to complete further and sufficient investigation of SW29 to permit the Regional Board to make a final determination regarding its impairment. I sent that proposal to the Regional Board on March 12, 2012, a copy of which is attached to the Petition as Exhibit 4. That proposal was not accepted. Moreover, the appropriate scope of the RAP depends on the resolution of a variety of pending factual issues that are currently being negotiated by the Regional Board and the Designated Parties, including BAE Systems.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 13th day of April, 2012, at San Diego, California.



Shaun Halvax

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

IN RE CLEANUP AND ABATEMENT ORDER NO. R9-2012-0024

PROOF OF SERVICE

Presiding Officer: Grant Destache

I am a resident of the State of California, over the age of eighteen years, and not a party to the within action. My business address is DLA Piper LLP (US), 401 B Street, Suite 1700, San Diego, California 92101-4297. On April 13, 2012, I served the within documents:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S PETITION FOR REVIEW OF SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD CLEANUP AND ABATEMENT ORDER NO. R9-2012-0024; REQUEST FOR STAY; and

DECLARATION OF SHAUN HALVAX IN SUPPORT OF BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S REQUEST FOR STAY OF ENFORCEMENT OF ORDER NO. R9-2012-0024

☐ by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.

☐ by placing the document(s) listed above in a sealed Federal Express envelope for overnight delivery addressed as set forth below.

☐ by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, in the United States mail at San Diego, California addressed as set forth below.

☐ by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

☒ by electronic mail service. I caused all of the pages of the above-entitled document(s) to be electronically served on the parties listed below.

SEE ATTACHED SERVICE LIST

I declare under penalty of perjury under the laws of the State of California that the above is true and correct. Executed on April 13, 2012, at San Diego, California.

TAMMY KING

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Tentative Cleanup & Abatement Order No. R9-2012-0024

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