HUNTERS POINT SHIPYARD
DRAFT TECHNICAL MEMORANDUM
PARCEL B STORM DRAIN INFILTRATION STUDY
RESPONSE TO COMMENTS FROM
U.S. ENVIRONMENTAL PROTECTION AGENCY

This document presents the Navy's responses to comments from the U.S. Environmental Protection Agency (EPA) on the draft Technical Memorandum, Parcel B Storm Drain Infiltration Study (SDIS), Hunters Point Shipyard (HPS), San Francisco, California, dated March 15, 2000. The comments addressed below were received from EPA on May 22, 2000.

RESPONSES TO EPA

General Comments

1. **Comment:** **The methodology presented in the "Draft Technical Memorandum, Parcel B Storm Drain Infiltration Study, Hunters Point Shipyard, San Francisco, California" (the Report) for performing the storm drain infiltration study (the Study) differs from the methodology presented in the "Draft Final Revised Storm Drain Infiltration Study Approach," dated February 26, 1999 (the Work Plan), as follows:**

   - **The first step presented in Figure 2 of the Work Plan, "Infiltration Study Decision Path" is to ensure that sediment has been removed prior to sealing-off, dewatering, and video recording a storm drain reach. This is also the first step shown on Figure 6 of the Report, "Infiltration Study Decision Path." However, the Report states that video recording of the Basin 2 storm drain reach was hindered by the presence of accumulated sediment within the reach, and it appears that sediment removal was not performed prior to conducting the Study.**

   - **The Report states that accurate storm drain water depth measurements were not able to be collected due to the short time frame allotted for water sampling. However, this is the same time frame specified for water sampling in the Work Plan, so it is not clear why these water level measurements were not collected. Additionally, water level measurements for the storm drain manholes are presented in Appendix A of the Report, so it is not clear why these measurements are considered qualitative rather than quantitative.**

   - **It appears that groundwater levels were not measured during the Study, even though the Work Plan (Appendix C, Response to Comment. #1) states that groundwater levels would be measured during the Study.**

- **The Work Plan calls for measuring the average rate of storm drain infiltration by pumping any water that collects in a manhole through a totalizing flowmeter. However, this procedure was not performed during the Study.**

Some of the deviations from the approved Study methodology were documented in the Report in Section 3.1. However, there is no explanation provided for why the storm drains were not cleaned of sediment prior to performing the Study, why the time period for storm drain water level measurements proposed in the Work Plan was not sufficient for performing this task during the Study, why groundwater elevations were not measured in nearby monitoring wells during the Study and why average infiltration rates for the storm drains were not measured by pumping the collected water through a flow totalizer. Because these data are necessary to provide an accurate, quantitative study of potential infiltration into the storm drains, it appears that the Study is more qualitative than quantitative. The Report should be revised to more clearly address the deviations from the methodology presented in the Work Plan, and to discuss the impact these deviations have on the interpretation of the data collected during the Study.

Response: The Navy acknowledges EPA's comment and will revise Section 3.1 to elaborate on the work plan deviations noted in the comment. In addition, the Navy will clarify in Section 3.1 that water level measurements were collected from adjacent monitoring wells during the infiltration study. The measurements confirmed that the storm drain reaches were submerged below the groundwater table at the time of the study; the water level measurement results will be included in a revised version of the technical memorandum. Further, the Navy concurs with EPA's conclusion that the results of the study are more qualitative than quantitative. However, the Navy wishes to clarify that the qualitative conclusions from the study, coupled with chemical data from recent investigative efforts, indicate that some of the conditions that initially prompted the infiltration study may not be present or may have changed significantly.

2. **Comment:** **The Report references new groundwater analytical data from the September 1999 quarterly sampling event to indicate that contaminant plumes have decreased in size since they were last mapped in 1994, and therefore these contaminant plumes may no longer be intersecting the storm drain reaches targeted for the Study. However, data from the January 2000 sampling event showed significant increases in chemical concentrations in groundwater, particularly for barium and zinc, where many different monitoring wells in Parcel B had groundwater sample concentrations that exceeded applicable trigger levels. This variation in groundwater chemical concentrations shows the unreliability of quoting data from only one sampling event, and underscores the importance of an on-going, quarterly monitoring program to develop a comprehensive, historical data set to evaluate changes in groundwater conditions at Parcel B. Please revise the Report to eliminate all of the references to the September 1999 groundwater analytical data, and any conclusions that were made based upon these data.**

Alternatively, the Report should be revised to include all of the data from the January and April 2000 sampling events, and to indicate that there is on-going quarterly monitoring being conducted to develop a historical data set, in order to evaluate changes in groundwater conditions at Parcel B.

Response: The Navy acknowledges EPA's comment regarding elevated zinc and barium concentrations that were detected during the January 2000 quarterly groundwater sampling at Parcel B, and the Navy concurs with EPA's statement that ongoing groundwater sampling will assist in the evaluation of groundwater conditions at Parcel B. Further, the technical memorandum clarifies that the data trends from the limited groundwater sampling are preliminary and will need to be supplemented with future analytical data. In particular, the results from subsequent quarterly groundwater sampling events will be included in the revised technical memorandum.

3. **Comment:** **The Report does not clearly state the objectives of the Study in a stand-alone section, and therefore it is difficult for the reader to determine what the Study is intended to accomplish. However, the objectives of the Study were clearly presented in Section 2.1 of the Work Plan, as follows:**

- **Assess whether contaminated groundwater is infiltrating into the section of line being tested;**
- **Assess whether the infiltrating groundwater is impacting the water quality of San Francisco Bay;**
- **Assess whether there is a probability of preferential flow of contaminated groundwater along the outside of the storm drain section being tested; and**
- **Identify the sections of the storm drain system in Parcel B that may require remedial action.**

Please revise the Report to clearly state the objectives of the Study, and if these objectives were met. Additionally, please indicate if there were any deviations from the objectives listed in the Work Plan, and why such deviations occurred.

Response: The Navy clarifies that Section 1.0 of the draft technical memorandum states the objectives of the study. Furthermore, Sections 4.1 and 4.2 of the technical memorandum discuss the findings of the study and the extent to which the original objectives were met. The Navy does not believe that further revisions to the technical memorandum are required to address EPA's comment.

4 **Comment:** **The Report does not contain any geologic or hydrologic cross-sections, which are necessary to evaluate the subsurface relationships between the storm drains, groundwater level, tidal influences, known contaminant plumes, etc. Please revise the Report to include vertical cross-sections depicting the investigated storm drains, depths of inverts, points of potential infiltration,**

groundwater elevations, low- and high-tide levels, nearby monitoring wells and screen intervals, lithology of the test pits excavated adjacent to the storm drain lines and sampling points at each storm drain.

Response The Navy acknowledges EPA's comment and wishes to clarify that the majority of the requested information specified is included in the technical memorandum, and the remainder of the information will be provided in the revised version. However, the Navy believes that the preparation of detailed geologic or hydrologic cross-sections is not warranted at this time given the preliminary findings of the study (that is, that the initial conditions prompting the study have changed significantly), coupled with the fact that a detailed A-aquifer potentiometric surface map is not available for the time period corresponding with the study. The Navy may consider the preparation of cross-sections if, upon further evaluation of groundwater conditions at Parcel B, contaminants are found to intersect submerged reaches of storm drains at Parcel B.

5. **Comment:** **The Report does not indicate if or how any verification was made that the investigated storm drains were below the water table during the Study. The only reference to storm drain system water table levels is on Figures 2, 3 and 4, which indicate the sections of the storm drain that were below groundwater elevations measured on February 18, 1994, five years before the Study was conducted. It appears that groundwater levels were not measured during the Study, even though the Work Plan (Appendix C, Response to Comment #1) states that groundwater levels would be measured during the Study. Without this information, it is difficult to interpret the results of the Study. For example, a finding of no infiltration for a particular section of the storm drain system that happens to be above the water table on the day the section was tested does not prove that the section will not leak when it is below the water table. Additionally, because there is no information presented in the Report regarding the elevations of the storm drain lines or the groundwater elevations at Parcel B, it is not possible to evaluate whether these storm drain lines were historically below the water table based upon historical water level measurements. Additionally, measurement of water levels should be an important component of the Study, because the rate of infiltration into the storm drain is dependent on the head of water above the storm drain. Please revise the Report to either describe any observations made during the Study that confirmed expected water table levels or explain why groundwater level measurements were not needed. Additionally, please revise the Report to provide a table comparing invert elevations for each of the manholes with historical groundwater elevations measured at monitoring wells located in the vicinity of these manholes.**

Response: As stated in the response to General Comment 1, water level measurements were collected from adjacent monitoring wells during the infiltration study and the measurements confirmed that the storm drain reaches were submerged below the groundwater table at the time of the study. The water level measurement results from the current study, along with historic groundwater levels from wells along the storm drain reaches studied, will be included in a revised version of the

technical memorandum. In addition, the Navy clarifies that Table A-3 (Appendix A) of the technical memorandum specifies the elevation of each storm drain reach that was studied.

6. **Comment:** **Page 3 of the Work Plan states that the Study should be performed during dry weather (no rain for 48 hrs). However, the Report does not state whether or not this requirement was met. Please revise the Report to indicate whether or not this requirement was met. If this requirement was not met, please include a discussion in the Report regarding how the weather conditions might affect the results of the Study.**

Response: The Navy clarifies that the requirement for dry weather was met, and the revised technical memorandum will specify this fact.

Specific Comments

1. **Comment:** **Section 2.1, page 3: The sixth bullet in this section provides the methodology for measuring the rate of infiltration into the storm drain, and this methodology is different than the methodology presented in the Work Plan. The methodology presented on page 4 of the Work Plan has a second paragraph, which calls for measuring the average rate of storm drain infiltration by pumping any water that collects in a manhole through a totalizing flowmeter. However, the Report omits the second paragraph of this bullet, and therefore it is not clear if this procedure was performed. Please revise the Report to either present the totalizing flowmeter data if these data were collected, or to note that these data were not collected and provide an explanation for why these data were not collected.**

Response: The Navy clarifies that accumulated infiltration water was not pumped through a totalizing flow meter during the study. As stated in the response to General Comment 1, Section 3.1 of the technical memorandum will be revised to elaborate on the work plan deviations. The Navy wishes to clarify that the qualitative findings of the study suggest that significant groundwater infiltration is occurring along the Basin 2 reach, whereas little to no groundwater is infiltrating along the Basin 4 reach. The Navy believes that these qualitative findings are sufficient at the present time and that the omission of the use of a totalizing flow meter is not significant since available data suggest that the initial conditions prompting the study have changed significantly. Specific deficiencies of the previous study will be addressed if it is confirmed that contaminated groundwater intersects the submerged storm drain sections.

2. **Comment:** **Section 3.1.1, page 6: The top paragraph on this page states that video recording of the Basin 2 storm drain reach was hindered by the presence of accumulated sediment within the reach. However, the first step shown on Figure 6 of the Report, "Infiltration Study Decision Path," is to ensure that sediment has been removed from the storm drains prior to sealing-off, dewatering, and video recording a storm drain reach. This is the same methodology that was presented in the Work Plan. Additionally, the Report**

does not explain the nature of the hindrance. Did the sediment obscure the view through the video camera lens or the passage of the camera through the storm drain? Finally, this particular account of hindered video recording does not agree with the account shown on Figure 4 in the Report, which states that infiltration in this reach was observed by video recording. Please revise the Report to address the following:

- **clarify why sediment removal was not performed prior to conducting the Study, in accordance with the methodology specified in both the Work Plan and the Report;**
- **provide more information regarding the nature of the hindrance to videotaping the Basin 2 storm drain reach and explain if and how the hindrance was overcome;**
- **resolve the discrepancy between the text and Figure 4; and**
- **provide a description of the video recording procedure (i.e. how the video recorder was advanced through the storm drain, how the locations of the video recorder in the storm drain was tracked, etc.).**

Response: The Navy acknowledges that the accumulated sediment within the Basin 2 reach should have been removed prior to continuing the study; however, the Navy wishes to clarify that the presence of the accumulated sediment was not anticipated since the storm drain reach was cleaned in December 1996. Any accumulated sediment within the Basin 2 storm drain reach (from manhole [MH] A8 to MH A9) will be removed by December 2000. Section 3.1.1 of the technical memorandum states that the accumulated sediment hindered the complete video recording of the storm drain reach during the study; however, previous video recording conducted in conjunction with the storm drain cleaning in December 1996 indicated significant infiltration into the reach. The technical memorandum will be revised to briefly describe the nature of the accumulated sediment in Basin 2 and the specifics of the video recording procedure. The Navy notes that the video recording is available for review.

3. **Comment:** **Section 3.1.1, page 6: The second complete paragraph on this page states that the indicator parameter analytical results (Table A-2) confirm visual observations of groundwater infiltration in the Basin 2 reach. Another explanation for some of the indicator parameter analytical results (specific conductance) is salt-water intrusion. The percentage increase in specific conductance from low to high tide was greater in Manhole AH 9 (15%) than in the adjacent groundwater monitoring well (8%), which could indicate a greater degree of communication between San Francisco Bay and manhole AH 9 than between San Francisco Bay and the adjacent monitoring well. However, the specific conductance increase could have occurred due to San Francisco Bay waters flowing into the storm drain during high tide and leaking past the downstream plug into Manhole AH 9. If groundwater was the only source of water entering the sealed storm drain reach, the expected effect would be a decrease in the specific conductance of the water in the**

manhole, since the groundwater specific conductance at both high and low tide was less than that in the manhole. If the storm drain plugging was not effective, the manhole water depth measurements, any subsequent attempt to quantify the infiltration rate and the sample analytical results would be questionable. Please revise the Report to include the storm drain plugging procedures, the methods used to verify the plugging effectiveness, and drawings or sketches of the manholes showing plug placement and entering and exiting storm drains.

Response: The Navy clarifies that the differences in indicator parameter measurements cited in EPA's comment are less than 50 percent, and therefore did not require an investigation of other water sources as specified in Section 2.4.1 of the work plan. In addition, the Navy is confident that the storm drain plugging procedures were adequate to ensure that water from San Francisco Bay did not flow past the storm drain plug during testing; however, specific quantitative testing to verify the effectiveness of the plugging procedures was not feasible (given the short time frame allotted for sampling) nor were any specific procedures specified in the project work plan. The technical memorandum will be revised to specify the placement of the storm drain plugs and to specify that the plugs were inspected visually by the operator to ensure their integrity. Drawings or sketches of each manhole depicting the placement of the storm drain plugs are not available.

4. **Comment:** **Section 3.1.2, page 7: The top paragraph on this page states that video recording did not indicate infiltration flow into the Basin 4 reaches. However, Table A-3 (Storm Drain Water Depth Measurements) appears to contradict the video recording results. The water depth measured in the MH B8 to MH B9 reach increased 3.75 inches over five hours between low tide and high tide and the water depth in the MH B7 to B8 reach increased 1.5 inches, indicating either San Francisco Bay water flowing into the storm drain from the Bay, or groundwater infiltration into the storm drain. However, the depth to water measurements collected from the Basin 4 storm drains are not discussed in the Report. If the depth to water measurements collected from the manholes are too qualitative to be used for evaluating potential infiltration into the storm drains, then it appears that one of the objectives of the Study, assessing whether contaminated groundwater is infiltrating into the section of line being tested, has not been achieved. Please revise the Report to discuss the water depth measurements in the manholes, and any conclusions that can be drawn from these data.**

Response: The Navy acknowledges EPA's comment and concurs that limited conclusions can be drawn from the water level data; however, the Navy wishes to clarify that the available data suggest that the initial conditions that prompted the study appear to have changed significantly. Specific deficiencies of the previous study will be addressed if it is confirmed that contaminated groundwater intersects the submerged storm drain sections.

5. **Comment:** **Section 3.2.1, page 7: The first paragraph on this page presents test pit excavation depths as a distance below ground surface. However, this is not consistent with other pertinent depth measurements, which are reported as**

above or below Mean Sea Level (msl). The use of two datums is confusing to the reader, and requires additional data to compare the depths of the test pit with groundwater elevations, manhole invert elevations and water elevations inside the manhole. Please revise the Report to present all vertical measurements in relation to msl.

Response: The Navy will revise the technical memorandum to include ground surface elevations (in feet above mean sea level) to allow comparison of the water level and lithologic data.

6. **Comment:** **Section 3.2.1, page 7: The first paragraph on this page states that the presence of soft and saturated material prevented both the identification of porous bedding material and the construction of cut-off collars around the storm drains. These were important objectives of the Study, representing respectively a characterization of a key migration pathway and implementation of a remedial measure. The Report does not, however, describe in any detail the field procedures used and how the field conditions interfered with the successful implementation of the field procedures. Such information may be useful in developing a follow-up work plan designed to overcome the obstacles encountered in the Study. Please revise the Report to describe in greater detail the storm drain bedding characterization and cut-off collar construction methods and how the field conditions encountered prevented their implementation.**

Response: The technical memorandum will be revised to elaborate on the field methods used and the conditions encountered during the attempted installation of the vertical cut-off collars.

7. **Comment:** **Section 4.1, page 10: The first paragraph of this section states that because of limitations of the data, the conclusions of Phase I are based primarily on video recording. The Report does not, however, state which data are limited and why the data are limited. Without this information, the reader might attempt to draw conclusions from questionable data. Please revise the Report should to include a discussion of data limitations and reasons for these limitations.**

Response: The technical memorandum will be revised to elaborate on the limitations of the data collected during the study.

8. **Comment:** **Section 4.1, page 11: The first complete paragraph on this page states that the analytical results from the Basin 4 storm drain samples provide further evidence that the water within the Basin 4 storm drain is not representative of infiltrating groundwater". However, the data do not appear to support this conclusion. Water samples collected from manholes MH B6, MH B7 and MH B9 at low and high tide all showed higher concentrations of total petroleum hydrocarbons as diesel (TPHD) and total petroleum hydrocarbons as motor oil (TPHM) in the high tide samples as compared with the low tide samples. One possible explanation for this increase in TPH concentrations is the infiltration of groundwater**

contaminated with TPH into the storm drains during high tide. However, no explanation is provided in the Report for the increased TPH concentrations at high tide. The text in this paragraph further states that the TPH concentrations detected in the manhole water samples are not consistent with the TPH concentrations detected in groundwater samples collected from nearby monitoring wells (presented in Figure 5 of the Report). However, the nearest monitoring well to MH B7 and MH B9 (IR46MW40A) is approximately 200 feet away and the TPH analytical results from this well are consistent with the concentrations detected in the manhole water samples. Additionally, although the well closest to MH B6 (IR06MW45A) had non-detectable concentrations of TPH, there is a plume of TPHD and TPHM within approximately 100 feet of MH B6. Therefore, the TPH data from the manhole water samples appear to be consistent with the TPH data from nearby monitoring wells, and these data suggest that contaminated groundwater may be infiltrating into the Basin 4 storm drains. Please revise the Report to provide more compelling evidence regarding why the data presented in the Report indicate that groundwater is not infiltrating into the Basin 4 storm drains. Alternatively, please remove the statements from the Report that conclude that groundwater is not infiltrating into the Basin 4 storm drains.

Response: The Navy wishes to clarify that based on the procedures specified in the project work plan and the minimal groundwater infiltration observed (from the video recording) along the Basin 4 reaches, storm drain water samples should not have been collected. Therefore, the Navy believes that conclusions drawn from such data are not reliable and will revise the technical memorandum to remove any such conclusions. Further, the Navy acknowledges that further evaluation of TPH concentrations in groundwater near the Basin 4 reaches is required. Such data will provide a better assessment of the potential source(s) of TPH in the Basin 4 storm drain lines.

9. Comment: **Section 4.2, page 12: The last paragraph on this page describes a field decision made by the Navy regarding discontinuing the construction of cutoff collars around the storm drains. This information is not a "conclusion" based on the results of the Study, but is an explanation as to why certain actions were taken during the Study, and therefore should not be included in the conclusions section (Section 4) of the Report. Please revise the Report to move this paragraph to the appropriate portion of Section 3, which describes the results of field activities performed during Phase II of the Study. Additionally, this paragraph states that test pits were backfilled with a bentonite-soil mixture and that leaking storm drains were patched. However, this brief description does not provide enough information to assess the potential effectiveness of this remedial measure. Please provide additional details regarding the materials and methods used for backfilling the test pits and patching the leaking storm drains.**

Response: The Navy wishes to clarify that the decision to discontinue the construction of the cut-off collars was not made during the initial field activities. Rather, the decision was discussed with the Base Realignment and Closure (BRAC) Cleanup

Team (BCT) at the July/August 1999 monthly BCT meeting, at which time the BCT members concurred with the Navy's decision to discontinue the construction of the cut-off walls and to backfill the test pits. In addition, the backfilling activities in Basins 2 and 4 and the patching activities conducted at the Basin 2 storm drain reach were not intended as remedial measures, but were rather a way of minimizing the amount of infiltration into the storm drain lines beyond the procedures specified in the work plan. Therefore, the Navy believes that a detailed discussion of these additional procedures is not warranted; however, the Navy will revise the technical memorandum to reflect the details specified in this response.

10. Comment: **Section 5.1, page 13: The first paragraph in this section states that zinc was detected in the storm drain samples collected from the Basin 2 storm drain reach at concentrations that exceed the applicable trigger level, and further states that the probable source of the elevated zinc concentrations is the accumulated sediment observed in this storm drain reach. However, previous sections of the Report have previously documented that groundwater was infiltrating into this reach of the storm drain. Additionally, an April 26, 2000 email from Dave DeMars of the Navy, Southwest Division, indicated that zinc was detected above the applicable trigger level in groundwater samples collected from a wide variety of Parcel B monitoring wells during the January 2000 sampling event, including monitoring well IR07MW20A, which is located within approximately 15 feet of the Basin 2 storm drain each. Based upon these groundwater monitoring results, it appears that the source of zinc-contaminated water sampled from the Basin 2 manhole may be contaminated groundwater infiltrating into the storm drain, and not the sediment that has accumulated inside the storm drain. Please revise this section to incorporate data from the January 2000 Parcel B quarterly groundwater-sampling event in the analysis of the potential sources of zinc.**

Response: The Navy believes that zinc concentrations detected during the infiltration study (April 1999) are not due to concentrations in the surrounding groundwater because (1) zinc concentrations in groundwater during three rounds of remedial investigation sampling were below ambient water quality criteria, and (2) zinc concentrations in groundwater during quarterly groundwater monitoring in September 1999 and April 2000 were below ambient water quality criteria. As stated in the response to General Comment 2, the results from subsequent groundwater sampling events will be included in the revised technical memorandum. Further, all available data from the groundwater monitoring and additional investigation will be considered collectively to prevent biased conclusions from a single sampling event.

11. Comment: **Section 5.2, page 14: The first paragraph states that recent analytical data suggests that groundwater chemical concentrations in the vicinity of the Basin 2 submerged storm drain reach do not exceed applicable trigger levels. However, in an email from Dave DeMars of the Navy, Southwest Division, dated April 26, 2000, barium and zinc were detected in a wide variety of Parcel B groundwater monitoring well samples at concentrations that exceed**

the applicable trigger levels, including wells that are in the vicinity of the Basin 2 storm drain. Please revise this paragraph to eliminate this statement.

Response As stated in the response to General Comment 2, the results from subsequent groundwater sampling events will be included in the revised technical memorandum. The text and conclusions of the technical memorandum will be revised to reflect these results.

12. Comment: **Section 5.2, page 15, Technical Justification, second paragraph: The Report recommends the installation of a pair of monitoring wells along the Basin 4 storm drain to characterize potential preferential flow along the storm drain bedding. The Report also posits how contaminant monitoring in these wells should be interpreted to indicate preferential flow. This method differs from the conventional method of using water level measurements for identifying preferential flow paths in unconfined aquifers. The Report should be revised to explain why the proposed method is expected to achieve better results than the conventional method.**

Response The Navy wishes to clarify that the proposed method is intended to provide a visual assessment of potential preferential groundwater flow along the storm drain bedding. This visual assessment may be necessary, if it is confirmed that contaminated groundwater intersects the submerged storm drain sections, since existing A-aquifer potentiometric maps in Parcel B do not indicate anomalous flow patterns in the vicinity of the storm drain lines. Furthermore, the results of the test pit excavation activities (Phase II) conducted during the infiltration study do not indicate a significant difference in the storm drain backfill and the adjacent soil. In addition, two test pits excavated below the storm drain invert elevation were obstructed by concrete that appeared to extend below the storm drain line.

13. Comment: **Appendix A, Table A-3: This table shows that Manhole B6 water depths decreased during high tide, indicating that water was exiting the manhole. Since this was not an expected result, please revise the Report to provide an explanation for this observation.**

Response The depth of water change referenced in EPA's comment is about 0.25 to 0.50 inch (0.25 inch deep during low tide, and 0.50 to 0.75 inch deep during high tide) and is not considered significant since the measurement method used (weighted measuring tape lowered through an open manhole) has a precision of roughly the same order of magnitude.

14 Comment: **Appendix B, Test Pit Logs: The Report cites instances where test pit excavations encountered saturated conditions, which interfered with subsequent test pit activities. However, this information is not shown on any of the test pit logs. Please revise the Report should to indicate how saturated conditions were determined in the field and recorded for later report preparation.**

Response Although not explicitly stated on the test pit logs, an approximate depth to saturated soil can be obtained from the water level measurements (to be provided in revised version) and the manhole invert elevations listed in Table A-3 (Appendix A). The technical memorandum will be revised to include depth to water levels at each test pit log.

HUNTERS POINT SHIPYARD
DRAFT TECHNICAL MEMORANDUM
PARCEL B STORM DRAIN INFILTRATION STUDY
RESPONSE TO COMMENTS FROM
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

This document presents the Navy's responses to comments from the California Regional Water Quality Control Board (RWQCB) on the draft Technical Memorandum, Parcel B Storm Drain Infiltration Study (SDIS), Hunters Point Shipyard (HPS), San Francisco, California, dated March 15, 2000. The comments addressed below were received from RWQCB on March 30, 2000.

RESPONSES TO RWQCB

General Comment

1. Comment: **Based on our review, we understand that the Infiltration Study is proposing the following additional investigation and remedial activities:**

- **Removal of sediment along storm drain reach MH A8 to address elevated concentrations of zinc detected in water samples collected from the storm drain in this area.**
- **Installation of a new groundwater monitoring well between petroleum source area wells in Building 134 and the storm drain reach from MH B5-1 to MH B6.**
- **Installation of a new groundwater monitoring well near the shoreline adjacent to storm drain reach MH B8 to MH B9 to address the lateral extent of petroleum products in groundwater in this area.**
- **Installation of a pair of groundwater monitoring wells near the Basin Four storm drain to compare the concentration of petroleum products in groundwater along the storm drain to the concentration of petroleum products in groundwater approximately 10 to 20 feet laterally away from the storm drain. The purpose of this study would be to evaluate the potential for the backfill soils surrounding the storm drain to act as a preferential pathway for groundwater flow.**

Board staff supports these proposed activities. We understand from the schedule included in the Infiltration Study that the additional activities will be completed in coordination with forthcoming field work for the Remedial Action Monitoring Plan (RAMP) and Petroleum Corrective Action Plan. We concur with this schedule, and look forward to receiving the scope of work for review and comment in the near future.

Response: The Navy acknowledges RWQCB's comment and wishes to further clarify the timing of the additional investigation and remedial activities as follows:

- Accumulated sediment along storm drain reach manhole (MH) A8 to MH A9 will be removed by December 2000.

- A new groundwater monitoring well between the petroleum source area well in Building 134 and storm drain reach MH B5-1 to MH B6 will be installed during the Phase I groundwater data gaps investigation scheduled for August 2000.

- A new groundwater monitoring well near the Parcel B shoreline, approximately 80 feet northwest of storm drain reach MH B8 to MH B9, was recently installed and sampled to provide additional data for the Parcel B petroleum hydrocarbon corrective action plan (CAP). The CAP is scheduled to be submitted on August 11, 2000.

- The installation of monitoring well pairs to evaluate the potential for backfill soils to act as a preferential pathway is pending further discussion with the Base Realignment and Closure (BRAC) Cleanup Team (BCT).

Specific Comments

1. Comment: **Total Petroleum Hydrocarbons in Basin Four Storm Drain**

In review of the conclusions from the Infiltration Study, we do not concur that petroleum products detected in the water from the Basin Four storm drain are not related to contaminants in groundwater in this area. Although the studies conducted did not indicate significant leakage of groundwater into the storm drain in this area, Board staff believes it is unlikely that the detected petroleum hydrocarbons can be attributed to "storm water runoff" as discussed on page 11 of the Infiltration Study. Total petroleum hydrocarbons (TPH) were detected in the storm drain water at concentrations ranging from 520 to 1,700 ppb. These elevated concentrations of TPH do not appear to be indicative of storm water runoff from a site that no longer has significant industrial use. These concentrations also appear to be consistent with concentrations of TPH previously detected in the groundwater in this area. Possible sources of TPH include groundwater that is discharging into the storm drain but was not observed during the study, and/or sediments in the storm drain that are contaminated by TPH from previous industrial activities.

Response: The Navy acknowledges RWQCB's comment and wishes to clarify that the draft technical memorandum identified storm water runoff as a potential source of the TPH contamination; however, the technical memorandum also noted that further evaluation was required to establish the potential source(s) of the TPH contamination. The Navy wishes to further clarify that based on the procedures specified in the project work plan and the minimal groundwater infiltration observed (from the video recording) along the Basin 4 reaches, storm drain water samples should not have been collected. Therefore, the Navy believes that conclusions drawn from such data are not reliable and will revise the technical memorandum to remove any such conclusions.

2. Comment: **Board staff believes that additional assessment is necessary in the area of the Basin Four storm drain to determine the sources of the TPH. If the**

source(s) include groundwater discharging into the storm drain, then the Navy may be required to take necessary actions to prevent the discharge of contaminated groundwater into the storm drain. If the source(s) of TPH is storm water runoff as discussed in the Infiltration Study, then the Navy will need to evaluate the possible source(s) of this runoff and implement necessary remedial activities to abate these conditions. In this letter below, Board staff is requesting that the Navy further assess the source(s) of TPH in the Basin Four storm drain line and take necessary actions to either abate or justify these conditions.

Response: The Navy concurs with RWQCB's comment and, as outlined in the Navy's response to General Comment 1, is planning on conducting further evaluation to determine the source(s) of the TPH in the Basin 4 storm drain area.

3. Comment: **<u>Infiltration of Groundwater in Basin Two Storm Drain</u>**

Data collected during the Infiltration Study indicate significant infiltration of groundwater into the Basin Two storm drain. This section of the storm drain was isolated in attempt to collect a sample of water that would be representative of the groundwater discharging into the storm drain. Analysis of a water sample from this storm drain indicated that only zinc exceeded ambient water quality criteria (AWQC) for discharges into San Francisco Bay. The suspected source of zinc as reported in the Infiltration Study is the sediments observed in the storm drain rather than the groundwater because zinc is not a groundwater constituent of concern for this area. Although not discussed in the text of the Infiltration Study, data included in Table A-1 also indicate that TPH as diesel (380 µg/L) and motor oil (370 µg/L) were also detected in a water sample collected from the Basin Four storm drain.

Response: The Navy clarifies that TPH was not a target analyte in the Basin 2 storm drain area, as outlined in the project work plan. Therefore the significant groundwater infiltration observed in the Basin 2 storm drain area does not contain TPH above threshold levels of concern. The Navy acknowledges RWQCB's comment and confirms that the TPH concentrations referenced in the comment were measured in the Basin 4 storm drain.

4. Comment: **Nickel was the primary constituent of concern for this section of the storm drain because it was previously detected in the groundwater in this area at concentrations greater than AWQC for discharges to San Francisco Bay. Remediation has included the excavation and off-site disposal of approximately 28,000 cubic yards of soils containing elevated concentrations of nickel and other constituents of concern at IR07. Recent groundwater monitoring conducted in accordance with the RAMP indicates that the groundwater does not currently contain nickel or other constituents of concern identified in the ROD at concentrations exceeding AWQC. Based on these data, the Infiltration Study proposes that the remedial activities are not necessary to prevent the discharge of groundwater into the storm drain in this area.**

Response: The Navy concurs with RWQCB's comment and wishes to further clarify that remedial activities consisting of lining the Basin 2 storm drain line are not required at this time. In addition, the technical memorandum indicates that future groundwater monitoring in the area will assist in verifying the trend on which this conclusion is based.

5. **Comment:** **In regards to the TPH in the Basin Two storm drain, the Infiltration Study does not discuss the source(s) for the TPH, trigger levels for TPH, or the potential ecological impacts of TPH discharges to San Francisco Bay. The Navy has not formally proposed AWQC for TPH at Hunters Point Shipyard. It is inappropriate to discharge TPH-contaminated groundwater into San Francisco Bay without assessing ecological risk and the technical and economic feasibility of abating the discharge. In this letter below, Board staff is requesting that the Navy assess the ecological risk associated with TPH discharges in the Basin Two storm drain line and develop a recommendation for future actions to either abate the condition or provide appropriate justification for allowing the discharge. Remedial actions may be necessary to prevent the discharge of groundwater into the Basin Two drain line to abate the discharge of TPH-contaminated groundwater to San Francisco Bay.**

Response: As stated in the response to Specific Comment 3, TPH is not a target analyte in the Basin 2 storm drain. For the Basin 4 storm drain, an assessment of potential ecological risk to aquatic receptors in San Francisco Bay associated with TPH will be addressed, as necessary, in the Parcel B TPH CAP.

6. **Comment:** **In regards to constituents of concern other than TPH such as nickel, groundwater conditions are subject to change during future monitoring events conducted in accordance with RAMP. If trigger concentrations contained in the Record of Decision (ROD) are exceeded in the future for nickel and/or other constituents of concern, Board staff believes that additional assessment of the Basin Two storm drain line should be required to investigate the chemical nature of discharges to San Francisco Bay. This assessment would be necessary because a significant quantity of groundwater is being discharged to the Basin Two storm drain line. In this letter below, Board staff is requesting that the Navy provide a plan of action for further sampling of the Basin Two storm drain line if groundwater samples from this area indicate that trigger levels are exceeded for one or more constituents of concern.**

Response: The Navy will address exceedances of trigger concentrations of constituents of concern within the quarterly and annual reports for the Parcel B RAMP. In particular, the annual report for the Parcel B RAMP, scheduled to be submitted in October 2000, will discuss necessary actions to be taken based on the RAMP results.

7. **Comment:** <u>Necessary Future Actions</u>

Board staff requests that the Navy provide a time schedule to the Regional Board and other members of the Base Realignment and Closure Cleanup Team (BCT) no later than <u>July 1, 2000</u> for the following tasks:

Assessment of source(s) of TPH detected in water samples collected from the Basin Four storm drain line.

Assessment of the ecological risk associated with the discharge of TPH-contaminated groundwater to the Basin Two and Four storm drain lines, and an evaluation of the technical and economic feasibility of abating the discharges of TPH-contaminated groundwater from the Basin Two and Four storm drain lines to San Francisco Bay.

Development of a plan of action for sampling of the Basin Two storm drain line if groundwater samples from this area exceed trigger levels contained in the ROD for one or more constituents of concern.

Response: The tasks specified above will be addressed during ongoing work for the Installation Restoration (IR) and petroleum hydrocarbon programs at HPS, as stated in the Navy's responses to General Comment 1 and Specific Comments 5 and 6. The Federal Facility Agreement schedule reflects the ongoing work for the IR and petroleum hydrocarbon programs, and a revised copy of the schedule was submitted to the BCT on June 23, 2000.

Tetra Tech EM Inc.

135 Main Street, Suite 1800 ◆ San Francisco, CA 94105 ◆ (415) 543-4880 ◆ FAX (415) 543-5480

July 28, 2000

Richard Pribyl
Remedial Project Manager
Southwest Division
Naval Facilities Engineering Command
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

Subject: **Responses to Agency Comments on Draft Technical Memorandum Parcel B Storm Drain Infiltration Study Hunters Point Shipyard, San Francisco, California CLEAN II Contract No. N62474-94-D-7609, Contract Task Order 201**

Dear Mr. Pribyl:

Enclosed please find for your review three (1) copies of the responses to agency comments on the draft technical memorandum for the Parcel B Storm Drain Infiltration Study. Please contact me at (415) 222-8242 if you have any questions regarding this deliverable.

Sincerely,

Doug Bielskis
Project Manager

Enclosure

cc: Lucreatria Holloway—SWDIV
Diane Silva--SWDIV
Jason Brodersen—TtEMI
Jim Robbins—IT Corporation
Hunters Point Shipyard distribution list (20 copies—see transmittal form)

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SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132-5190

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Ser 06CH.RM/518
July 28, 2000

Ms. Claire Trombadore, (SFD 8-1)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Chein Kao
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

Mr. Brad Job
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, #1400
Oakland, CA 94612

Dear BCT members:

Enclosure (1) is provided for your review regarding the Navy's response to comments on the Storm Drain Infiltration Study for Parcel B, Hunters Point Shipyard. Please review and provide any additional comments to the undersigned by August 28, 2000. All comments received will be discussed at the September 7, 2000 BCT meeting. Schedules for completion of the storm drain infiltration study will also be determined during the September 7, 2000 BCT meeting.

Should you have any concerns with this matter, please contact the undersigned at (619) 532-0913.

Sincerely,

RICHARD G. MACH JR., P.E.
BRAC Environmental Coordinator
By direction of the Commander

Enclosure: (1) Navy's Response to Comments, Draft Technical Memorandum, Parcel B Storm Drain Infiltration Study, Hunters Point Shipyard, San Francisco California, July 28, 2000.

N00217.000064
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RECORDS MANAGEMENT SPECIALIST
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July 28, 2000

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Southwest Division
1230 Columbia Street, Suite 1100
San Diego, CA 92132-5190

DATE: 07/28/00
CTO: 0201
LOCATION:
Hunters Point Shipyard, San Francisco

FROM: Greg Swanson
Daniel Chow, Program Manager

DOCUMENT TITLE AND DATE:
Response to Agency Comments on Draft Technical Memorandum, Parcel B Storm Drain Infiltration Study, July 28, 2000

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