BOARD OF WATER SUPPLY

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July 14, 2017

Mr. Bob Pallarino
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and

Mr. Steven Chang, P.E.
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Dear Messrs. Pallarino and Chang:

Subject: Board of Water Supply (BWS) Comments to the Red Hill Administrative Order on Consent (AOC) Section 4.5 New Release Detection Alternatives [Report] Scope of Work, dated June 19, 2017

The BWS has reviewed the subject document and offers the following comments. Further, we refer to our previous letter dated March 9, 2017 (Lau, 2017) where additional comments were provided by BWS on Leak Detection. Comments provided in that letter still apply and pertain to this current letter.

We understand that this Scope of Work (SOW) for New Release Detection Alternatives is an "overall outline" for the New Release Detection Alternatives Report (the final report). We look forward to reviewing the Final SOW for New Release Detection Alternatives at the Red Hill Bulk Fuel Storage Facility (RHBFSF) once it is developed and submitted by the Navy to the Environmental Protection Agency (EPA) and the Hawaii Department of Health (DOH).

Main Comments:

The subject SOW outline states that "The Contractor shall execute the requirements of this SOW that will result in the Contractor completing the "New Release Detection Alternatives Report." However, in various sections it states that the "Authors" will perform or execute work product and prepare report content. It is unclear who (what entity) will be preparing the final report and how precisely the responsibilities for the work will be assigned. Currently the SOW outline may not provide suitable technical depth to ensure that all Contractors bidding on this work have sufficient detailed information to understand what work is required.

Nevertheless, we are pleased to see that many of the suggestions previously provided by the BWS are being considered in this SOW. However, this SOW outline lacks the technical detail that will ultimately be required to evaluate the overall approach and specific goals or acceptance criteria. Statements such as "authors will research and detail..." or "authors shall develop…" as examples do not provide enough technical detail for the BWS to provide constructive comments.

There is likewise limited information in this SOW outline with regards to the previously proposed blind tests to show the effectiveness of the Leak Detection Systems (LDS). Section D of the SOW outline states that the "author shall include a statistical evaluation to demonstrate the developed protocol is acceptable," but the SOW does not explicitly state the acceptance criteria or requirements for the evaluation (e.g., single-blind testing?). The ultimate goal of the statistical evaluation should not be to demonstrate the protocol is acceptable but rather to establish the reliability with which a low leak rate can be detected over what time period for each leak detection method being evaluated.

The 40 CFR 280 release detection rule for field-constructed tanks does not adequately protect against the unique risks associated with leaks at the RHBFSF (Refer to Section B, Item 1.a.ii.4 of the SOW). This standard is only a "snapshot" of the release taken on the day, or days, of the testing. Such CFR-compliant static leak detection for the RHBFSF storage tanks would not reliably detect leaks of up to 4,300 gallons per tank per year. As stated previously in AOC stakeholder meetings, compliance with this standard is a low hurdle and cannot be considered as a basis for eliminating the potential for current or future environmental contamination at the RHBFSF.

The BWS is concerned about the statement in the Release Detection SOW outline that "[Double Wall [DW] Tank with Interstitial Monitoring] will not be considered further for this evaluation, since this will be discussed after a Tank Upgrade Alternative (TUA) decision is made" (Refer to Section B, Item 2.a.v.2.a.ii of the SOW). One of the significant advantages of double-wall construction with an engineered interstitial space

monitoring system is that it offers a quantum improvement in leak detection and mitigation. The TUA decision would be better informed by an engineering assessment of the leak detection options and implications associated with interstitial monitoring of double-wall tanks, and the results of this study. By not considering an interstitial monitoring system, the Release Detection Alternatives evaluation process will be unnecessarily limited and of very limited use to the TUA decision makers.

Additional Comments:

Refer to Section B, Item 1.a.i of the SOW; the BWS believes that research into the "Existing Industry Practices," should include research into how the 0.5 gallon per hour (GPH) leak rate rule was established for field-constructed tanks, and whether its basis is applicable to the RHBFSF.

Refer to Section B, Item 1.a.5 of the SOW; the BWS concurs that research of industry standards and practices is an important aspect of this work, but would like to re-emphasize the unique aspects and risks associated with the RHBFSF, particularly regarding data from the National Work Group On Leak Detection Evaluations (NWGLDE). The NWGLDE work is primarily focused on Underground Storage Tank (UST) release detection for systems less than 50,000 gallons, which is orders of magnitude below the capacity of that of the RHBFSF storage tanks. Further, the NWGLDE is a volunteer committee with no real authority, and has a mixed level of experience and knowledge. Private sector third party evaluations, listed under Item 1.a.4, may provide more credibility and more useful and applicable input.

Refer to Section B, Item 1.a.iii and 1.a.iv.4 of the SOW; the BWS concurs that the Automated Tank Gauging (ATG) and Automated Fuel Handling Equipment (AFHE) are both inventory control methods. However, they are not viable leak detection systems. Further research into these methods may not provide significant value for this SOW unless it can be demonstrated that these methods can provide a way of limiting the amount of fuel released between annual leak detection testing.

Refer to Section B, Item 1.a.v of the SOW; the BWS does not believe that Environmental Sampling methods are effective methods for dynamic release detection and they are certainly not protective of our drinking water supply. These methods provide useful data for the analysis and impact once a leak occurs, but they are not methods that should be used for the sole prevention and dynamic leak detection. The BWS has stated on multiple occasions that the vadose zone monitoring points are inadequate in number and their construction and location make it nearly impossible to understand fuel migration. We have also shared that the Navy's understanding of fuel migration in the vadose zone is far from what is needed to be able to defensible infer

(let alone estimate) leak rates from changes in vapor concentration measured far underneath the tanks at locations beneath the concrete plug underlying each tank. Allowing Environmental Sampling methods to serve as a leak detection system above our Sole-Source Aquifer is not appropriate or acceptable.

Refer to Section B, Item 1.a.vi of the SOW; the BWS is concerned about the use of the tell-tale system as an effective release detection method. It was decommissioned and is limited because of the age of the system. While part of the SOW, research into the tell-tale monitoring may be useful for understanding the decommissioned tell-tale system, it should not be considered for future alternate leak detection alternatives because, in part, it does not compare to the superior interstitial monitoring methods used for double wall tanks, and further there is evidence that leaks may not find their way to the tell tales as reflected in by Bechtel (Bechtel, 1949). The BWS would like to know why the Navy continues to consider the tell-tale system to be an effective leak detection system for the RHBFSF and worth the time to evaluate further? What specific means and methods will the Navy be using to test and potentially prove its effectiveness?

Refer to Section B, Item 2.a.i.1 of the SOW; there is likely a typo in this line, the phrase "Leak Manger" may likely refer to "Leak Manager."

Refer to Section B, Item 2.a.i of the SOW; as previously stated, static leak detection is ineffective and should not be considered for the future alternate leak detection system at the RHBFSF. While as part of the SOW, research into static leak detection may be useful for understanding the methods, it should not be considered for future leak detection systems because, in part, it is ineffective and can allow for substantial releases to occur.

Refer to Section B, Item 2.a.ii of the SOW; the BWS believes that only Double Wall Tank Interstitial Monitoring system should be considered. Tracer, Vapor, Groundwater (GW) Monitoring, and tell-tale systems are not effective prevention based methods. Research into these methods may provide useful information and demonstrate the superiority of the Double Wall Interstitial Monitoring system. However, these other methods should not be considered for future alternate leak detection systems. Double Wall Interstitial Monitoring is the only leak prevention based release detection method.

Refer to Section B, Item 2.a.iii of the SOW; the BWS believes that current industry standard is Double Wall Interstitial Monitoring. Systems used on Bulk Fuel Field Constructed Underground Storage Tanks (BFCUST)s are not viable options because these systems were previously deferred and not regulated. Only BFCUST owners concerned about risk management performed voluntary release detection.

Refer to Section B, Item 2.a.iv of the SOW; the BWS believes that there is an engineering solution to the limitations and challenges for construction/operation at the RHBFSF. The RHBFSF was built in 1941 and was considered state-of-the-art at that time. However, after approximately 75 years of operation, today's engineering and materials advances, robotic manufacturing technologies, and other factors can be expected to achieve better results, more reliable welding, and manufacturability than what was available for the original construction. Further, and again, the BWS notes that the NWGLDE data may not be applicable to the RHBFSF (see above).

Refer to Section B, Item 3.c.ii of the SOW; the BWS believes that the Vista Precision Solutions LRDP technology has been used extensively in the commercial aviation industry and with Department of Defense (DOD) sites with Aboveground Storage Tank (AST) piping systems. It is our understanding that it works well for its intended purpose, but will have the same limitations as the Mass Tech system's inability to detect small leaks at the RHBFSF.

Refer to Section B, Item 5 of the SOW; the BWS believes that any Decision Matrix that does not include Interstitial Monitoring has an inherent bias and is of limited value. Interstitial Monitoring should be considered as part of this SOW and evaluation of New Release Detection Alternatives.

If you have any questions, please call Erwin Kawata at 808-748-5080.

Very truly yours,

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References Cited

Bechtel Corporation (Bechtel). 1949. Engineering Survey of U.S. Navy Petroleum Facility at Pearl Harbor. Prepared by the Bechtel Corporation, Contract No. 16535. May 12.

Lau, E. Y. W. (2017). Letter to Mr. Bob Pallarino, United States Environmental Protection Agency (EPA) and Mr. Steven Y.K. Chang, State of Hawaii, Department of Health regarding: Board of Water Supply (BWS) Comments Pertaining to the Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) February 15, 2017 Administrative Order on Consent (AOC) Sections 2, 3, 4, 5 and 8 Meeting, March 9, 2017.