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DEPARTMENT OF HEALTH

STATE OF HAWAII

In the Matter of the Application of
UNITED STATES NAVY

For an Underground Storage Tank Permit for
the Red Hill Bulk Fuel Storage Facility

DOCKET NO. 19-UST-EA-01

PETITIONER HONOLULU BOARD OF
WATER SUPPLY'S POST-HEARING
MEMORANDUM; PROPOSED FINDINGS
OF FACT, CONCLUSIONS OF LAW, AND
RECOMMENDED DECISION;
CERTIFICATE OF SERVICE

PETITIONER HONOLULU BOARD OF WATER SUPPLY'S
POST-HEARING MEMORANDUM

The evidence and testimony presented in this contested case proceeding before the Hawaii Department of Health (“DOH”) is clear – the United States Department of the Navy (“Navy”) has not and cannot operate the Red Hill Bulk Fuel Storage Facility (“Red Hill”) in compliance with Hawaii law. Neither its permit application nor the evidence and testimony the Navy has presented in support of its application demonstrate that Red Hill can be operated to prevent releases for its operational life, that the Red Hill underground storage tanks (“USTs”) are adequately protected from corrosion, or that operations at Red Hill meet the regulatory requirements for leak detection. To the contrary, the Navy could not even prevent a fuel release into the environment in the three months following the contested case hearing itself. It still has not employed any of the UST corrosion protection measures required by DOH rules. Navy witnesses acknowledge that it cannot meet the minimum leak detection rate required by State law when returning a repaired UST back into service. And the Navy’s own expert concedes that operations at Red Hill have already contaminated the irreplaceable sole-source groundwater aquifer that nourishes Oahu’s drinking water supply. Operations at Red Hill simply are not protective of human health and the environment. The DOH’s public trust responsibility to safeguard all of Hawaii’s water resources, including groundwater, precludes it from granting the Navy a UST operating permit for Red Hill. Accordingly, the DOH has no choice but to deny the Navy’s permit application and require that the Navy immediately relocate the Red Hill USTs away from Oahu’s sole-source groundwater aquifer or upgrade them with tank-within-a-tank secondary containment.

I. INTRODUCTION AND SUMMARY OF RELEVANT FACTS

At the conclusion of this contested case, the Hearings Officer will recommend, and the Director of Health will decide, whether to grant or deny the Navy's application for a permit to operate the Red Hill facility. As set forth in greater detail in the BWS' pre-hearing brief, the Navy stores nearly 200 million gallons of fuel at Red Hill in 18 colossal World War II vintage USTs a mere 100 feet above the federally designated sole-source groundwater aquifer from which the BWS provides drinking water to residents from Moanalua to Hawaii Kai. *See* Updated Written Testimony of Erwin M. Kawata ("Kawata Test.") at ¶¶ 15, 18; Exhibit B-1; *see also* Written Reply Testimony of Nicole M. DeNovio, ¶ 3.b, Report: Sole Source Aquifer, Reply Testimony, 3. Numerous episodic releases from the Red Hill USTs have occurred and sampling from under and around Red Hill has demonstrated the existence of petroleum contamination in the very aquifer that sustains Oahu's water supply. *See* Second Updated Written Testimony of Nicole M. DeNovio ("DeNovio Test."), ¶ 9.b, Report: Evaluation of Hydrogeology, Groundwater Flow and Contaminant Fate and Transport, Red Hill Bulk Fuel Storage Facility ("DeNovio Expert Report"), i, 3, 20-36, tbl. 1.1-1. At least 73 fuel release incidents at Red Hill have been documented, including a Navy reported release of approximately 27,000 gallons of jet fuel from Tank 5 in January 2014 and a release of approximately 1,000 gallons of jet fuel from supply piping in the lower access tunnel underneath the Red Hill USTs during the refilling of Tank 20 on May 6, 2021, involving more than 175,000 total gallons of product. *See* Updated Written Testimony of David M. Norfleet ("Norfleet Test."), Expert Report: Evaluation of Underground Storage Tanks at the Red Hill Bulk Fuel Storage Facility ("Norfleet Expert Report"), 8, app. C; Updated Supplemental Written Testimony of Nicole M. DeNovio ("Supp. DeNovio Test."), ¶¶ 7-8; Exhibit B-407. In September 2015, the Navy entered into an

administrative order (“AOC”) with the EPA and the DOH requiring the Navy to conduct certain investigations and other work “necessary to address potential impacts to human health, safety and the environment ... due to historical, recent and potential future releases at the [Red Hill] Facility.” Exhibit B-81 at BWS008935.

Effective July 15, 2018, the DOH adopted HAR Chapter 11-280.1, which for the first time required large field-constructed USTs like those at Red Hill¹ be subject to permitting requirements by July 15, 2019. HAR §§ 280.1-10(a)(1)(A), 280.1-323(a).² By letter received by the DOH on May 23, 2019, as corrected June 12, 2019, the Navy submitted its operative application seeking a permit to operate the Red Hill USTs. *See* Exhibits B-77, B-246 through 252, and B-301 through 304. On June 24, 2019, the BWS submitted to the DOH written comments on the Navy’s permit application, making clear that “it is not appropriate for the DOH to issue an operating permit” for the USTs at Red Hill. Exhibit B-22 at BWS006291. By letter and complaint dated October 29, 2019, the BWS requested a contested case hearing concerning

¹ Federal facilities are required to comply with all federal, state, interstate, and local solid and hazardous waste requirements (including statutes, regulations, permits, reporting requirements, and administrative and judicial orders and injunctions). The express waiver sovereign immunity contained in the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.*, subjects the Navy to the same substantive and procedural requirements as any person under state laws regulating USTs. *See* 42 U.S.C. § 6991f(a) (“Each department, agency, and instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any underground storage tank or underground storage tank system, or (2) engaged in any activity resulting, or which may result, in the installation, operation, management, or closure of any underground storage tank, release response activities related thereto, or in the delivery, acceptance, or deposit of any regulated substance to an underground storage tank or underground storage tank system shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injunctive relief and such sanctions as may be imposed by a court to enforce such relief), respecting underground storage tanks in the same manner, and to the same extent, as any person is subject to such requirements, including the payment of reasonable service charges. The Federal, State, interstate, and local substantive and procedural requirements referred to in this subsection include, but are not limited to, all administrative orders and all civil and administrative penalties and fines, regardless of whether such penalties or fines are punitive or coercive in nature or are imposed for isolated, intermittent, or continuing violations. The United States hereby expressly waives any immunity otherwise applicable to the United States with respect to any such substantive or procedural requirement (including, but not limited to, any injunctive relief, administrative order or civil or administrative penalty or fine referred to in the preceding sentence, or reasonable service charge.”).

² Hawaii Revised Statutes § 342L-32(b)(3) required existing USTs to be replaced or upgraded by December 22, 1998, but field-constructed USTs were largely exempted from DOH’s UST rules until July 15, 2018.

the Navy's permit application. *Kawata Test.* at ¶ 37; Exhibit B-23.³ As the largest municipal drinking water utility in Hawaii, the BWS has standing to bring this contested case because it has a significant interest in the outcome of the permitting decision. *See* Pet'r Honolulu Board of Water Supply's Pre-Hr'g Mem. at 3-4 (Jan. 19, 2021); *see also* *Kawata Test.* at ¶¶ 22-28, 37-38, 41. The BWS is obligated to oppose the Navy's permit application to protect the water resources it manages and to preserve the rights of present and future generations in the waters of Hawaii.

II. LEGAL AND REGULATORY FRAMEWORK FOR THE PERMITTING DECISION

The DOH must protect Oahu's drinking water from the clear and present danger posed by the Navy's operations at Red Hill. The Hawaii Constitution guarantees that "[a]ll public natural resources are held in trust for the benefit of the people" and directs the State, and by extension the DOH, "to protect, control and regulate the use of Hawaii's water resources for the benefit of its people." Haw. Const. art. XI, §§ 1, 7. Both the BWS and the DOH have a public trust responsibility to protect the water resources that they manage and to preserve the rights of present and future generations in the waters of the State. Public trust is the principle embedded in the Hawaii Constitution and State law that obligates the State, including the BWS and DOH, to protect the purity of Hawaii's water:

[T]he public trust doctrine applies to all water resources without exception or distinction. The state water resources trust thus embodies a dual mandate of 1) protection and 2) maximum reasonable and beneficial use. The public trust is, therefore, the duty and authority to maintain the purity and flow of our waters for future generations and to assure that the waters of our land are put to reasonable and beneficial uses.

³ The Navy's permit application package, as corrected, consisted of ten enclosures: the permit application itself and nine supporting documents. Of these nine supporting documents, six were initially redacted either in part or in full. The BWS' written comments and contested case request were based on the publicly-available information only. In connection with this contested case, the Navy subsequently produced its permit application with some, but not all, of these redactions removed.

Kauai Springs, Inc. v. Planning Comm'n of Cnty. of Kauai, 133 Haw. 141, 172, 324 P.3d 951 (2014) (alteration and emphasis in original) (citations and internal quotation marks omitted).

The Supreme Court of Hawaii has made clear that this responsibility is “unlimited by any surface-ground distinction,” extending to all water resources, including groundwater. *In re Water Use Permit Applications*, 94 Haw. 97, 133-135, 139, 9 P.3d 409 (2000).

State policy for water resources in Hawaii is likewise directed toward achieving the highest water quality consistent with maximum benefit to the people of the State and “shall be liberally interpreted to obtain maximum beneficial use of the waters of the State” H.R.S. § 174C-2(c). Pertinent here, drinking water is the highest beneficial use of groundwater. State law governing underground storage tanks only serves to bolster these public trust commitments, expressly providing that underground storage tank systems “shall be designed, constructed, installed, upgraded, maintained, repaired, and operated *to prevent releases of the stored regulated substances for the operational life of the tank or tank system*” H.R.S. § 342L-32(b)(1) (emphasis added).

The DOH’s UST regulations recognize that compliance with the requirements of Chapter 342L of the Hawaii Revised Statutes is a prerequisite for the issuance of a permit to operate. *See* HAR § 280.1-323(c). These regulations are careful to further limit the agency’s authority to approve permit applications “only if the applicant has submitted sufficient information to the satisfaction of the director that the technical, financial, and other requirements of this chapter are or can be met and the installation and operation of the UST or tank system will be done in a manner that is protective of human health and the environment”; the regulations authorize the DOH to impose conditions on a permit where “reasonably necessary to ensure compliance with

this chapter and any other relevant state requirement, including conditions relating to equipment, work practice, or operation.” HAR §§ 280.1-323(b), 280.1-328.

III. NAVY OPERATIONS AT RED HILL DO NOT COMPLY WITH LAW

The Navy has failed to meet its burden. As the applicant for a permit to operate the Red Hill USTs, the Navy must demonstrate that its proposed operations at Red Hill satisfy all requirements imposed by applicable laws, rules, and regulations. *See Order Re Burden of Proof, Produc. Evid. and Persuasion*, ¶ 12 (July 14, 2020). The Navy has not and cannot do so. Red Hill has released fuel into the environment in the past, did so just months ago, and will continue to do so in the future. As it exists and is proposed to be operated in the Navy’s permit application, Red Hill simply cannot be operated to prevent releases for the operational life of the UST system as required by Hawaii Revised Statutes § 342L-32(b). Nor does the Navy comply with any of the enumerated requirements in HAR § 11-280.1-20(b) for corrosion protection even though corrosion that leads to through-wall holes in the ¼-inch thick steel liner used to contain fuel is well documented. Additionally, the Navy has already violated and will continue to violate the release detection requirements in HAR § 11-280.1-33. The Navy’s permit application must be denied, and the Red Hill USTs must be relocated away from Oahu’s sole-source groundwater aquifer or upgraded with secondary containment.

A. The Navy Cannot Operate the Red Hill Facility without Future Fuel Releases

The Navy’s permit application cannot be lawfully approved because it is clear that operations at Red Hill do not satisfy the mandate of Hawaii Revised Statutes Chapter 342L that all USTs and UST systems must be “operated to prevent releases ... for the operational life of

the tank or tank system” H.R.S. § 342L-32(b)(1).⁴ The Red Hill USTs and associated infrastructure have a long history of releasing fuel into the environment and this facility will continue to leak if allowed to operate as proposed in the Navy’s permit application. To date, at least 73 fuel release incidents involving more than 175,000 gallons of product have occurred at Red Hill. *See* Norfleet Expert Report at 8, app. C; Supp. DeNovio Test. at ¶¶ 7-8; Exhibit B-407. This abysmal record of environmental stewardship and the utter failure of the Navy’s UST inspection, repair, and maintenance (“TIRM”) practices are so compelling that Dr. David M. Norfleet, the head of an incident investigation group that conducts over 100 failure investigations each year, concluded that more fuel releases from Red Hill are “inevitable.” Norfleet Test. at ¶ 10.a; Norfleet Expert Report at iii, 12-61. Dr. Norfleet was right. Less than three months after the conclusion of the contested case hearing itself another fuel release of an unknown quantity of jet fuel, reported as approximately 1,000 gallons, occurred from supply piping in the lower access tunnel underneath the Red Hill tanks during the refilling of Tank 20 on May 6, 2021. *See* Exhibit N-143A. Soil vapor data collected by the Navy indicates that this most recent release also made it into the environment. *See* Supp. DeNovio Test. at ¶ 8; Exhibits B-404 through B-407; *see also* Hr’g Tr. Vol. III, 668:12-18 (Navy witness Mr. Curtis Stanley admitting that “soil vapor monitoring can be a very effective technology for assessing releases at Red Hill.”); Reopened Hearing Tr. 7:19-8:11 (“we see elevated or pronounced spikes of soil vapor readings at Tanks 20, 17, 18, and 15 and 16 in particular...”).

As disturbing as the May 6, 2021 fuel release to the environment is, fuel releases from the Red Hill USTs themselves remain a dire concern. The most pervasive and ongoing threat to the

⁴ Under Hawaii law, a “[r]elease” includes, but is not limited to, any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from an underground storage tank or tank system.” H.R.S. § 342L-1.

integrity of these USTs is corrosion which has and can develop into holes in the Red Hill USTs and associated piping that allow fuel to be released into the environment. Moisture trapped between the outside face of the Red Hill USTs' steel liner and concrete shell causes corrosion to form on the backside of the steel liner, and that corrosion progresses inward with time. *See* Norfleet Expert Report at 27, fig. 10. It is well documented that corrosion has and will continue to take place on the outsides or backsides of the USTs' steel liners, areas that the Navy cannot physically access, inspect, maintain, or protect. *See id.* at 17-26, tbl. 2 (summarizing 22 through holes identified in inspections performed on Tanks 2, 5, 6, 15, 16, and 20); *see also* Hr'g Tr. Vol. II, 276:3-10 (Navy witness Mr. Frank Kern testifying that "the answer to your question is yeah, we cannot inspect that [the back side of the Red Hill tanks], correct, visually"). Corrosion-induced holes result in the release of fuel into the environment because the concrete structure does not provide fluid containment, as evidenced by the presence of water on the backside of the USTs' steel liner and the presence of released fuel in the subsurface at Red Hill. *See* Norfleet Expert Report at 3; *see also* Hr'g Tr. Vol. III, 535:2-9 (Navy witness Dr. Gaur Johnson acknowledging that "concrete cracks" and that "fuel could go through the cracks in the concrete" into the subsurface environment).

This ongoing corrosion means that the likelihood of chronic leaks and potentially catastrophic fuel releases from the Red Hill USTs are unacceptably high. Norfleet Expert Report at iii, 59-60; *see also* Exhibit B-15. Given the ever-present threat to tank integrity posed by corrosion-induced failure which cannot be directly observed, eliminated, or reduced as the tanks are currently configured and operated, the only potential way to protect the environment is through a rigorous and thoroughly reliable inspection program that can identify *any and all* areas that are vulnerable to corrosion and effectively repair these areas prior to a through hole

developing in the tank wall. Unfortunately, the overwhelming majority of the Red Hill USTs have not been properly inspected and the evidence in the record clearly shows that even the Navy's current non-destructive examination ("NDE") techniques used to inspect the ¼-inch steel liner of the Red Hill USTs, the only meaningful barrier protecting the environment, are not reliable or accurate. *See* Norfleet Expert Report at 12.

The Navy's claim that its TIRM process is governed by a standard of care and safety that exceeds industry practice is laughable. The American Petroleum Institute ("API") standard 653 for aboveground storage tanks calls for tank inspections to occur on a ten-year interval. *See* Exhibit B-6, at BWS001329. The Navy's own modified API 653 inspection process requires that every Red Hill UST should be inspected within every ten years, unless the corrosion rate is such that an API 653 inspector recommends it can be inspected in 20 years. *See id.* The Navy has failed to meet even its own subpar standard. According to the DOH and the EPA, the Navy's current inspection cycle "is averaging 30 years, with the longest duration being 59 years for Tank 18." Exhibit B-30 at BWS007575. Indeed, Navy witness after Navy witness acknowledged under oath that the Red Hill USTs have not been inspected in a reasonably timely manner nor have many of them even been inspected at all in accordance with modern inspection standards. *See, e.g.,* Hr'g Tr. Vol. I, 189:7-194:15 (Navy witness Mr. John Floyd recognizing that Red Hill Tanks 3, 4, 7, 8, 9, 10, 11, and 12 either have no inspection history or are "overdue for an inspection"); Hr'g Tr. Vol. II, 277:11-280:1 (Navy witness Mr. Frank Kern conceding that the majority of the Red Hill USTs have not undergone the inspection process that the Navy itself claims is the proper standard of care and that more than a quarter of the Red Hill USTs have never undergone any formal API inspection); Hr'g Tr. Vol. III, 618:9-22 (Navy witness CDR Darrel Frame admitting that "we have not met our timeline on some of our tanks" and that at

least eight USTs have not had a major API 653 inspection once every twenty years as required by Navy standards).

Not only are most of the Red Hill USTs overdue for a proper inspection, the Navy's own laboratory testing demonstrates that the Navy's TIRM practices are neither accurate nor reliable. *See* Norfleet Expert Report at 32-37. Destructive testing performed by a Navy-contracted laboratory on ten steel liner samples, commonly referred to as "coupons," removed from Tank 14 in June 2018 indicates that the "vast majority" of the Navy's tank wall inspection measurements do not meet the Navy's own specified accuracy requirements. *See id.* at 33. In addition, four of the ten coupons removed from Tank 14 were thinned by corrosion to the point that they required patching under Navy repair criteria but the NDE prior to coupon removal only identified two of these locations as warranting repair, which corresponds to a 50 percent rate of correctly identifying tank wall areas in need of corrosion repair. *See id.* at 33, tbl. 4, fig. 12; *see also* Hr'g Tr. Vol. II, 418:9-20 (Navy witness Mr. Robert Jamond agreeing that NDE was only accurate in detecting actionable metal loss 50 percent of the time in the ten coupon samples). Collectively, these misidentified areas establish that the Navy's NDE process both over and underestimates the remaining thickness of the Red Hill USTs' steel liner and is unquestionably inaccurate and unreliable. *See* Norfleet Expert Report at 26-27. The odds of the Navy's NDE performing as needed to ensure tank integrity and prevent fuel releases "is the same as flipping a coin." *See id.* at 33.

The inadequacy of the Navy's TIRM process is so apparent that the regulators and the Navy have all agreed to take the extreme step of invoking AOC Section 5.4, which is only to be implemented "[i]f the Parties determine that the results of the previous deliverables in this Section [AOC Section 5 – Corrosion and Metal Fatigue Practices] indicate the need for

evaluation and implementation of potential changes in practices to control corrosion or metal fatigue.” BWS Exhibit B-82 at BWS008976. If so, the Navy must take action “for the purpose of developing appropriate modification to the scopes of work and timelines in Section 2 [Tank Inspection, Repair, and Maintenance] and/or Section 3 [Tank Upgrade Alternatives]” and AOC “deliverables *shall* be modified or added ... to address any needs for further evaluation, development, or implementation of practices to control corrosion or metal fatigue.” *Id.* (emphasis added). As such, Section 5.4 of the AOC is supposed to be a fail-safe mechanism. Its invocation is an acknowledgement that the Navy’s TIRM process is not good enough and that the Navy’s operations at Red Hill cannot adequately safeguard our critical drinking water resources.

Approval of the Navy’s permit application would require a finding that there is no risk or, at a minimum, an extremely low risk for future chronic or catastrophic releases from Red Hill. Such a finding cannot be made as it is directly contradicted by the baseline quantitative risk and vulnerability assessment (“QRVA”) report issued by Navy consultant ABS Consulting (Exhibit B-15), which substantiates the chronic and potentially catastrophic risks associated with operating enormous fuel tanks a mere 100 feet above a one of a kind sole-source aquifer. The Navy’s QRVA report details a comprehensive quantitative engineering evaluation of the internal event hazards at Red Hill designed to provide a baseline assessment of the level of risk Red Hill poses to nearby groundwater resources. *See* Exhibit B-15 at BWS005019; *see also* Norfleet Expert Report at 50 (the QRVA report “was professionally executed using recognized risk assessment software”). The QRVA report confirms that both the risk of a sudden, large release and an undetected, slow fuel release from Red Hill to the environment are unacceptably high. According to the Navy’s own consultant, we can expect:

- Greater than 27% probability of a sudden release of between 1,000 and 30,000 gallons of fuel from Red Hill each year;
- Greater than 34% chance of a sudden release of more than 120,000 gallons from Red Hill in the next 100 years;
- Greater than 5% chance of a sudden release of more than 1 million gallons from Red Hill in the next 100 years; and
- 5,803 gallons per year of chronic, undetected fuel releases from Red Hill.

Exhibit B-15 at BWS005021. The Navy agrees that these levels of risks are unacceptable. Hr’g Tr. Vol. III, Testimony of Darrel Frame, 575-576.

Although the Navy’s QRVA report confirms that both the risk of a sudden, large release and an undetected, slow fuel release from Red Hill to the environment are unacceptably high, the overall risk of future releases from Red Hill are actually much higher:

Several specific deficiencies and limitations likely contribute significantly to ABS’ underestimation of risk, including: (1) reliance on incomplete historical release data from [Red Hill]; (2) reliance on an unwarranted assumption that UST leak rates are constant over time, disregarding physical failure mechanisms, like corrosion, that correspond with an increasing rate over time as a true renewal process is not occurring; (3) discounting releases identified by the tell-tale leak detection and collection system without sufficient due diligence; (4) calculation of leak frequency distributions for individual [Red Hill] USTs using Navy leak data from dissimilar (smaller) tanks at distant locations, while excluding leak data from neighboring [Red Hill] USTs; and (5) exclusion from the initial (Phase 1) QVRA the consideration of risks from such external sources such as fire, flood, and earthquake.

Norfleet Expert Report at 50-51. The May 6, 2021 release of approximately 1,000 gallons of jet fuel from supply piping in the lower access tunnel tanks during the refilling of Tank 20 merely serves to underscore the reality of these immense risks to Oahu’s sole-source groundwater aquifer.

Fatal to its case, the Navy offers no credible rebuttal to this clear and compelling evidence. *Compare* Norfleet Expert Report at 50 (although underestimating the likely overall

risk of future fuel releases from Red Hill, the Navy's QRVA report "was professionally executed using recognized risk assessment software") *with Hr'g Tr. Vol. III, 570:9-19, 581:23-582:22* (Navy witness CDR Darrel Frame, despite offering written testimony purporting to address the meaning and the importance of the Navy's QRVA report, conceding that he could not answer and was not qualified to answer certain questions about the Navy's risk assessment). There is simply no credible evidence in the record that reasonably disputes these dire risks to our irreplaceable drinking water resources. Given the long history of fuel releases from Red Hill, the tank integrity threat posed by the corrosion afflicting the Red Hill USTs from the side of the steel liner that the Navy cannot inspect or maintain, the inaccuracy and unreliability of the Navy's TIRM practices, and the results of the Navy's own baseline risk assessment, it is clear that Red Hill cannot be operated, as required, "to prevent releases ... for the operational life of the tank or tank system" H.R.S. § 342L-32(b)(1). Accordingly, the DOH must deny the Navy's permit application and instead order the Navy to relocate the Red Hill USTs away from Oahu's sole-source groundwater aquifer or upgrade them with secondary containment.

B. The Red Hill USTs Do Not Comply with Corrosion Protection Requirements

State law recognizes the immense threat that corrosion can pose to the integrity of steel utilized in USTs. DOH regulations require UST systems with field-constructed tanks like those at Red Hill to be upgraded to comply with the codes of practice in corrosion protection performance standards found at HAR § 11-280.1-20(b), among others, or be closed. HAR § 11-280.1-21(a). HAR § 11-280.1-20(b) enumerates the five criteria by which a UST can comply with the performance standards for corrosion protection: (1) the UST is constructed of fiberglass-reinforced plastic; (2) the UST is constructed of steel and cathodically protected; (3) the UST is constructed of steel and clad or jacketed with a non-corrodible material; (4) the

UST is installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life; or (5) the UST construction and corrosion protection are determined by the DOH to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than criteria (1) through (4). *See* HAR § 11-280.1-20(b).

The Navy has not upgraded the Red Hill USTs with *any* corrosion protection. Specifically, none of the five allowable corrosion protection alternatives, as stated in the administrative rules, have been met or will be met if the Navy's permit application is approved. *See* Norfleet Expert Report at 62-66. The first two options are to construct the Red Hill USTs with non-corrodible fiberglass-reinforced plastic or to employ cathodic protection; neither of these apply to the USTs at Red Hill as they are concrete tanks with a steel liner that has not been cathodically protected. *See id.* at 63; *see also* Testimony of CDR Blake Whittle ("Whittle Test."), 18:11-13 ("The Red Hill tanks are made from quarter-inch-thick welded steel liners surrounded by reinforced concrete."); Testimony of Robert Jamond ("Jamond Test."), 6:8 ("Cathodic protection is not used to protect the steel liner...") (footnote omitted).⁵

The third option requires that steel USTs be clad or jacketed with a non-corrodible material. This is also not applicable to the Red Hill USTs, as the Red Hill USTs do not satisfy any of the codes of practice for cladding or jacketing listed in HAR § 11-280.1-26(c)⁶ and

⁵ The Red Hill USTs are more properly considered concrete USTs with steel liners, not steel USTs. *See* Norfleet Expert Report at 3; *see also* Whittle Test., 17:5-6 ("The Navy listed the primary containment of the tanks as steel liner over concrete..."); Exhibits B-190 through B-192 (Tanks 6, 15, and 16 are each described in Navy inspection reports as "an underground concrete tank with a steel liner"). In any event, the concrete shells of the Red Hill USTs "are cracked and/or perforated, and deteriorating" resulting in pathways for water to reach the steel liner through the concrete and leaked fuel to reach the environment. Norfleet Expert Report at 65. There is ample evidence in the record that the concrete provides neither meaningful containment nor adequate corrosion protection.

⁶ HAR § 11-280.1-26(c) states that the following codes of practice "may be used to comply" with HAR § 11-280.1-20(b)(3): (1) Underwriters Laboratories Standard 1746, "External Corrosion Protection Systems for Steel Underground Storage Tanks"; (2) Steel Tank Institute ACT-100® Specification F894, "Specification for External

“cannot be considered clad or jacketed as such terms are defined or understood in industry practice.” *See* Norfleet Expert Report at 64; *see also* Hr’g Tr. Vol. I, 136:15-137:2 (Navy witness Ms. Danae Smith admitting that she could not identify any of the enumerated codes of practice listed in HAR § 11-280.1-26(c) that the Navy uses to comply with mandated corrosion protection requirements). The Red Hill USTs’ steel liners are not clad or jacketed with concrete;⁷ rather, they merely had concrete cast against the unprotected steel surface decades ago using antiquated tank construction practices. *See id.* at 3-4; Exhibit B-174, at BWS024974-76. In fact, the outside surfaces of the steel liners, in many locations, are not in intimate contact with concrete, and moisture between the steel and the concrete is causing the USTs to corrode. *See* Norfleet Expert Report at 8, 65; Exhibits B-28 and B-157. The condition of the concrete is such that it “does not serve as a barrier to water ingress” and thus does not provide a barrier to corrosion as would a cladding or jacketing. *See* Norfleet Expert Report at 63; *see also* Jamond Test. at 17:14-18:3 (acknowledging “some corrosion had occurred” at Tank 14 and “there is the potential for corrosion to occur or continue”).

The fourth and fifth options are for a “corrosion expert” to determine that the site is not corrosive enough to cause the Red Hill USTs to have a release due to corrosion during their operating life or for the DOH to independently determine that the existing corrosion protection is no less protective than level of protection provided by the other options. Neither of these determinations have been made, nor would either be justifiable considering the documented

Corrosion Protection of FRP Composite Steel Underground Storage Tanks”; Steel Tank Institute ACT-100-U® Specification F961, “Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks”; or Steel Tank Institute Specification F922, “Steel Tank Institute Specification for Perma tank®”. These are the same codes of practice identified in the federal regulations. *See* Norfleet Expert Report at 64; 40 CFR § 280.20. ⁷ In a preliminary response to the Navy’s initial permit application, DOH staff indicated that the Red Hill USTs could be considered steel tanks clad or jacketed with concrete. *See* Exhibit B-70 at BWS008572. However, such a determination would not be in accordance with applicable regulatory requirements or consistent with the existing condition of the Red Hill USTs.

through-wall corrosion at the Red Hill USTs. Dr. David M. Norfleet, an expert in corrosion and degradation/failure mechanisms associated with oil and gas assets, testified unequivocally that “no expert could credibly determine that the [Red Hill] site is not corrosive enough to cause a corrosion-induced release during the life of the USTs.” Norfleet Expert Report at 65. He also testified that the Red Hill USTs “are not designed to prevent releases in a manner that is equally protective of human health and the environment as fiberglass construction, cathodic protection, or proper cladding or jacketing.” *Id.* Simply put, the Navy has not and cannot demonstrate that the Red Hill USTs comply with applicable corrosion protection requirements or that these tanks are adequately protected from corrosion and, as a result, the Navy’s permit application must be denied.

C. The Navy Has Not and Cannot Meet Applicable Release Detection Requirements

The Navy has already violated and will continue to violate the DOH’s UST regulations specifying the release detection requirements all UST operators must satisfy to comply with law. Specifically, DOH rules require owners and operators of UST systems to ensure that repairs will prevent releases due to structural failure or corrosion for as long as the UST system is used to store regulated substances. *See* HAR § 11-280.1-33(a). Among other things, prior to the return to use of a repaired UST system, all repaired USTs must pass a tank tightness test in accordance with HAR § 11-280.1-43(3). *See* HAR § 11-280.1-33(a)(4). The Navy does not deny this.

Q. WHAT SECTIONS OF HAR § 11-280.1 ADDRESS REPAIRS TO UST SYSTEMS?

A. HAR § 11-280.1-33 requires UST owners and operators to ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store regulated substances. The following requirements apply to repairs undertaken at Red Hill:

...

(3) Prior to the return to use of a repaired UST system, any repaired USTs must pass a tank tightness test in accordance with section 11-280.1-43(3);

See Smith Test. at 10:9-11:2. That release detection method for repaired USTs unequivocally specifies a 0.1 gallon per hour (gph) rate tank tightness test performance criteria:

Tank tightness testing. Tank tightness testing (or another test of equivalent performance) must be capable of detecting a **0.1 gallon per hour leak rate** from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.

HAR § 11-280.1-43(3) (emphasis added). The Navy violated this provision when it returned Tank 5 to service in 2020 after it was repaired, and it will continue to violate this legal requirement every time it repairs one of its leaky USTs. *See* Hr'g Tr. Vol. I, 140:2-12 (Navy witness Ms. Danae Smith testifying that the Navy only applied the 0.5 gph standard used for annual tank tightness testing when it tested Tank 5 prior to returning it to service after repair and that the Navy has not asked its release detection vendor to meet the 0.1 gph standard). The DOH cannot approve the Navy's permit application where, as here, the Navy cannot even meet basic, generally applicable release detection requirements for repaired USTs.

Nor has the Navy presented sufficient information to conclude that it can detect fuel releases in the normal course of operations. DOH regulations require UST systems with field-constructed tanks like those at Red Hill to be regularly monitored for releases in a manner that meets specified requirements. *See* HAR § 11-280.1-41. HAR § 11-280.1-43(10) allows an annual tank tightness test that can detect a 0.5 gph leak rate as a release detection method for nonrepaired field-constructed USTs. *See* HAR § 11-280.1-43(10)(A). The Navy claims that it performs a semi-annual tank tightness test on the in service Red Hill USTs that is third-party certified to detect a 0.5 gph leak rate or better, but the Navy has not itself validated this

representation nor has it provided the actual data and analyses necessary to fully evaluate such claims. *See* Smith Test. at 9:13-10:2; Testimony of Christopher D. Caputi (“Caputi Test.”), 2:7-8; Hr’g Tr. Vol. II, 230:7-12 (Navy witness Mr. Christopher Caputi testifying that the Navy relies upon a third party vendor to both assess the accuracy of and calibrate the equipment used to perform tank tightness testing on the Red Hill USTs). The Navy’s release detection claims cannot be accepted without support. DOH’s decision as to whether or not to issue the Navy a permit to operate the Red Hill USTs must be based solely on the evidence presented in this contested case. *See* H.R.S. § 91-9(g) (“No matters outside the record shall be considered by the agency in making its decision except as provided herein.”); *see also* HAR § 11-1-42(c) (final decision maker must “consider the whole hearing record or those parts the parties designate”).⁸ Accordingly, the Navy has not met its burden to prove it can satisfy applicable release detection requirements.

D. The Navy Has Failed to Demonstrate that Operations at Red Hill Are Protective of Human Health and the Environment

Faced with the inevitability of future fuel releases from the Red Hill USTs, the Navy is left to contend that operations at Red Hill are nevertheless protective of human health and the environment because the contamination of the subsurface and Oahu’s irreplaceable groundwater aquifer might remain localized. *See* Testimony of Curtis Stanley, 8:1-11:8, Facility Environmental Report for Contested Case Hearing No. 19-UST-EA-01 (“Stanley Expert Report”). Hawaii law requires more. Public trust principles compel the DOH to protect not just drinking water, but the irreplaceable groundwater aquifer that nourishes Oahu’s drinking water

⁸ The BWS recognizes that the cover letter to the Navy’s permit application states that the information redacted therein has been provided in full to the DOH. Exhibit B-251. That the Navy may have provided a complete, unredacted version of its permit application to the DOH is irrelevant. This information is not available to the parties or the Hearings Officer and is not in the administrative record. Thus, it cannot form the basis of a decision in this proceeding.

supply. *Kauai Springs*, 133 Haw. at 172 (“[T]he public trust doctrine applies to all water resources without exception or distinction.”) (alteration and emphasis in original). The Navy has not and cannot meet this burden and, therefore, its permit application must be denied.

To demonstrate that the Navy’s operations at Red Hill are protective of human health and the environment, there must be substantial data and robust technical analysis to prove, at a minimum, that Oahu’s federally designated sole-source aquifer will not be contaminated. There is not. To the contrary, Navy witness Mr. Curtis Stanley’s opinions related to whether or not the Navy’s operations at Red Hill are protective of human health and the environment fail to adequately account for the considerable uncertainties arising from the lack of data collected by the Navy’s sparse monitoring well network and the resulting challenges in characterizing the groundwater flow system and the nature and the extent of groundwater contamination at and around Red Hill. *See* DeNovio Test. at ¶ 9.c; DeNovio Expert Report at i, 14-18. These uncertainties are compounded by the fact that the subsurface conditions in the vicinity of Red Hill, where fuel migration occurs in a highly heterogeneous basalt containing preferential flows, is extremely complex and insufficiently characterized. *See* DeNovio Test. at ¶ 9.a; DeNovio Expert Report at i-ii, 1-14, 19. This level of uncertainty is fatal to Mr. Stanley’s claim of protectiveness as it means that the Navy cannot adequately evaluate the possibility that fuel releases from Red Hill could migrate to and impact critical drinking water receptors like the BWS’ Halawa Shaft.

It is undisputed, however, that the Red Hill USTs have leaked in the past and, as discussed in greater detail above, the likelihood of ongoing chronic leaks and potentially catastrophic future fuel releases from Red Hill are essentially certain. The Navy also acknowledges that fuel releases have impacted the sole-source groundwater aquifer. *See, e.g.,*

Hr’g Tr. Vol. IV, 876:22-877:4 (Navy witness Mr. Curtis Stanley testifying that Navy operations have “impacted the aquifer immediately beneath Red Hill, but that impact is confined to the area relatively beneath Red Hill”); Stanley Expert Report at 15 (“[I]mpacts to groundwater appear to be limited to the immediate vicinity of the tank farm”); Exhibit B-10 at BWS003492 (“Previous environmental Site Investigations (SIs) at the Facility showed that past inadvertent releases have contaminated the fractured basalt, basal groundwater, and soil vapor beneath the Facility with petroleum hydrocarbons.”); Exhibit B-11 at BWS003856 (“Groundwater contamination exists around the underground storage tanks (USTs) at [Red Hill] because of irregular maintenance and insufficient inspection over the life of the fuel tanks.”); *see also* Supplemental Testimony of Curtis Stanley, 14:1-4 (“The Navy has never pretended there aren’t impacts to the groundwater below the tanks. As can be seen in the FER, the Navy never stated that the holding capacity ‘prevents’ migration of fuel; rather, the holding capacity undoubtedly [*sic*] ‘helps to impede’ downward migration....”). Mr. Stanley’s opinions that no petroleum “product” has been measured in any drinking water or monitoring well and no fuel constituents have been detected above regulatory screening levels outside of the “immediate vicinity” of Red Hill (*see* Stanley Expert Report at i) are misleading and legally irrelevant. *See* DeNovio Test. at ¶ 9.e; DeNovio Expert Report at 21, 31-35; *see also* Exhibit B-339 at BWS034975 (“[T]here is an indication that LNAPL [i.e., light nonaqueous-phase liquid or petroleum fuel product] is at or near the water table upgradient from RHMW02.”).

If DOH were to accept Mr. Stanley’s arguments as sufficient, it would need to conclude that the State can only act to protect groundwater once it is shown that this precious resource is already grossly contaminated, and that the DOH cannot take action to prevent the contamination. Mr. Stanley’s argument is contrary to the Hawaii Constitution, State statutes and regulations, and

defies logic. This proceeding is not about whether the drinking water is *currently* impacted or the proper cleanup standard to which the Navy must remediate the hundreds of thousands of gallons of fuel it has already released into the environment. It is about whether the Navy can operate Red Hill in accordance with Hawaii law and without putting the State's water, including groundwater, resources at risk. Nothing in Mr. Stanley's testimony or expert report proves that the Navy can do so.

The Navy's remaining purported justifications for Red Hill being protective of human health and the environment are based on unwarranted assumptions, improper conclusions drawn from a limited dataset, and/or incomplete and unapproved Navy work product and should be rejected. Specifically, Mr. Stanley's presumed natural attenuation rates are overstated, highly uncertain and cannot be reconciled with the data collected and analyses performed to date. *See* DeNovio Test. at ¶ 9.d; DeNovio Expert Report at i, 37-43. Mr. Stanley also improperly credits the Navy for future improvements at Red Hill that have not been approved by regulators or committed to by the Navy. *See* DeNovio Expert Report at i, 43-44. The DOH should not accept these unproven and speculative claims as indicative of protectiveness. In October 2020, the DOH rejected similar contentions, concluding that the Navy had not demonstrated that proposed operations at Red Hill are "the most protective of the groundwater and drinking water resources and other options are either less protective or impractical; and that the proposed alternative adequately mitigates release risk." Exhibit B-28 at BWS007367. It should do so again. The factual and technical record is clear that the Red Hill USTs pose a substantial threat to Oahu's irreplaceable sole-source groundwater aquifer. *See* DeNovio Test. at ¶ 10 ("Facility operation as described in the Navy's permit application is not protective of human health and the environment.").

IV. NAVY WITNESSES UNDERMINE THE NAVY'S CASE AND LACK CREDIBILITY

The Navy has not and cannot accurately marshal the facts or present a consistent, credible argument when it comes to whether or not the Navy can operate Red Hill in compliance with Hawaii law. The Navy offered the testimony of ten witnesses during the contested case hearing. Most witnesses made admissions damaging to the Navy's position in this contested case and/or presented testimony that was not credible and should be afforded no or negligible evidentiary weight. Most egregiously:

- CDR Blake Whittle. Commander Whittle testified that the lower access tunnel could contain an immense volume of fuel released including a catastrophic release of one million gallons of fuel. *See* Hr'g Tr. Vol. I, 72:2-24. However, the Navy was unable to entirely contain in the lower access tunnel or prevent from entering the subsurface environment a much smaller fuel release of reportedly approximately 1,000 gallons that occurred on May 6, 2021. *See* Supp. DeNovio Test. at ¶ 8; *see also* Hr'g Tr. Vol. I, 200:5-18 (Navy witness Mr. John Floyd testifying that he was not aware of any lower access tunnel tightness test that has been performed to conclude that the tunnel will hold released fuel); Reopened Hearing Tr. 7:19-8:11 ("the fuel from the tunnel was not contained in the tunnel, and the soil vapor probes indicate that fuel was released to the environment."), 23:11-23 ("we can tell that the soil vapor monitoring probes over quite a long time – several weeks – are indicating the presence and persistence of concentrations that indicate fuel or fuel constituents [in the environment]."). Clearly the recent release confirms that this tunnel is not leak tight. Commander Whittle's testimony concerning the Navy's ability to prevent releases into the environment from the lower access tunnel can be afforded no probative value.
- Ms. Danae Smith. Ms. Smith initially incorrectly claimed in her written testimony that "HAR § 11-280.1-20(b) and (c) state that each tank and any piping 'that routinely contains regulated substances and is in contact with the ground must be properly designed, constructed, and installed, and any portion underground that routinely contains product must be protected from corrosion, in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory.'" Smith Test. at 6:19-7:6. Ms. Smith was wrong and corrected her testimony at the hearing. *See* Hr'g Tr. Vol. I, 126:12-128:7. While HAR § 11-280.1-20(c), which applies to UST system piping, does include the language initially referenced by Ms. Smith, HAR § 11-280.1-20(b), which applies to the USTs themselves, does not. That is not the only error Ms. Smith made with respect to the regulations pertaining to the Navy's operations at Red Hill. Ms. Smith also testified that the Navy meets UST repair requirements. *See* Smith Test. at 10:9-11:16 ("Repaired components are tested

and inspected in accordance with the above rule [i.e., HAR § 11-280.1-33].”). As discussed above, HAR § 11-280.1-33 requires that all repaired USTs must pass a tank tightness test in accordance with the 0.1 gph tank tightness test performance standard specified in HAR § 11-280.1-43(3). Ms. Smith admitted, however, that repaired Red Hill USTs do not undergo nor satisfy this express requirement for a 0.1 gph tank tightness test. *See* Hr’g Tr. Vol. I, 137:23-140:12. Ms. Smith’s testimony that the Navy can meet all applicable release detection requirements is unsupported and her testimony concerning the Navy’s ability to meet the requirements of Hawaii law are not credible.

- Mr. John Floyd. Although Mr. Floyd is charged with overseeing the maintenance of Red Hill, he testified that he had no knowledge about the status of the Navy’s TIRM process and the modifications required under AOC Section 5.4 to correct well-documented deficiencies in the Navy’s current inspection practices. *See* Hr’g Tr. Vol. I, 172:5-173:10. While Mr. Floyd demonstrated an understanding of how the Navy implemented its TIRM procedures, his testimony regarding the adequacy of the Navy’s TIRM process should be afforded no weight.
- Mr. Frank Kern. Mr. Kern indicated that he did not believe tank-within-a-tank secondary containment was a feasible upgrade solution for the USTs at Red Hill, testifying under oath that “if it was a feasible thing to do, the Navy would have done it.” Hr’g Tr. Vol. II, 237:13-14. Mr. Kern’s testimony is refuted by the Navy’s own December 2017 Tank Upgrade Alternatives (TUA) report. *See* Exhibit B-174 at BWS025105 (recognizing that tank-within-a-tank secondary containment (TUA Option 3A) “can be constructed in the field at Red Hill using practicable construction means and methods.”). Mr. Kern’s testimony regarding the feasibility of installing secondary containment at Red Hill is not credible.
- CDR Darrel Frame. The only witness that the Navy presented to address its QRVA report, Commander Frame, acknowledged that he did not have any formal education in performing or evaluating risk and vulnerability assessments, did not have any formal training in performing or evaluating risk and vulnerability assessments, and did not have any certifications related to risk and vulnerability assessments. *See* Hr’g Tr. Vol. III, 570:9-19. According to Commander Frame himself, “that’s why we hired a consultant.” *Id.* Under cross-examination, Commander Frame could not answer and conceded that he was not qualified to answer certain questions about the Navy’s risk assessment. *See id.* at 581:23-582:22. Commander Frame’s testimony concerning the Navy’s QRVA can be afforded no probative value.
- Mr. Curtis Stanley. Mr. Stanley’s lack of credibility has been briefed at length in this proceeding. *See* Order Denying Mot. To Strike the Test. of Curtis Stanley and/or for a Negative Inference (Apr. 28, 2021) (“In this matter, the objections and assertions of the BWS with regard to the testimony of Curtis Stanley and the supporting files and records produced relating thereto will be considered by the Hearing Officer in determining the appropriate weight to be afforded to such

testimony.”).⁹ The Navy has argued, and Mr. Stanley has submitted a declaration attesting, that raw data and modeling files that serve as the basis for his testimony and reports were not “re-investigated, re-examined, or validated” by Mr. Stanley in the course of preparing his expert report. Declaration of Ella Foley Gannon in support of Pet’r BWS’ Motion to Strike the Testimony of Curtis Stanley, Exhibit B (referencing a January 8, 2021 email from Navy counsel Marnie Riddle); *id.* at Ex. C (“Declaration of Curtis Stanley”). Based on this glaring admission, it is clear that Mr. Stanley did not perform an independent assessment or evaluation of critical data and information to form his opinions and conclusions. Rather, he merely reiterated and summarized findings from other Navy sources. Mr. Stanley even stated in his January 8, 2021 declaration that his expert report “is not intended to independently replicate, validate, or critically analyze the extensive environmental investigations and studies that have already been performed by the Navy.” *Id.* at Ex. C, ¶ 2. Mr. Stanley’s testimony and report, then, should not be given any weight because he did not “critically analyze” any of the issues in this matter. The factual and technical bases for Mr. Stanley’s opinions have been so undermined by the Navy’s and Mr. Stanley’s own admissions that the only reasonable conclusion is to afford them no meaningful evidentiary weight.

Rather than support the Navy’s position, its witnesses undermine it. The Hearings Officer should critically evaluate the credibility of the Navy witnesses based on the testimony and documentary evidence presented in this proceeding. This means, among other things, that the Hearings Officer must consider the bases for the Navy witnesses’ testimony and disregard it to the extent that the testimony relies on unproven or erroneous assumptions, particularly where the testimony is contradicted by other Navy documents. The Hearings Officer must also decide how much of the Navy witnesses’ testimony to believe, and how much weight it should be given. Based on the totality of the evidence presented during this contested case, the only reasonable conclusion is to render much of the Navy witness testimony no probative value.

⁹ See also Pet’r Honolulu Board of Water Supply’s Mot. to Strike the Test. of Curtis Stanley and/or for a Negative Inference Addressing the Navy’s Refusal to Comply with the Dec. 30, 2020 Order to Prod. Information (Mar. 16, 2021); Pet’r Honolulu Board of Water Supply’s Reply in Supp. of Mot. to Strike the Test. of Curtis Stanley and/or for a Negative Inference Addressing the Navy’s Refusal to Comply with the Dec. 30, 2020 Order to Prod. Information (Mar. 30, 2021); Pet’r Honolulu Board of Water Supply’s Sur-Reply in Supp. of Mot. to Strike the Test. of Curtis Stanley and/or for a Negative Inference Addressing the Navy’s Refusal to Comply with the Dec. 30, 2020 Order to Prod. Information (Mar. 30, 2021).

V. THE DOH CAN AND SHOULD REQUIRE THE NAVY TO RELOCATE THE RED HILL USTS OR UPGRADE THEM WITH SECONDARY CONTAINMENT

Relocating the Red Hill USTs or upgrading them with tank-within-a-tank secondary containment is long overdue. While a permit to operate cannot lawfully be issued for the Red Hill USTs as they are configured and proposed to be operated in the Navy's application, Hawaii law empowers the DOH with the authority to impose conditions on a permit where "reasonably necessary to ensure compliance with this chapter and any other relevant state requirement, including conditions relating to equipment, work practice, or operation." HAR § 280.1-328. The only way to ensure the fuel storage operations at Red Hill comply with Hawaii law is to require, as a condition to granting a permit to operate, that the Navy relocate the Red Hill USTs or upgrade them with secondary containment.

The Navy's resistance to implementing these more protective measures appears to hinge on its position that relocation and tank-within-a-tank secondary containment are not feasible. But the Navy provides nothing more than conclusory statements in support of its position. *See, e.g., Whittle Test.* at 12:14-15 ("[T]he Red Hill Facility is a strategically important national defense asset due to its unique location and capacity."); Supplemental Testimony of Frank Kern, 1:18 ("Navy has not acknowledged 'tank-within-a-tank' can be built at Red Hill."). These technical and constructability concerns are contradicted by the fact that the Navy's December 2017 Tank Upgrade Alternatives (TUA) report recognizes that tank-within-a-tank secondary containment (TUA Option 3A) "can be constructed in the field at Red Hill using practicable construction means and methods." Exhibit B-174 at BWS025105; *see also* Hr'g Tr. Vol. III, 271:22-272:25 (Navy witness Mr. Frank Kern admitting that the Navy's 2017 TUA report concluded that tank-within-a-tank secondary containment can be constructed in the field at Red Hill using practicable construction means and methods, but that the Navy has neither

implemented nor committed to implementing that solution). The Navy's desire to continue with status quo operations that place Oahu's critical drinking water resources at risk cannot be allowed to override its prior feasibility analysis on secondary containment. Similarly, relocation is a viable option. In fact, the Navy has recently decided to decommission other 1940s-era USTs and relocate the fuel to new aboveground storage tanks at facilities in Point Loma, California and Manchester, Washington. *See* Responsive Testimony of Danae Smith, 1:1-7, 2:1-6. These more protective options are feasible and, in the event the DOH issues a permit to the Navy authorizing future fuel storage operations, must be included as a permit condition.

VI. CONCLUSION

The DOH's public trust responsibility to safeguard all of Hawaii's water resources, including groundwater, prevents it from granting the Navy a UST operating permit for Red Hill. The Navy cannot prove that the Red Hill facility will not release more fuel that will continue to impact Oahu's sole-source groundwater aquifer and could not even make it through this contested case proceeding without another release to the environment. It has not implemented adequate corrosion protection for the Red Hill USTs. It has violated and will continue to violate applicable release detection requirements when returning repaired USTs to service. It has failed to meet its burden to prove future operations will be protective of human health and the environment. The Navy's operations at Red Hill do not comply with Hawaii law. Accordingly, the Navy's permit application must be denied, and the Red Hill USTs must be relocated away from Oahu's sole-source groundwater aquifer or upgraded with secondary containment.

PETITIONER HONOLULU BOARD OF WATER SUPPLY'S PROPOSED FINDINGS
OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDED DECISION

I. FINDINGS OF FACT

A. Procedural History

1. Effective July 15, 2018, the Hawaii Department of Health (DOH) adopted Hawaii Administrative Rules (HAR) Chapter 11-280.1, requiring large field-constructed underground storage tanks (USTs) like those at the Red Hill Bulk Fuel Storage Facility (Red Hill) be subject to permitting requirements by July 15, 2019. HAR §§ 280.1-10(a)(1)(A), 280.1-323(a).¹⁰

2. By letter received by the DOH on May 23, 2019, as corrected June 12, 2019, the United States Department of the Navy (Navy) submitted its operative application seeking a permit to operate the Red Hill facility, including its USTs, as required under Hawaii Revised Statutes (H.R.S.) Chapter 342L and HAR Chapter 11-280.1. *See* Exhibits B-77, B-246 through 252, and B-301 through 304.

3. On June 24, 2019, the Honolulu Board of Water Supply (BWS) submitted a letter to the DOH objecting to the Navy's application. Exhibit B-22.

4. By letter and complaint dated October 29, 2019, the BWS requested a contested case hearing concerning the Navy's application. Updated Testimony of Erwin Kawata ("Kawata Test."), ¶ 37; Exhibit B-23.

5. As the applicant for the permit that is challenged in this proceeding, the Navy has the burden of proof, the burden to produce evidence, and the burden of persuasion to demonstrate that it can maintain and operate the Red Hill facility consistent with the

¹⁰ H.R.S. § 342L-32(b)(3) required existing USTs to be replaced or upgraded by December 22, 1998, but field-constructed USTs were largely exempted from DOH's UST rules until July 15, 2018.

requirements of State law. *See* Order Re Burden of Proof, Produc. Evid. and Persuasion, ¶ 12 (July 14, 2020).

6. The initial contested case hearing took place from February 1 through 5, 2021, with closing arguments being offered on February 8, 2021.

7. All the parties' written testimony and exhibits submitted in this proceeding were admitted into the record and have been considered as part of this proceeding. The parties and the Hearings Officer had the opportunity to cross-examine each witness that presented testimony and the oral testimony presented at the hearings has also been evaluated and considered.

8. Following the close of the initial hearing, there was a release of fuel into the environment from the Red Hill facility (*see* Updated Supplemental Written Testimony of Nicole M. DeNovio ("Supp. DeNovio Test."), ¶¶ 2-3, 8) and at the request of the BWS, the proceeding was reopened to allow for additional information and testimony related to that release.

9. A hearing was conducted on July 7, 2021 to allow for cross-examination of the sole witness who presented testimony and expert opinion related to the May 2021 release, Dr. Nicole M. DeNovio on behalf of the BWS.

B. The Parties

10. The Navy is the owner and operator of the Red Hill facility. Exhibit B-1 at BWS000011. The Navy is seeking a permit to operate the Red Hill facility under State law, including H.R.S. Chapter 342L and HAR Chapter 11-280.1. *See* Exhibits B-77, B-246 through 252, and B-301 through 304.

11. The BWS is the largest municipal drinking water utility in the State of Hawaii and is responsible for managing Oahu's municipal water resources and distribution system. Kawata Test. at ¶¶ 6-7. The BWS' mission is to provide safe, dependable and affordable water now and into the future. Kawata Test. at ¶ 6. The BWS has a public trust responsibility to protect the water resources that it manages and to preserve the rights of present and future generations in the waters of the State. Kawata Test. at ¶ 8. As a direct result of the Navy's past fuel releases into the environment, the BWS has devoted considerable time and resources to addressing damage to Oahu's sole source groundwater aquifer. Kawata Test. at ¶ 22.

12. The Sierra Club is a nonprofit corporation with more than 2,700 dues-paying members who live on Oahu and depend on the clean drinking water from the sole source aquifer that underlies the Red Hill facility. The Sierra Club's mission includes the protection of natural resources, including the purity of groundwater. Declaration of Jodi Malinoski, ¶ 7.

13. The Environmental Health Administration is a division of the Department of Health that is tasked with reviewing, analyzing, and recommending how applications for USTs should be resolved.

C. History and Description of the Red Hill Facility

14. The Red Hill facility is located on the island of Oahu, Hawaii, approximately 2.5 miles northeast of Pearl Harbor. It occupies approximately 144 acres of land along the western edge of the Koolau Range situated on a topographic ridge that divides the Hawala Valley and the Moanalua Valley. It consists of twenty field-constructed USTs as well as other infrastructure. Kawata Test. at ¶¶ 10, 12; Exhibit B-2.

15. In addition to the twenty USTs, the Red Hill facility includes seven miles of tunnels with 29 miles of pipelines, ventilation systems with air intakes and exhaust portals, a pumphouse, control room, surge tanks, slop oil and oil recovery facilities, and a pier that can fuel ships. Testimony of Blake Whittle (“Whittle Test.”) at NAVY0027276; Testimony of John Floyd (“Floyd Test.”) at NAVY0026808.

16. The twenty USTs were constructed during the early 1940s by mining into the ridge to create cavities for concrete tank lined with ¼ inch steel plates welded together. Guniting was used to line the rock cavities. The steel lining was built against a steel rebar framework and then concrete was pumped over the steel framework. The reinforced concrete is estimated to vary in thickness from 2 to 4 feet. Guniting lines the rock cavities. After the concrete set, pressurized grout was pumped between the concrete and the guniting layer. Whittle Test. at NAVY0027280. The concrete, the guniting, and the surrounding bedrock support the steel liner. *See id.*

17. The bottoms of the USTs are located approximately 100 feet above a groundwater aquifer used as a drinking source by the BWS and the Navy. Kawata Test. at ¶ 15; Exhibit B-1.

18. There is no corrosion protection on the outside surface of the steel liner of the Red Hill tanks, as it was not and cannot be painted, coated, or cathodically protected. *See* Updated Written Testimony of David M. Norfleet (“Norfleet Test.”), at ¶ 10.b; Expert Report: Evaluation of Underground Storage Tanks at the Red Hill Bulk Fuel Storage Facility (“Norfleet Expert Report”), at iii-iv.

19. The outside of the tanks, the concrete shell, and the surrounding guniting cannot be accessed and have not been repaired, maintained, or upgraded since the original

construction nearly 80 years ago. *See, e.g.*, Hr’g Tr. Vol. I, 189:7-194:15 (Navy witness Mr. John Floyd recognizing that Red Hill Tanks 3, 4, 7, 8, 9, 10, 11, and 12 either have no inspection history or are “overdue for an inspection”); *see also* Hr’g Tr. Vol. II, 276:3-10 (Navy witness Mr. Frank Kern testifying that “the answer to your question is yeah, we cannot inspect that [the back side of the Red Hill tanks], correct, visually”).

20. Each tank is approximately 250 feet tall, 100 feet in diameter, and provides a fuel storage capacity of up to 12.5 million gallons of jet or marine. Whittle Test. at NAVY0027272; Kawata Test. at ¶ 12.

21. The Navy stores marine diesel (F-76) and two types of jet fuel, JP-5 and F-24, at Red Hill. Testimony of Danae Smith (“Smith Test.”) at NAVY0027318.

22. Two of the tanks have been removed from service (Tanks 1 and 19), but not officially closed. Kawata Test. at ¶ 13; Exhibit B-1. Another two to three tanks are generally empty as part of the Navy’s ongoing clean, inspect, and repair program. The Navy generally stores fuel in 14 or 15 tanks at Red Hill, with a total capacity of over 187 million gallons of fuel. Norfleet Expert Report at 3.

23. The tanks are connected to three pipelines that run for approximately 2.5 miles through an underground access tunnel to the underground pumphouse at Pearl Harbor. The fuel can be moved from the Red Hill tanks to Pearl Harbor via gravity. A pumping station controls tank filling and dispenses fuel to ships and Hickman Airfield. Whittle Test. at NAVY0027272.

D. Strategic Importance of the Facility

24. The Navy stores at Red Hill approximately 27 percent of all the Navy fuel in the Pacific, 16 percent of all the Navy fuel worldwide, and 5 percent of all Department of

Defense fuel. Whittle Test. at NAVY0027265. It provides fuel to support the Navy, the U.S. Air Force, the U.S. Marine Corps, U.S. Army, Hawaiian National Guard, and the U.S. Coast Guard. Testimony of Donald Panthen (“Panthen Test.”) at NAVY0026879.

25. Given that the Red Hill facility provides the single largest fuel reserve of the Department of Defense and is strategically located to provide fuel for key military and safety operations, it is considered a critical resource. The fuel helps ensure that the U.S. military can respond to emergencies in the Pacific whether they be the result of hostile acts or natural disasters. Whittle Test. at NAVY0027273.

26. The location of the facility on top of Red Hill allows for fuel to be supplied through gravity fed pipelines, allowing it to continue to provide fuel even in the face of power outages. Panthen Test. at NAVY0026880. The entire facility can operate without external power. Whittle Test. at NAVY0027272.

27. Red Hill is a strategic fuel facility required by U.S. Indo-Pacific Command to store Petroleum War Reserve Stocks. Panthen Test. at NAVY0026879.

E. Environmental Setting

28. The Red Hill facility sits directly above Oahu’s federally designated sole-source groundwater aquifer, the Southern Oahu Basal Aquifer. In 1987, the U.S. Environmental Protection Agency determined that this aquifer is the “principal source of drinking water” for the island and that “[i]f contaminated, would create a significant hazard to public health.” Exhibit B-5.

29. The Southern Oahu Basal Aquifer is irreplaceable. The aquifer is fresh, with less than 250 milligrams per liter of chloride. It is highly vulnerable to contamination. Kawata Test. at ¶ 16; Exhibit B-4. Should the sole source aquifer become contaminated, there

would be a significant impact on the available drinking water available for the citizens of and visitors to Oahu. *See* Written Reply Testimony of Nicole M. DeNovio (“DeNovio Reply Test.”), at ¶ 4; Report: Soul Source Aquifer Reply Testimony (“DeNovio Reply Expert Report”), at 4, fig. 3.

30. The BWS supplies drinking water to residents from Moanalua to Hawaii Kai. Seventy-seven percent of the total island-wide water supply comes from the Southern Oahu Basal Aquifer. This is an area that could be impacted by releases from the Red Hill facility.

31. Currently, fuel releases from the Red Hill facility have not caused any measurable impacts to the drinking water supplied by the BWS. Hr’g Tr. Vol. V, Testimony of Erwin Kawata, 982:24-983:25. However, the groundwater under the Red Hill facility has been impacted by Navy operations. *Id.* at 985:11-19. Given that the drinking water supply and the groundwater under the Red Hill facility come from the same aquifer (DeNovio Reply Expert Report, at 3), the drinking water supply could be impacted in the future.

32. The environment that underlies Red Hill is a highly complex and sensitive environment. *See* Updated Written Testimony of Nicole M. DeNovio (“DeNovio Test.”), at ¶ 9.a; Report: Evaluation of Hydrology, Groundwater Flow and Contaminant Fate and Transport (“DeNovio Expert Report”), at 2-13. While the Navy has completed some studies of the subsurface environment, the evidence in the record is not sufficient to determine a substantiated understanding of the likely transport of contaminants that are released. DeNovio Expert Report, at 14 (stating that limitations in Red Hill’s monitoring networks result in conclusions about the safety and operations at Red Hill as “premature and speculative.”).

33. The subsurface environment includes various geological formations which are intermixed and form complex pathways for fluids and vapors, including released fuel and

fuel constituents, to move through the subsurface. DeNovio Expert Report, at ii (“The complex subsurface, characterized by a complicated network of high-speed pathways that can distribute the contaminants, does not prevent the fuel constituents from reaching the Sole Source Aquifer.”), 7 (“These lavas, clinker zones, and lava tubes are found intermixed, forming complex pathways for fluids to move through the subsurface.”), 9 (“Fractured, volcanic rocks have unique characteristics in that water and contaminants (liquid and vapor) travel in discrete pathways that may be highly spatially variable, fragmented, and discontinuous, and directionally dependent.”). This means that: (1) it is difficult to determine where releases have and will travel; and (2) that there are pathways through which it can reach the sole source aquifer. Accordingly, based on the evidence in the record, it is assumed that released fuel presents a risk to the groundwater underlying the facility and the sole source aquifer generally. *Id.* at 21 (“The fact that the released fuel is present in the environment and can reach the Sole Source Aquifer is apparent from an examination of rock cores removed from under the Tank Farm, evaluation of vapor sampling results, and analysis of groundwater trend data.”).

F. Releases from the Facility to the Environment

34. There have been episodic releases from the facility over the past 80 years. Hr’g Tr. Vol. I, Testimony of Danae Smith, at 131:1-11; Norfleet Expert Report, at 8-10; Exhibits B-12; B-10; B-15; B-193; B-196; B-198; B-232; B-276; B-296; B-306; B-307. Releases started occurring as early as the 1940s and have continued to occur since 2014 (Hr’g Tr. Vol. III, Testimony of Darrell Frame, at 573:4-9; Exhibits B-11; B-12; B-13; B-14; B-15) and as recent as May 2021 (Supp. DeNovio Test. at ¶ 8). Prior to the February 2021 hearing on this matter, it was estimated that there had been at least 72 fuel release incidents involving more than 175,000 gallons of fuel. Norfleet Expert Report at 8, Appendix C. Since the initial hearing,

there has been an additional release of fuel of an unknown quantity into the environment in May 2021. Supp. DeNovio Test. at ¶ 8.

35. The evidence shows that it is likely that not all releases have been documented and that not all documented releases have volume estimates. Therefore, it is more likely than not that the identified 73 fuel release incidents and the more than 175,000 gallon release volume are both underestimates of the total number of release incidents and the total volume of fuel that has been released historically from the Red Hill facility. Norfleet Expert Report at 8-9.

36. In January 2014, the Navy reported a release into the environment of approximately 27,000 gallons of fuel from Tank 5. This release occurred during the filling of Tank 5. During the filling, alarms were triggered but operators presumed the alarms were falsely activated and did not immediately react. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 62:15-24. Although the release occurred between December 12, 2013 and January 6, 2014, the Navy did not verbally report the release to DOH until January 13, 2014. Kawata Test. at ¶ 20; Exhibits B-1; B-6. Based on this evidence, it appears that the Navy did not have in place at that time procedures to ensure timely response to and notification of the DOH of releases that could threaten the environment. There is no evidence presented that demonstrates that such notification procedures are now in place and it is therefore found that this remains a risk.

37. Following the release from Tank 5, there was a “reappearance of fuel on the lower tunnel wall after the tank was refueled” and “the monitoring well nearest to Tank 5 [showed] a signature spike of petroleum products.” Hr’g Tr. Vol. I, Testimony of John Floyd, 160:17-161:7. These readings and observations show that the fuel released was not contained within the facility but rather was released into the environment.

38. A few months before the leak occurred, Tank 5 had undergone and passed a tank tightness test. Hr'g Tr. Vol. I, Testimony of Blake Whittle, 64:14-19. This demonstrates that while tank tightness testing may show that a tank is "tight" at the time of a test, it is not necessarily predictive of future conditions that may be present. *See* Norfleet Expert Report at 67.

39. Although the Navy presented no evidence that a formal root cause analysis has been conducted concerning the Tank 5 release reported in January 2014, the Navy assumes that the leak in Tank 5 was caused by a contractor improperly performing maintenance and drilling holes through the tank. Hr'g Tr. Vol. I, Testimony of Blake Whittle, 64:14-19; *see also id.*, Testimony of John Floyd, 162:5-9 (stating he was not aware of any root cause analysis of the 2014 Tank 5 release being conducted).

40. The Navy does not know where the fuel released from Tank 5 went or how it traversed through the environment. Hr'g Tr. Vol. II, Testimony of Frank Kern, 375:15-376:10. It conducted several investigations, but it was not able to locate any of the fuel or identify the pathways for its release into the environment. *Id.*

41. Although the Navy claims that the Red Hill facility was designed to have multiple layers of protection between the fuel and the environment, vast quantities of fuel have been released over the years, including the 2014 release from Tank 5 and the May 2021 release from the supply pipe near Tank 20. These releases have impacted the environment as is evidenced by detection of fuel and fuel constituents in the groundwater under the facility and the detections in the soil vapor monitoring probes in the rocks beneath the facility. Kawata Test. at ¶ 19; DeNovio Expert Report at 21; Supp. DeNovio Test. at ¶ 8. The fuel could only reach the environment by moving through the tank or piping walls, the concrete, the grout, and the gunite that surrounds the USTs and the facility. *See* Norfleet Expert Report at 3 (there are pathways for

leaked fuel to reach the environment as the concrete structure provides structural support, not fluid containment); *see also, e.g.*, Hr’g Tr. Vol. II, Testimony of Frank Kern, 307:22-25 (noting that fuel can move through cracks in the concrete; *id.*, Vol. III, 535:2-9 (Navy witness Dr. Gaur Johnson acknowledging that “concrete cracks” and that “fuel could go through the cracks in the concrete” into the subsurface environment). Therefore, it is found that these structural layers do not provide a meaningful barrier between fuel released from the USTs and the environment. The only true barriers for the USTs are the corroding steel liners.

42. The amount of total petroleum hydrocarbons as diesel (TPH-d) detected in Red Hill Monitoring Well 2 and other monitoring wells exceed existing DOH environmental action limits (EALs) for gross contamination and drinking water toxicity. The EAL is the amount below which the contaminants are assumed to not pose a significant threat to human health or the environment. Kawata Test. at ¶ 32; Exhibit B-16; *see also*, Hr’g Tr. Vol. V, Testimony of Erwin Kawata, 998:11-1000:3. Accordingly, it is found that the releases from the Red Hill facility pose a threat to human health and the environment.

G. Current Condition of the Facility

43. The integrity of the steel liners in the USTs is critical to ensure fuel will not be released into the environment. Norfleet Expert Report at 12. The backsides of the tanks are experiencing corrosion, as demonstrated by ten coupons that were removed from Tank 14 in 2018 as part of the Navy’s destructive testing. Exhibits B-160; B-267 at BWS031009 (“The principle problem manifesting itself now may be corrosion on the exterior of the steel liner, resulting in through plate corrosion.”); Exhibit B-170 at BWS024499, BWS024503 (“Current and previous inspection have found corroded areas in the steel liner requiring repair such as

pitting holes, plate thinning and, defective welds ... The existing steel liner is subject to external corrosion and will continue to corrode. Over time corrosion holes will develop”).

44. When water is present, steel is subject to corrosion. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 68:16; Jamond Test. at NAVY0026769 - NAVY0026770; Exhibit B-267 (“Water intrusion through the concrete, and collecting behind the steel liner, has been a recognized problem since original construction.”); Norfleet Expert Report, at 62. Of the 10 coupons removed from Tank 14 in 2018, at least five of them were wet or damp on the exterior when extracted. *See* Exhibit B-160 at BWS023597, BWS023600, BWS023612, BWS023620. Based on this evidence, it is assumed that a significant portion of the backside of the tanks’ steel liners may be exposed to moisture and are therefore experiencing corrosion.

45. The Navy relies on the USTs’ surrounding concrete to act as a barrier to protect the steel liner from corrosion. While concrete can provide some protection from corrosion, this is minimized when the steel and the concrete are not in intimate contact. Of the ten coupons extracted from Tank 14 in 2018, eight were found to have at least some separation (void space) between the concrete and the steel liner. Exhibit B-160 at BWS023595 - BWS023618. Based on this evidence, there is likely a separation between the concrete and the steel liners on significant areas of all the USTs currently in use at the Red Hill facility.

46. The Navy testified that they have procedures in place to ensure that whenever fuel is moved, there are necessary steps to ensure only secured movement occurs. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 107:8-13. Even with these measures in place, on May 6, 2021, the Navy released approximately 1,000 gallons of jet fuel from supply piping in the lower access tunnel underneath the Red Hill USTs during the refilling of Tank 20 which resulted in a release to the environment. *See* Exhibit N-143A; Supp. DeNovio Test. at ¶ 8. It is therefore

found that that the Navy has not presented evidence to demonstrate that it has procedures in place to ensure the safe operation of the Red Hill facility.

47. The primary fuel release prevention method used at Red Hill is the Tank Inspection Repair and Maintenance (TIRM) process. Floyd Test. at NAVY0026817. This is a three-part process: (1) tanks are inspected with non-destructive technologies; (2) holes are drilled, tested for gas, and repaired; and (3) patch plates are welded on, inspected, and tested for integrity. *Id.* During the maintenance, portions of the interior tank steel liner are also recoated to attempt to prevent internal corrosion from occurring on the inside of each UST. *Id.* The other mitigation measures implemented at the Red Hill facility, such as tank tightness testing, groundwater monitoring, and vapor monitoring, are designed to detect releases after they happen and do not prevent releases from occurring. Hr'g Tr. Vol. V, Testimony of Erwin Kawata, 1016:17-1017:5.

48. The Navy has identified the small nozzles installed on the USTs as being a potential risk for fuel releases. Floyd Test. at NAVY0026817. Based on this conclusion, the Navy determined that the small nozzles should be replaced with larger nozzles that can be physically inspected and repaired. *Id.* To date, the small nozzle at Tank 5 is the only one that has been replaced. Hr'g Tr. Vol. I, Testimony of John Floyd, 174:16-20. The other thirteen USTs currently in operation (i.e., not undergoing maintenance) still use small nozzles, which cannot be internally inspected and present a risk. *See id.* Under the current schedule, it is anticipated that all the small nozzles on the 18 USTs still placed into service will not be replaced until 2032-2035. Hr'g Tr. Vol. I, Testimony of John Floyd, 175:1-13. For purposes of evaluating the current permit application, it is assumed that most of the USTs will not be upgraded with the large nozzles and that this identified risk will remain.

49. In 2015, the Navy changed the corrosion coating system specification for its USTs to specify the application of polysulfide interior coating to the USTs at Red Hill. Based on experience at other facilities, the Navy has determined that this coating has a better life-cycle alternative than the PFU coating previously used and would therefore provide additional protection against internal corrosion. Jamond Test. at NAVY026763. However, given that only Tank 5 has completed repair since 2015, none of the other USTs have benefitted from this identified enhanced protection. Based on the evidence presented, it is found that most of the USTs will not receive the enhanced coating during the time period for the permit application under review.

50. Tank tightness testing is a method designed to determine if a tank is leaking. It is a leak detection method and not a leak prevention method. Hr'g Tr. Vol. I, Testimony of Blake Whittle, 59:17-19. Additionally, tank tightness testing only measures conditions found at the tank at the moment the test is done and does not measure the future condition of the tank. *Id.*, at 64:24 (“Yes, it [tank tightness testing] cannot predict the future.”). It also can only detect leaks to a certain minimum level. For the Red Hill USTs, the leak detection level is at or above 0.5 gallons per hour (gph). Testimony of Christopher D. Caputi (“Caputi Test.”), Letter from C. Caputi to J. McKay Re: Haw. Dep't of Health Hr'g, for Doc. No. 19-UST-EA-01; contested case draft permit for the Navy Red Hill Underground Fuel Storage Facility (Jan. 15, 2021) (“Caputi Letter”) at 8. A leak that is below that level would not be detected through a tank tightness test. Hr'g Tr. Vol. II, Testimony of Christopher Caputi, 220:22-25.

51. If there was a chronic leak below the minimum established threshold of the tank tightness testing, it would not be detected. *Id.* at 221:1-19. It could continue

indefinitely until it exceeded the minimum detection threshold. *Id.* For example, a leak of around 0.4 gph, left undetected could result in an annual release of over 3,000 gallons of fuel. *Id.* at 259:25-260:18. It is concluded that a chronic leak would likely be undetected.

52. There are currently only three, two-inch diameter groundwater monitoring wells installed within the 450 feet footprint of the Red Hill USTs. DeNovio Expert Report at 14. One of these three wells was incorrectly installed and requires replacement. DeNovio Expert Report at 17. Only two of these three wells provide data regarding the constituents in groundwater at the water table below the tank. *Id.* at i. The sparsity of the groundwater monitoring network does not provide information about the overall conditions of the groundwater underlying either the Red Hill USTs or the facility and it is therefore not possible, based on the evidence in the record, to make a determination regarding the current condition of the sole source aquifer under the Red Hill facility. *Id.* at 14. The Navy has indicated that it will install additional wells (Hr'g Tr. Vol. III, Testimony of Curtis Stanley, 724:18-725:4), but such additional wells are not included in the application and therefore will not be taken into consideration.

53. The Navy has installed soil vapor monitoring probes in order to identify leaks that occur. Hr'g Tr. Vol. III, Testimony of Darrel Frame, 645:2-5; Floyd Test. at NAVY026831. When there is a release of fuel into the environment, vapors from the fuel product will be present in the soil or rocks. The monitoring probes register the volatile organic compounds (VOCs) in this vapor. This is evidenced by spikes in soil vapor in the area under the tanks following the 2014 release from Tank 5. Hr'g Tr. Vol. III, Testimony of Darrel Frame, 645:2-5. The May 2021 release resulted in similar spikes at Tanks 15, 16, 17, 18, and 20. Supp. DeNovio Test. at ¶ 8; Exhibits B-404; B-405. These types of spikes demonstrate that released

fuel has reached the environment and not been contained within the Red Hill facility. Supp. DeNovio Test. at ¶ 8.

54. There are currently insufficient procedures in place for mitigating a release from the Red Hill facility. Floyd Test. at NAVY0026819 (“It is my understanding that the Navy is working with the Regulating Agencies through the AOC to meet its mitigation requirements.”).

55. The Red Hill facility is in an area subject to seismic activity and the Navy is planning to conduct a study regarding the risk that this presents. Testimony of Gaur Johnson (“Johnson Test.”), at NAVY0026937. That investigation has not yet been completed. Hr’g Tr. Vol. III, Testimony of Dr. Gaur Johnson, 469:12-25. Based on information available regarding releases that occurred following the known 1948 release, it appears that ground shaking has the potential to result in releases. *See id.* at 467:5-471:25; Exhibit B-12 at BWS003966. Accordingly, there is not sufficient information to determine the level of risk associated with potential seismic activity and it must be assumed that there is some risk.

H. Risks Associated with Facility

56. The DOH has recognized that storing up to 187 million gallons of fuel 100 feet above a drinking water source is inherently dangerous. Exhibit B-21. The Navy has also recognized this risk. *See* Exhibit B-145 at BWS023203 (“potential pollution of the Red Hill potable water aquifer that lies less than 100’ under the Red Hill tanks is real.”).

57. At the time of the release from Tank 5 that was reported in January 2014, the Red Hill tanks were not being operated in a manner that was “fully protective of the environment.” Hr’g Tr. Vol. I, Testimony of Blake Whittle, 121:3-7. Although there have been upgrades and improvements made at the facility (*see id.* at 106:15-107:24), the Navy has not

presented sufficient information to demonstrate that the Red Hill facility is currently being operated in a manner that is fully protective of the environment.

58. Following the 2014 Tank 5 release, the DOH concluded that operation of Red Hill “should only exist on the condition that the facility be upgraded with secondary containment and state-of-the-art leak detection to ensure safe operations and prevent adverse impacts to the environment.” Exhibit B-21 at BWS006270. Secondary containment has not been installed and the leak detection methods utilized at the facility do not and cannot accurately identify or measure the corrosion that is occurring on the backside of the tanks’ steel liners. Norfleet Expert Report at 16. The Navy plans to install additional leak detection measures (Hr’g Tr. Vol. I, Navy Opening Statement, 26, 32), but those measures have not been installed and are not considered as part of this permitting proceeding. Therefore, it is found that by utilizing the current operations described in the application, the Navy cannot reliably repair corrosion damage and breaches will likely occur in the future. Norfleet Expert Report at 16. This represents a significant risk to the environment.

59. As the facility is currently constructed, operated, and maintained, future releases of fuel are inevitable because the Navy is currently conducting an integrity management strategy that will not prevent future releases. Norfleet Test. at ¶ 10.a; Norfleet Expert Report at iii, 12-61.

60. Corrosion is a major threat to the Red Hill USTs. Norfleet Test. at ¶ 10.b; Norfleet Expert Report at iii-iv, 9-10, 12. The outside or backside of the steel liners cannot be directly inspected or maintained. Hr’g Tr. Vol. II, Testimony of Frank Kern, 276:3-10 (testifying that “the answer to your question is yeah, we cannot inspect that [the back side of the

Red Hill tanks], correct, visually”); Norfleet Expert Report at 12. It is not possible to determine the current conditions of the outside of the steel liners.

61. Water is present on the outside of the steel liner, and the steel liner does not have any corrosion protection. Norfleet Expert Report at 6. Therefore, corrosion is occurring at some or all the in-service USTs at Red Hill. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 71:13 (“I’m not denying that corrosion’s occurring...”); Hr’g Tr. Vol. V, Testimony of David Norfleet, 1024:20-21.

62. If left untreated, corrosion can eat through steel and create through holes over time. Hr’g Tr. Vol. V, Testimony of David Norfleet, 1024:22-1025:1; Norfleet Expert Report at fig. 4, 5, 6. There have been numerous through holes in the Red Hill USTs that resulted from corrosion. Hr’g Tr. Vol. II, Testimony of Frank Kern, 309:22-24; Norfleet Expert Report at fig. 4, 5, 6. When there is a through hole that goes through the steel liner, there is no impermeable surface between the stored fuel and the environment. This means that fuel will be released into the environment. No Navy witness could testify to the precise amount of through holes that have been documented at the Red Hill facility. Hr’g Tr. Vol. II, Testimony of Frank Kern, 312:22-24.

63. The steel liners at the Red Hill facility have experienced corrosion in the past. Hr’g Tr. Vol. I, Testimony of Danae Smith, 137:19-22. When the Navy removed ten coupons of the steel lining from a UST, corrosion was found on the exterior wall of each coupon. Hr’g Tr. Vol. I, Testimony of John Floyd, 164-169; Exhibit N-032; Norfleet Expert Report at 27-29. It is therefore found that untreated corrosion on the Red Hill USTs present a significant threat to the environment.

64. The parties agree that concrete can crack. Hr’g Tr. Vol. II, Testimony of Frank Kern, 306:18-19; Hr’g Tr. Vol. III, Testimony of Gaur Johnson, 535:2-9. The concrete surrounding the tanks and the facility is more than 80 years old. The cracks in the concrete can provide a pathway for released fuel to reach the environment.

65. The fact that water has been found on the backsides of the USTs indicates that there are pathways for water to reach the steel liner through the surrounding concrete and other structural layers. Norfleet Expert Report at 27, fig. 10. This demonstrates that there are also pathways for fuel released from the USTs to reach the environment. Norfleet Expert Report at 3.

66. The Navy has not been able to find the fuel associated with known releases from the facility including the Tank 5 release and the most recent May 2021 release. Hr’g Tr. Vol. I, Testimony of John Floyd, 202:14-25 (confirming that the Navy never found the fuel from the Tank 5 fuel release).

67. While the precise location of the released fuel is not known, it is known that the released fuel has impacted the underlying sole source aquifer. DeNovio Test. at ¶ 9.b; DeNovio Expert Report at i, 31, 43. Such impacts may be irreparable, particularly given the fact that the Navy currently has no methods in place to address contamination of groundwater. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 92:15-25; Floyd Test. at NAVY0026819 (“It is my understanding that the Navy is working with the Regulating Agencies through the AOC to meet its mitigation requirements.”).

68. As the parties recognize and the Navy admits, Hawaii’s UST regulations were enacted to protect human health and the environment. Hr’g Tr. Vol. I, Navy Opening

Statement, 15:17-24, 19-20. Compliance with these regulations is critical to protecting the environment.

69. If the Automated Fuel Handling System (AFHS) indicates that there has been a leak from a tank, the leak cannot be addressed until the tank is drained. If a tank is full at the time of the leak, it will take between 12-24 hours to drain the tank. During this drain down time, fuel may be being released from the tank. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 62:12-14. This could constitute a significant risk to the environment.

70. Potential for human error has been and remains a significant concern at the Red Hill facility. Human error caused and/or contributed to the release of fuel to the environment on numerous occasions including the 2014 release from Tank 5 (*id.* at 62:15-24) and the most recent documented release from the pipeline under Tank 20 (Reopened Hearing Tr. at 7:15-18). Despite the Navy’s efforts to add new systems, training, and policies to ensure that such errors will not result in releases, this remains a significant risk as evidenced by the May 2021 release.

71. The Navy has identified the most likely source of a catastrophic release to be a result of some failure in the pipeline system. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 72:7-11. To contain such a release, the Navy has installed a door to lock fuel released from a pipeline in the lower access tunnel. *Id.* at 72:14-21. There is no evidence that the lower access tunnel could contain the fuel and there has been no tightness testing done on the lower access tunnel. Hr’g Tr. Vol. I, Testimony of John Floyd, 200:5-18. Fuel released from a pipeline during the May 2021 spill was not contained within the lower access tunnel and was released into the environment. Reopened Hearing Tr. 7:25-8:11 (“we see elevated or pronounced spikes of soil vapor readings at Tanks 20, 17, 18, and 15 and 16 in particular...So based on that

information, the fuel from the tunnel was not contained in the tunnel, and the soil vapor probes indicate that fuel was released to the environment.”).

72. The Navy hired ABS Consulting to conduct a risk assessment. The Phase 1 QRVA found that: (1) there is a greater than 27 percent probability of an acute sudden release of between 1,000 and 30,000 gallons of fuel from the Red Hill Facility each year (Exhibit B-15 at BWS005021; *see also* Hr’g Tr. Vol. III, Testimony of Darrel Frame, 575:9-10); (2) there is a greater than 34 percent chance of a sudden release of more than 120,000 gallons of fuel from the Red Hill Facility within the next 100 years (Exhibit B-15 *see also* Hr’g Tr. Vol. III, Testimony of Darrel Frame, 576:7-8); and (3) the expected volume of chronic, undetected fuel releases from the Red Hill facility is 5,806 gallons per year (Exhibit B-15 *see also* Hr’g Tr. Vol. III, Testimony of Darrel Frame, 577:4). The Navy agrees that these levels of risks are unacceptable. Hr’g Tr. Vol. III, Testimony of Darrel Frame, 575-576.

73. In the event of a fuel release into the groundwater, the Navy has not presented any evidence or testimony to demonstrate that it has committed to any meaningful plans, procedures, or arrangements to treat impacted groundwater. *See, e.g.*, Hr’g Tr. Vol. I, Testimony of Blake Whittle, 74-75. Commander Whittle speculated that the Navy would likely pump the contaminated groundwater by using the existing Red Hill pumps and send it to an existing wastewater treatment facility. *Id.* at 74:6-11. Commander Whittle, however, acknowledged that this would only be a temporary solution based on the existing infrastructure. *Id.* at 74:9-11. Additionally, he admitted that the Navy does not have any arrangement with an existing wastewater treatment facility to treat contaminated groundwater. *Id.* at 74:25-75:2 (“I don’t know if [arrangements with a wastewater treatment facility] have been fully fleshed out, but that’s what I would recommend.”). Mr. Floyd testified that the Navy is currently working

with state agencies on these issues but did not provide any evidence regarding any procedures that would be implemented if there was a release today or during the proposed permit timeframe. Floyd Test. at NAVY0026820.

74. The Navy is required to update its Groundwater Protection Plan every five years. Exhibit B-373 at BWS040922. Based on the evidence in the record, the Groundwater Protection Plan has not been updated since 2014, more than seven years ago. *Id.*; Hr'g Tr. Vol. I, Testimony of Blake Whittle, 91:23-92:1 (admitting that he was not aware of any update having been done to the Groundwater Protection Plan). No other Navy witness presented evidence which demonstrated that the Navy has such arrangements in place. Accordingly, it is found that the Navy does not have measures in place to address groundwater contamination were it to occur during the proposed permit time frame.

75. The Navy has not been able to determine what has happened to the fuel that has been released from the Red Hill facility. However, for the 2014 release of approximately 27,000 gallons of fuel from Tank 5, the Navy acknowledges that fuel reached the rock and the Navy's monitoring showed spikes in soil vapor monitoring. Hr'g Tr. Vol. I, Testimony of Blake Whittle, 109:5-22.

76. It is critical to understand the direction and rates of groundwater flow, along with potential pathways for constituents, in order to assess the risk associated with releases from the Red Hill facility. DeNovio Expert Report at 18. The record does not include sufficient information to assess the direction and rates of groundwater flow. Therefore, it must be assumed that fuel released from the facility presents a risk to the underlying groundwater aquifer and ultimately to the State's drinking water.

77. It has been conclusively demonstrated that fuel released from the Red Hill facility has reached the environment, including the sole source aquifer under the facility. *See* Exhibits B-373 at BWS040922 (“Previous environmental Site Investigations (SIs) at the Facility showed that past inadvertent releases have contaminated the fractured basalt, basal groundwater, and soil vapor beneath the Facility with petroleum hydrocarbons.”); B-11 at BWS003849 (“site investigations have shown evidence of fuel releases which have resulted in contamination of the rock bed, soil, and groundwater surrounding the RH tanks.”). Following the 2014 release from Tank 5, fuel traveled through the 20-foot thick reinforced concrete plug the tanks rest upon and stained the wall in the lower access tunnel. Hr’g Tr. Vol. I, Testimony of John Floyd, 184:5-13.

78. Evidence of prior fuel releases impacting the environment is also documented by the observation of the drill core from borings removed during a subsurface investigation that contained staining, odors, sludges, and sheens from fuel products. DeNovio Expert Report at 25-28. Data from soil vapor monitoring further supports this conclusion. *Id.* at 29-31.

79. There is evidence that the environment around the Red Hill facility has some ability to hold released fuel and that there is natural attenuation that can remediate fuel given sufficient time. *Id.* at 37. There is not, however, evidence in the record to establish a reliable rate of attenuation or to conclude that this rate is sufficient to eliminate risks to the groundwater following releases. *Id.* at 29-31. Therefore, the Navy has not demonstrated that the fuel previously released does not represent a risk to human health and the environment nor that future releases will not pose such a threat.

I. Maintenance of Facility

The Tanks

80. The only way to ensure the integrity of the steel liners is through a vigorous and thoroughly reliable inspection and repair program. Hr’g Tr. Vol. I, Testimony of Blake Whittle, 75:22 (“inspections are critical to the facility.”). Conducting reliable and appropriate API 653 inspections, which is the Navy’s method for testing the integrity of the USTs, is critical to the safe operation of the Red Hill facility. Hr’g Tr. Vol. II, Testimony of Frank Kern, 277:1-5. The majority of tanks have not undergone API 651 inspections. *Id.* at 278:5-281:18.

81. Under API 653, the maximum allowable interval for inspections is 10 years. Exhibit B-6 at BWS001329. Although the Navy has a policy that each UST should be inspected every 10 years unless the corrosion rate is such that an API 653 inspector recommends it can be inspected in 20 years (*id.*), the record shows that the USTs that have been inspected have often exceeded the 20-year target interval in between inspections. Exhibit B-30. The current inspection rate interval is averaging 30 years, with the longest duration being 59 years for Tank 18. *Id.*; *see, e.g.*, Hr’g Tr. Vol. I, 189:7-194:15 (Navy witness Mr. John Floyd recognizing that Red Hill tanks 3, 4, 7, 8, 9, 10, 11, and 12 either have no inspection history or are “overdue for an inspection”); Hr’g Tr. Vol. II, 277:11-280:1 (Navy witness Mr. Frank Kern conceding that the majority of the Red Hill USTs have not undergone the inspection process that the Navy itself claims is the proper standard of care and that more than a quarter of the Red Hill USTs have never undergone any formal API inspection); Hr’g Tr. Vol. III, 277:11-280:1 (Navy witness Darrel Frame admitting that “we have not met or [sic] timeline on some of our tanks” and that at

least eight USTs have not had a major API 653 inspection once every twenty years as required by Navy standards).

82. An inspection program is only reliable if it can detect any and all areas that are vulnerable to corrosion and effectively repair these areas prior to a through hole developing in the steel liner or a failure occurring at a weld. Norfleet Expert Report at 12.

83. In order to ensure that conditions needing repairs are detected prior to there being a through hole, failure of a weld, or other condition that could result in a release from the USTs, the inspection period must be set such that the tank will be re-inspected and repaired prior to such conditions developing. *Id.*; *see also* Hr'g Tr. Vol. III, Testimony of Frank Kern, 297-298. The Navy uses a corrosion rate of 3 mils per year to set its inspection schedule and relies on an assumed steady rate of corrosion. Hr'g Tr. Vol. III, Testimony of Frank Kern, 297:2-15. However, corrosion does not occur at a linear rate. *Id.* at 299:25-16. If the Navy's estimates were accurate, there would not be any through holes for approximately 83 years. *Id.* However, there has been numerous instances of through holes developing during the operational life of the Red Hill USTs. There were through holes found in 1998. Hr'g Tr. Vol. II, Testimony of Frank Kern, 299 (regarding two through holes in Tank 2), 310-311 (regarding 6 through holes found in Tank 16), 357; Hr'g Tr. Vol. V, Testimony of David Norfleet, 1063:7-21. If it is assumed that the corrosion started at the time of the USTs' construction, then the corrosion growth rate would be 4.5 mils per year based on the 1998 through holes. Hr'g Tr. Vol. V, Testimony of David Norfleet, 1063:7-21. This estimate is not conservative, as it assumes without any evidence that the corrosion began at the time of construction. *Id.* If the corrosion did not begin at the time of construction, the corrosion rate would be even higher than these

estimates. *Id.* Accordingly, there is a documented rate of corrosion that is higher than the rate relied on by the Navy.

84. Although the Navy's presumed corrosion rate may be sufficient to ensure some of the tanks are inspected in a time frame that will identify certain significant corrosion areas in need of repair before through holes or other failures occur (Hr'g Tr. Vol. II, Testimony of Frank Kern, 300-303), there will likely be other areas, particularly corrosion outliers, where the corrosion rate is higher than what has been assumed. *Id.* The risk of through holes developing is increased when the tanks are not inspected within the 20-year timeframe. Accordingly, it is found that the corrosion rate on which the Navy uses to set its inspection intervals is not sufficiently protective of the environment. This conclusion is consistent with the DOH and EPA's conclusion that the Navy is underestimating corrosion rates based on the destructive testing conducted at Tank 14. Exhibit N-044 at NAVY0010372.

85. The Navy uses non-destructive examination (NDE) methodologies to indirectly inspect the backside of the Red Hill USTs' steel liners. Norfleet Expert Report at 13. The inspections are conducted primarily by individuals manually inspecting the interior surface of a tank with a hand-held sensor. *Id.* The inspections rely heavily on the skill of the operator and the accuracy of the hand-held scanners. At Red Hill, this requires individuals to manually scan large surface areas which are roughly 30% larger than the size of a football field. *Id.* at 14. The inspectors are required to move a hand-held scanner over the surface of the tanks while monitoring a computer screen to note possible defects. *Id.* at 15. The inspectors do this task while working off a suspended scaffolding while the USTs are illuminated by artificial lights. *Id.* Given the scale of the tanks and the conditions under which the inspections occur, these methods are inherently unreliable. *Id.* at 13.

86. As part of the AOC process, the Navy was required to assess the effectiveness of its NDE methods. Through this process, Tank 14 underwent an NDE inspection to ascertain the then-existing conditions of the tank. Ten coupons were removed and sent to a laboratory for testing to see if the NDE methods were valid. Of the ten coupons, five of the readings were found to be inaccurate. Exhibit B-160; Hr’g Tr. Vol. II, Testimony of Robert Jamond, 201-207; Norfleet Expert Report at 33, tbl. 4, fig. 12; *see also* Hr’g Tr. Vol. III, 418:9-20 (Navy witness Mr. Robert Jamond agreeing that NDE was only accurate in detecting actionable metal loss 50 percent of the time in the ten coupon samples). Based on this data, the Navy’s NDE process is determined to not be reliable in accurately identifying areas where repairs are needed. This creates a risk to human health and the environment.

87. The Navy interpreted the destructive testing results as indicative of a sound tank inspection process. The DOH and the EPA disagreed and found that the Navy’s destructive testing did not validate the Navy’s TIRM process and directed the Navy to take further actions. Exhibit B-30. The inadequacy of the Navy’s TIRM process is so apparent that the regulators and the Navy have all agreed to take the extreme step of invoking AOC Section 5.4, which is only to be implemented “[i]f the Parties determine that the results of the previous deliverables in this Section [AOC Section 5 – Corrosion and Metal Fatigue Practices] indicate the need for evaluation and implementation of potential changes in practices to control corrosion or metal fatigue.” Exhibit B-82 at BWS008976. If so, the Navy must take action “for the purpose of developing appropriate modification to the scopes of work and timelines in Section 2 [Tank Inspection, Repair, and Maintenance] and/or Section 3 [Tank Upgrade Alternatives]” and AOC “deliverables shall be modified or added ... to address any needs for further evaluation, development, or implementation of practices to control corrosion or metal fatigue.” *Id.* These

further actions have not yet been completed and the tank inspection process in the application is the same as that which was found to be inadequate by the agencies. At this time, the Navy has not demonstrated that it can reliably identify areas on the USTs that need repair.

88. The amount of corrosion that is repaired following an inspection has increased over time. Hr'g Tr. Vol. II, Testimony of Frank Kern, 281:12-18. Inspections have uncovered large areas where corrosion is significantly weakening the backside of the tank. *Id.* at 278, 314-315 (noting that last time Tank 13 was inspected in 1995, large areas of backside corrosion were found requiring repairs). In such cases, the Navy has had to remove and replace large areas of plates. *Id.*; *see also id.* at 284 (noting that an inspection completed on Tank 13 in 2017 or 2018 found large areas of backside corrosion requiring the replacement of an area of greater than 2 square feet in each location); Exhibit B-297 at BWS031345 (same).

89. Based on the most recent inspections, it appears that on average 1 to 2 percent of the inside of a tank requires repair due to corrosion, representing approximately 8,000 to 16,000 square feet. Within each of these areas, there could be multiple areas where failure of the steel could occur as a result of the corrosion. Hr'g Tr. Vol. II, Testimony of Frank Kern, 350-351. Although the Navy's intent and standard of care is not to allow areas to corrode to failure, such failures have occurred and are anticipated to continue to occur under the Navy's current inspection, maintenance, and repair programs.

90. Based on the evidence presented, it is likely the tanks that have not been inspected have the same defects and corrosion. *See, e.g.,* Norfleet Expert Report at 17-26. Those defects and corrosion have not been repaired and therefore make the USTs vulnerable to releases.

The Pipelines

91. The pipelines are inspected daily by roving patrols and inspected and certified by an American Petroleum Institute 570 standard inspector so that the pipelines are suitable and safe for service. The pipelines are not required to have secondary containment given that they can be visually inspected in the access tunnel. Whittle Test. at NAVY0027281. Despite these inspections, leaks have and can occur from pipelines. Norfleet Expert Report at tbl. 8. The May 2021 release demonstrates that pipeline leaks can result in fuel releases to the environment.

J. Administrative Order of Consent

92. In September 2015, the Navy and the Defense Logistics Agency (DLA) – the owner of the fuel stored at Red Hill – entered into an administrative order of consent (AOC) with the EPA and the DOH requiring the Navy to conduct certain investigations and other work to address fuel releases from Red Hill. The AOC includes a Statement of Work (SOW) that outlines steps “necessary to address potential impacts to human health, safety and the environment ... due to historical, recent and potential future releases at the [Red Hill] Facility.” Exhibit B-81 at BWS008935. While the AOC does not purport to evaluate the Navy’s ability or inability to comply with Hawaii’s UST regulations, much of the work conducted under the AOC relates to issues that are of concern in this proceeding.

93. The AOC consists of eight sections including: “Section 1: Overall Program Responsibility; Section 2: Tank Inspection, Repair, Maintenance (TIRM); Section 3: Tank Upgrade Alternatives; Section 4: Release Detection/Tank Tightness Testing; Section 5: Corrosion and Metal Fatigue Practices; Section 6: Investigation and Remediation of Releases;

Section 7: Groundwater Protection and Evaluation; and Section 8: Risk/Vulnerability Assessment.” *Id.* at NAVY0026882 - NAVY0026883.

94. To date, many of the deliverables required by this order still have not been approved by the regulators, with key Navy reports disapproved and the Navy tank upgrade proposal rejected. *See, e.g.* Exhibits B-30; B-15; B-28.

95. Under Section 2 of the AOC, the Navy was required to develop TIRM procedures. Although the EPA and DOH approved the TIRM procedures in 2017 (Panthen Test. at NAVY0026888), these procedures need to be updated and revised given that the destructive testing conducted under Section 5 showed that the Navy NDE procedures were not sufficiently reliable. *See* Hr’g Tr. Vol. II, Testimony of Frank Kern, 347:13-348:4; Norfleet Expert Report at 33, tbl. 4, fig. 12; *see also* Hr’g Tr. Vol. III, 418:9-20 (Navy witness Mr. Robert Jamond agreeing that NDE was only accurate in detecting actionable metal loss 50 percent of the time in the ten coupon samples).

96. Under Section 3 of the AOC, the Navy is required to evaluate alternatives and to identify in the Tank Upgrade Alternative (TUA) document the best available practicable technology (BAPT) to utilize at the Red Hill facility. Panthen Test. at NAVY0026888. The Navy submitted a TUA Decision Document on September 9, 2019. *See* Exhibit N-101. The EPA and the DOH denied the Navy’s TUA Decision Document because it lacked “detail, clarity, rationale and justification to demonstrate that the actions described in the Decision Document are the best available practicable technology (‘BAPT’) for the tanks and operation at the Red Hill Facility.” Exhibit N-075 at NAVY0011689 - NAVY0011690. The Navy has produced no evidence in this proceeding to document that they have provided further detail, clarity, rationale,

or justification to show that the facility as currently proposed is protective of the environment or any additional measures that will potentially be implemented in the future to meet this standard.

97. In rejecting the TUA Decision Document, the regulatory agencies found that the Navy had not demonstrated that the proposed alternative was the most protective of groundwater and drinking water resources and other options are either less protective or impractical, and that the proposed alternatives adequately mitigated risk. Exhibit N-075 at NAVY0011692 - NAVY0011701. Given that the operation measures proposed in the current application include less protective measures than included in the alternative proposed in the rejected TUA Decision Document, there is no evidence that the operation measures described in the application are adequate to mitigate the risks posed to groundwater and drinking water.

98. Section 4 of the AOC requires the Navy to evaluate the release detection and tank tightness testing procedures implemented at Red Hill and to modify them to be more protective of the environment. *See, e.g.,* Panthen Test. at NAVY0026891. The Navy has increased the frequency of its tank tightness testing under this provision.

99. Section 5 of the AOC requires the Navy to develop a scope of work to evaluate the possibility and extent of corrosion and metal fatigue at the tanks at Red Hill. The Navy is also required to develop best practices to control corrosion and metal fatigue at the tanks. Testimony of Robert Jamond (“Jamond Test.”) at NAVY0026763. As part of the SOW, the Navy completed destructive testing designed to validate the NDE inspection methods used. Panthen Test. at NAVY0026893. The destructive testing report demonstrated that the NDE methods were only accurate 50% of the time, yet the Navy indicated that the destructive testing results indicated that the Navy’s NDE methods were validated. Exhibit B-14 at BWS004832. The DOH and EPA did not concur with the Navy’s conclusion that the NDE results were

validated and disapproved the results of the report. Hr'g Tr. Vol. II, Testimony of Robert Jamond, 422:17-22; Exhibit B-30. The Navy has been ordered to take significant action, conduct additional study, and research into the TIRM process, the sources of corrosion, and possible actions to reduce corrosion rates. *Id.* Until these actions, studies, and analyses are completed, the Navy cannot demonstrate that these measures are reliable.

100. Sections 6 and 7 of the AOC, relating to the investigation and remediation of releases and groundwater modeling, required the submittal of a proposed SOW. On September 15, 2016, the EPA and DOH disapproved the Navy's proposed SOW to comply with Sections 6 and 7. Exhibit B-328. The Regulatory Agencies found that there were several significant flaws in the proposed study approach and assessment. *Id.* On December 2, 2016, the EPA and DOH conditionally approved the Section 6 and 7 SOW but required that the Navy address all the deficiencies identified in the September 15, 2016 letter and attachments. Exhibit B-330. In February of 2018, the EPA and the DOH provided additional comments that were intended to set forth additional processes for modeling groundwater in relation to the work plans. The comments identified a number of concerns with the Navy's proposal, including that the conceptual site model is not sufficiently supported by the data collected to date, that the Navy and its consultants are drawing conclusions prematurely "about key aspects of the model that strongly influence groundwater flow and contaminant fate and transport," that the Navy had not "presented a strategy and framework for evaluating the uncertainty associated with the results obtained from the model," and that the "initial analysis of Non-Aqueous Phase Liquid transport, fate and transformation in the unsaturated zone is not likely to be conservative and appears inconsistent with data collected at the site." Exhibit B-345 at BWS037404. The Navy has not

produced documentation in this record to demonstrate that these issues have been addressed. Accordingly, the groundwater studies produced in these proceedings will be given little weight.

101. Section 8 of the AOC requires the Navy to develop a Risk/Vulnerability Assessment. The Phase 1 of the Risk Assessment was completed by ABS and as previously found, showed a high level of risks for both acute and chronic releases. Exhibit N-031. Phase 2 of the Risk Assessment, which must consider risks associated with external factors such as earthquakes, was disapproved by the EPA and the DOH. Panthen Test. at NAVY0026896; Exhibit N-084.

K. Legal and Regulatory Requirements

Applicability of Regulatory Requirements

102. The Red Hill facility is subject to HAR § 280.1-10(a)(1)(A) and § 280.1-323(a) requiring the Navy obtain a permit for operating the facility after demonstrating that it can meet the requirements of State law. Hr'g Tr. Vol. I, Testimony of Danae Smith, 126:2-11, 135:3-16. The HAR provides the rules by which the Red Hill facility must comply. *Id.*, Testimony of John Floyd, 205:7-17.

103. The Navy is subject to other state law permitting requirements for UST facilities. *Id.*, Testimony of Blake Whittle, 112:2-11.

104. There has not been a determination that the Red Hill USTs comply with Hawaii State UST regulations. Mr. Floyd's testimony that the USTs have met the agencies' determined compliance is not supported by evidence in the record.

Leak Prevention

105. State law requires that all USTs be operated and maintained in a manner that prevents leaks. Hr'g Tr. Vol. I, Testimony of Danae Smith, 129:4-130:12. There have been

numerous leaks from the Red Hill facility in the past. *Id.* at 131:1-11; Norfleet Expert Report at 8, Appendix C; Exhibits B-12; B-10; B-15; B-193; B-196; B-198; B-232; B-276; B-296; B-306; B-307. There is evidence that such leaks are likely to continue. Norfleet Expert Report at 49-61. Specifically, the record shows that given the current condition of the steel liner and the concrete, the only way to ensure leaks do not occur is if the Navy can reliably and accurately detect and repair tank defects in the steel liner and tank system before they occur. *Id.* at 12. Based on destructive testing, the Navy's inspection and maintenance process was found to not be validated. *See* Exhibit B-30. The Navy has not demonstrated that through its current TIRM process, it can identify and repair tanks at Red Hill before corrosion defects breach the internal surface of the steel liners. Norfleet Expert Report at 27. Accordingly, the Navy has not demonstrated that it can prevent fuel releases at Red Hill during the proposed permit term.

Appropriate Construction Materials

106. The Red Hill UST steel liners are compatible with the fuel stored therein. Smith Test. at NAVY0027318; Jamond Test. at NAVY0026773.

Corrosion Protection

107. Under State law, all USTs that routinely contain a regulated substance must be protected from corrosion. HAR § 11-280.1; Smith Test. at NAVY0027319; Hr'g Tr. Vol. I, Testimony of Danae Smith, 127. These provisions apply to the tanks at Red Hill. Hr'g Tr. Vol. I, Testimony of Danae Smith, 135:12-136:14. There are several ways that a tank can meet this requirement. *Id.* at 136:23-137:2. In the Navy's application for Red Hill, it indicated that it met this requirement because it is clad or jacketed with a non-corrodible material. *Id.* at 135:16. There is no evidence that the Red Hill tanks meet the definition of "clad or jacketed" under HAR § 11-280.1-26(b). *Id.* at 136:15-137:2 (Navy witness Ms. Danae Smith admitting

that she could not identify any of the enumerated codes of practice listed in HAR § 11-280.1-26(c) that the Navy uses to comply with mandated corrosion protection requirements). It is found, therefore, that the Red Hill tanks do not meet this standard.

108. Pipelines that routinely contain a regulated substance and come in contact with the ground must be protected from corrosion. Smith Test. at NAVY0027319. Pipelines leading from Red Hill to the pump house are considered aboveground pipelines because they can be visually inspected. They are not subject to corrosion protection requirements. *Id.* at NAVY0027320. The pipelines that are underground are cathodically protected by an impressed current system. *Id.*

Release Detection

109. Hawaii State law provides that field-constructed USTs may satisfy leak detection requirements if they pass an annual tank tightness test that can detect a 0.5 gph leak rate. HAR § 11-280.1-40(a); HAR § 11-280.1-43(10)(A); Smith Test. at NAVY0027321.

110. The Navy relies on tank tightness testing methodology that has been approved by independent third parties. Hr’g Tr. Vol. II, Testimony of Christopher Caputi, 228-232. However, neither the Navy nor its consultants have independently verified that the equipment used during a specific tank tightness test is working correctly nor have they evaluated the raw data from the tank tightness tests. *Id.* The DOH has requested the raw data but such data has not been provided. *Id.* at 233. Although the Navy presented arguments as to why this information was not required, the DOH has not concurred with this assessment. *Id.* at 235. Neither the Navy nor its consultant MBI verifies the accuracy of the tank tightness testing. *Id.* at 235-237. Therefore, there is not sufficient information in the record to conclude that the Navy’s

semi-annual tank tightness testing meets the 0.5 gph leak rate standard. *See id.* at 230; Smith Test. at NAVY0027321; Caputi Test. at 2.

111. HAR § 11-280.1-33 requires that any UST that has been repaired must pass a tank tightness test in accordance with § 11-280.1-43(3) which requires that a tank meet a 0.1 gph rate tank tightness test. Smith Test. at NAVY0027323.

112. The tank tightness test currently being done semiannually on the in-service USTs at Red Hill does not evaluate the ability to detect a leak of 0.1 gph. HAR § 11-280.1-43(3); Floyd Test. at NAVY0026842 (“a leak of less than 0.5 gph from any of the tanks may not be detected with the facility’s annual tank tightness testing, even though tank level systems may be able to detect smaller inventory losses.”); Hr’g Tr. Vol. I, Testimony of Danae Smith, 40:2-12 (testifying that the Navy only applied the 0.5 gph standard when it tested Tank 5 prior to returning it to service after repair and that the Navy has not asked its release detection vendor to meet the 0.1 gph standard).

113. When the Navy returned Tank 5 to service after it was repaired, it did not comply with this State law requirement. Hr’g Tr. Vol. I, Testimony of Danae Smith, 140:8-9 (stating that the Navy tested Tank 5 only to the 0.5 gph standard for the tank tightness test prior to returning it to service). The Navy has presented no evidence regarding its ability to conduct a tank tightness testing to the 0.1 gph standard. Therefore, it is found that the Navy has not met its burden of demonstrating that it can comply with this regulatory requirement.

114. The underground pipelines at Red Hill meet the regulatory requirements for tightness testing. Smith Test. at NAVY0027322.

Secondary Containment

115. Under State law, all USTs will be required to utilize secondary containment or to have a design that the Director of the DOH determines is sufficiently protective of human health and the environment. *Smith Test.* at NAVY0027332. Secondary containment systems must (1) contain regulated substances leaked from the primary containment until they are detected and removed; (2) prevent the release of regulated substances to the environment at any time during the operation life of the UST system; and (3) be checked for evidence of a release at least every 31 days. *Id.* UST systems with field-constructed tanks are to be upgraded to secondary containment no later than twenty years after the effective date of the DOH's UST rules; that is, by July 15, 2038. HAR § 11-280.1-21(c).

116. There is no secondary containment currently utilized at Red Hill. The Navy is beginning to conduct a feasibility study to determine if there is an existing technology that could be implemented at Red Hill. The Navy has not made any determination or commitment to implement this or any other technology at this point. Hr'g Tr. Vol. II, Testimony of Frank Kern, 266-272. The application for the current permit does not reference any secondary containment technology that will be installed. There is no evidence in the record that demonstrates that the Navy has plans to install secondary containment during the 5-year permit term if the DOH decided to issue the permit. *Id.*

117. It is feasible for the Navy to install tank-within-a-tank secondary containment at Red Hill. *Id.* at 272; Exhibit B-174 at BWS025105. Secondary containment would allow the Navy to utilize additional and significant corrosion control, and inspection and containment measures. *See, e.g.,* Hr'g Tr. Vol. V, Testimony of David Norfleet, 1096.

Closure of Tanks

118. When a field constructed UST, such as the tanks at Red Hill, is permanently closed, State law requires that the tank be removed from the ground, filled with an inert solid substance, or closed in a way that is approved by the DOH. HAR § 11-280.1-71(c); Smith Test. at NAVY0027336. Two Red Hill USTs (Tanks 1 and 19) have been permanently closed but they have not been removed or filled. Smith Test. at NAVY0027336. There is no written DOH approval of an alternative plan, but the Navy believes that the current approach was approved. *Id.*

Protection of Human Health and the Environment

119. Public Trust principles in the Hawaii Constitution require that the DOH protect groundwater. *See* Haw. Const. art. XI, §§ 1 & 7. The DOH can only approve the permit application if it determines that the facility is operated in a manner that is protective of human health and the environment. *Id.*

120. Given the large number of historic leaks, the Navy's inability to demonstrate that it can maintain and repair the tanks in manner that will prevent such leaks in the future, the uncertainty regarding where released fuel is located, coupled with the evidence that released fuel has reached the groundwater, and the critical nature of the sole source aquifer located under the facility, it is found that as proposed in the permit application, the Red Hill facility is not operated in a manner that is protective of human health and the environment.

L. Adverse Credibility Determinations

Commander Blake Whittle

121. Commander Blake Whittle was the Fuels Officer for the Naval Supply Systems Command Fleet Logistics Center Pearl Harbor from June 2017 to June 2020. Whittle

Test. at NAVY0027265. In this role, he was responsible for ensuring that the Red Hill facility was operated in a manner that was protective of human health and the environment. *Id.* at NAVY0027266. Commander Whittle served as one of the Navy's leads in the UST permitting process and signed the permit application. *Id.* at NAVY0027275.

122. Commander Whittle testified that the lower access tunnel could contain fuel released and prevent releases to the environment, including a catastrophic release of one million gallons of fuel. Hr'g Tr. Vol. I, Testimony of Blake Whittle, 72:22-23. However, the Navy was unable to contain the recent release on May 6, 2021 of a reported estimate of approximately 1,000 gallons of jet fuel. As noted above, fuel from the recent release was not contained in the access tunnel and there was a release of fuel into the environment. Supp. DeNovio Test. at ¶ 8; Reopened Hearing Tr. 23:11-23 ("we can tell that the soil vapor monitoring probes over quite a long time – several weeks – are indicating the presence and persistence of concentrations that indicate fuel or fuel constituents [in the environment]."). Therefore, his testimony regarding the ability of the tunnel to contain fuel is not given significant weight.

123. Despite the fact that Commander Whittle was responsible for ensuring that Red Hill is operated in a way that is protective of the environment, under cross-examination, he was not able describe any specific plan that the Navy has in place for addressing groundwater contamination in the event of a large release. Hr'g Tr. Vol. I, Testimony of Blake Whittle, 74:1-75:23. When reminded during re-direct questioning by the Navy's counsel that the Navy has a Groundwater Protection Plan (Exhibit B-373), Commander Whittle testified that this Plan contains the "actions that would be recognized to remediate a large release." Hr'g Tr. Vol. I, Testimony of Blake Whittle, 90:11-13. However, he was not able to describe what those

measures are or how they would be carried out. *Id.* at 91:10-92:25. His testimony regarding the content of the Plan should be given little weight and the fact that no Navy witness provided written or oral testimony that explained how this Groundwater Protection Plan would be carried out supports the conclusion that the Navy is not ready to activate a comprehensive strategy to address contaminated groundwater if there is a large release.

Ms. Danae Smith

124. Danae Smith is the Environmental Compliance Program Manager at the Naval Systems Supply Command Naval Petroleum Office. In this role, she is tasked with ensuring compliance with all federal and state regulatory programs at the Navy's fuel storage sites, including Red Hill. Smith Test. at NAVY0027313 - NAVY0027314.

125. Ms. Smith testified that she believed that the report prepared by the Navy's consultant ABS which documented that there were around 60 historic leaks from Red Hill is wrong given that it was based on incomplete records. Hr'g Tr. Vol. I, Testimony of Danae Smith, 132:6-133:2. Ms. Smith did not reference any documents to support this conclusion. This conclusion is found to be unbelievable.

126. Ms. Smith testified that the Red Hill tanks could meet the State law leak detection requirements. She admitted, however, that repaired tanks could not meet the specific State law required leak detection. Hr'g Tr. Vol. I, Testimony of Danae Smith, 140:3-4 ("We have not asked the test vendor to meet that standard, so I cannot confirm that."). Her testimony that these provisions did not apply to the Red Hill facility is unsupported and not credible. Smith Test. at NAVY0027318 - NAVY0027319 (incorrectly claiming that "HAR § 11-280.1-20(b) and (c) state that each tank and any piping 'that routinely contains regulated substances and is in contact with the ground must be properly designed, constructed, and installed, and any portion

underground that routinely contains product must be protected from corrosion, in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory.”); Hr’g Tr. Vol. I, Testimony of Danae Smith, 126:12-128:7 (Ms. Smith correcting her previous testimony at NAVY0027318).

127. Ms. Smith testified that, following the 2014 release, the DOH and EPA granted an exception to the requirement that the Navy locate the fuel that had been released. Smith Test. at NAVY0027331. Ms. Smith was not able to confirm how this approval was provided or offer any personal knowledge regarding such an approval. Hr’g Tr. Vol. I, Testimony of Danae Smith, 141:19-142:9. Given the lack of personal knowledge, this evidence will not be given weight.

128. Ms. Smith testified that the DOH waived the State law requirement that the two tanks permanently taken out of service needed to be removed or filled with an inert substance. Hr’g Tr. Vol. I, Testimony of Danae Smith, 144:4-19. Ms. Smith testified that she does not have personal knowledge of how that approval was obtained. *Id.* Given the lack of personal knowledge and documentation, this testimony will not be given weight.

Mr. John Floyd

129. John Floyd is the Deputy Director of the Regional Fuel Department for Naval Supply Systems Command, Fleet Logistics Center Pearl Harbor. Floyd Test. at NAVY0026804. Mr. Floyd is responsible for ensuring that Red Hill is maintained and operated in accordance with federal and state law. *Id.* at NAVY0026806.

130. Although Mr. Floyd is charged with overseeing the maintenance of Red Hill, he had no knowledge about whether there were any changes to the TIRM procedures in response to the Regulatory Agencies disapproval of the Destructive Testing Report. Hr’g Tr.

Vol. I, Testimony of John Floyd, 173:11-25. While Mr. Floyd is found to be knowledgeable about the TIRM procedures, Mr. Floyd's testimony regarding the adequacy of the TIRM procedures is not given weight.

131. In his written testimony, Mr. Floyd stated that, during an inspection conducted in October 2020, "no fuel leaks or visible staining of fuel was found at any of the operational Red Hill storage tanks, surge tanks, above ground storage tanks, Hickam fuel storage tanks, hydrants or any of the pipelines." Floyd Test. at NAVY0026848. However, when asked under cross-examination about a stain that is visible under Tank 5, Mr. Floyd admitted that there was still a fuel stain in this area. Hr'g Tr. Vol. I, Testimony of John Floyd, 183:16-21. Further, on cross-examination, Mr. Floyd admitted that there has been no final report issued regarding the 2020 inspection and that despite his testimony to the contrary, there has been no major finding conveyed at this point. *Id.* at 196:12-18. Mr. Floyd's testimony regarding the results of the October 2020 inspection is found to not be credible.

132. In his written testimony, Mr. Floyd stated that the five Petroleum, Oil and Lubricant Subject Matter Experts who conducted the 2016 inspection of the facility were selected by the DOH. Floyd Test. at NAVY0026839. Under cross-examination, Mr. Floyd acknowledged that this statement was incorrect, stating that they were under contract with the EPA Region 9. Hr'g Tr. Vol. I, Testimony of John Floyd, 197:14-19.

Mr. Christopher Caputi

133. Christopher Caputi of Michael Baker International works with DLA Leak Detection and has been charged with executing thousands of regulatory required leak detection or release detection events at over 200 Department of Defense facilities, including the Red Hill

facility. Testimony of Christopher D. Caputi, at 1; Hr’g Tr. Vol. II, Testimony of Christopher Caputi, 219:7-11.

134. Although on re-direct, Mr. Caputi testified that the Red Hill tank tight testing is calibrated to detect a leak of 0.36 gph (Hr’g Tr. Vol. II, Testimony of Christopher Caputi, 249:22-25), this testimony was not consistent with documentary evidence indicating that the Navy’s tank tightness testing test was only reported to a 0.5 gph level of sensitivity and it is contradicted by other Navy witnesses. Accordingly, this testimony is not given weight.

Mr. Frank Kern

135. Frank Kern is the technical lead in charge of managing the inspection and maintenance program at Red Hill. Hr’g Tr. Vol. II, Testimony of Frank Kern, 264:24-265:7.

136. Although Mr. Kern was the only Navy witness that testified regarding the possibility of the Navy to install secondary containment, he stated under oath that he is not an expert in this technology and has no personal knowledge of what it would specifically involve or when it would likely be implemented. *Id.* at 272:6-273:14. Mr. Kern testified that he did not believe that it was feasible for the Navy to currently construct secondary containment. *Id.* As was raised during his cross-examination to which he had no response, the Navy’s Tank Upgrade Alternative document (Exhibit B-174 at BWS025105) found that such construction is feasible. Hr’g Tr. Vol. II, Testimony of Frank Kern, 273:11-14. Based on Mr. Kern’s lack of expertise and personal knowledge, as well as the official findings made by the Navy in the TUA document, it is found that Mr. Kern’s testimony regarding the feasibility of installing secondary containment is not credible.

137. Mr. Kern testified that the Navy does not consider areas where the corrosion rate has been much faster than average, areas that he describes as “outliers,” in

calculating the appropriate and necessary inspection schedule. *Id.* at 301:14-15. Mr. Kern provides no support for his conclusion that this is adequately protective of the environment and consistent with agency practices. These conclusions are not given weight.

138. Mr. Kern testified that he was present when the ten coupons were removed from Tank 14 as part of the Navy's destructive testing conducted in 2018. *Id.* at 338:25-339:12. He did not recall who took the field notes and testified that his memory of the coupons was different from that recorded in the contemporaneous field notes. The pictures taken of the coupons (*see, e.g.*, Exhibit N-040 at NAVY0009626) appear to show a wet back side with corrosion and the field notes document the same. Mr. Kern, however, testified that he did not recall the coupon as being wet. Hr'g Tr. Vol. II, Testimony of Frank Kern, 290:22-291:3. Based on the evidence presented, this testimony is found to not be credible.

139. Mr. Kern testified that the Navy does not rely on the calculated corrosion rate of 3 mils per year to operate the Red Hill facility. *Id.* at 297:5-15. The evidence shows, however, that this corrosion rate is used to set the targeted re-inspection interval for the tanks and, therefore, his testimony regarding the significance of this rate is not credible.

140. Mr. Kern testified that he could not estimate corrosion rates for known through holes given that he lacks sufficient information. *Id.* at 294:12-16. Mr. Jamond, however, was able to do a similar calculation for areas on Tank 14, simply assuming a constant rate of corrosion between the original construction of the tank in 1943 and coupon removal in 2018 (75 years) and thereby calculating a more conservative and more protective corrosion rate. Jamond Test. at NAVY0026777. Mr. Kern's testimony regarding the inability to make conservative estimate corrosion rates based on known failure instances is found to not be credible.

141. Mr. Kern indicated that he was not able to respond to a line of questioning related to cathodic protection at the Red Hill facility and that the questions should be directed to Mr. Jamond. Hr'g Tr. Vol. II, Testimony of Frank Kern, 290:22-291:8. Mr. Jamond stated that Mr. Kern was the appropriate expert in this area. *Id.* at 399:18-18. The Navy did not provide a credible witness for cathodic protection.

Mr. Robert Jamond

142. Robert Jamond testified that the Navy has conducted non-destructive examination (NDE) on every tank at the Red Hill Facility since 1990. Jamond Test. at NAVY0026761. However, the weight of the evidence demonstrates that many of the tanks have not undergone inspections in this timeframe.

143. Mr. Jamond offered testimony regarding the NDE evaluation scanning that was conducted. Jamond Test. at NAVY0026766. Under cross-examination, Mr. Jamond indicated that he was not involved in the scanning and that any questions related to the NDE scanning should be directed at Mr. Kern. Hr'g Tr. Vol. II, Testimony of Robert Jamond, 411:20-412:6. Mr. Jamond is found to not be an expert in this area and his testimony in this regard is therefore not given any weight.

Commander Darrel Frame

144. Commander Darrel Frame provided testimony related to the nature of historic releases from Red Hill. Testimony of Darrel Frame ("Frame Test.") at 8-9. He asserted that a number of these releases were due to the telltale system which was not properly designed; he claimed these releases were discharged into slop tanks in the lower access tunnel rather than into the environment. *Id.* There is no evidence in the record to support this conclusion and the

contemporaneous reports do not make any such assertion. Hr’g Tr. Vol. III, Testimony of Darrel Frame, 544:10-547:23. This testimony is found not to be credible.

145. Commander Frame also testified that the BWS agreed that releases from the telltale system should be discounted in any analysis about the number of releases at Red Hill. *Id.* at 548:5-6. This testimony is not supported by any evidence and was directly contradicted by testimony provided by Erwin Kawata from the BWS. Hr’g Tr. Vol. V, Testimony of Erwin Kawata, 990-992. Commander Frame further testified that the BWS agreed that “no rigorous study has to be done to quantify the risk an earthquake could cause to large nozzle tanks.” This testimony was directly contradicted by Erwin Kawata and is not supported by any evidence in the record. *Id.* This testimony is found not to be credible.

146. Commander Frame testified that, despite descriptions in contemporaneous reports indicating that there were releases related to failed welds, he believed it is likely that failed welds might not hold air but that they could likely still hold fuel. Hr’g Tr. Vol. III, Testimony of Darrel Frame, Vol. III, 554-555. There is no evidence to support this assertion and it is contradicted by the evidence in the record, most notably the release of approximately 27,000 gallons from Tank 5 reported in January 2014. *Id.* at 540:9-542:24. This evidence is found to be not credible.

147. Commander Frame testified that he has no formal training in performing or evaluating risk and vulnerability assessments. Hr’g Tr. Vol. III, Testimony of Darrel Frame, at 570. Given this lack of training and expertise, Commander’s Frame testimony regarding the meaning and import of the ABS risk assessment is not given weight. *See* Exhibit B-15 at BWS005019; *see also* Norfleet Expert Report at 50 (the QRVA report “was professionally executed using recognized risk assessment software”).

148. Commander Frame also testified that he could not speak to all the conclusions in the ABS report because he has not studied it carefully; further, the model used was tremendously complex and was outside of his area of expertise. Hr'g Tr. Vol. III, Testimony of Darrel Frame, at 574. This further indicates that Commander's Frame testimony regarding the ABS analysis should not be given weight.

Mr. Curtis Stanley

149. Mr. Stanley is considered an expert in geology and hydrology, based on his education, training and experience. Testimony of Curtis Stanley ("Stanley Test.") at NAVY0026024 - NAVY0026025. He is not an expert in corrosion, metals, tank integrity, tank tightness testing and engineering risk assessment. Hr'g Tr. Vol. III, Testimony of Curtis Stanley, 672-673. Accordingly, his testimony related to these subject matters is not given any weight. Specifically, his testimony regarding the efficacy of the proposed AOC measures was based wholly on the testimony of others and is therefore not considered. *Id.* at 674.

150. Mr. Stanley testified that he was one of the primary authors of all the reports prepared under the AOC. Stanley Test. at NAVY0026028. However, under cross-examination, he clarified that he was only involved in the reports prepared under Section 6 and 7 of the AOC. Hr'g Tr. Vol. III, Testimony of Curtis Stanley, 675. These sections address the investigation and remediation of environmental conditions, groundwater modeling, and groundwater protection measures. *Id.* at 697. Accordingly, his testimony related to reports under the AOC's other sections is not given any weight in this proceeding.

151. Mr. Stanley's written testimony included a summary of the steps that the Navy has taken to address the lessons learned from the 2014 spill. Facility Environmental Report for Contested Case Hearing ("Stanley Expert Report") at NAVY0026057 -

NAVY0026058. This testimony was based solely on Navy reports written and validated by others. Hr’g Tr. Vol. III, Testimony of Curtis Stanley, 690. Accordingly, this testimony will be given no weight in this proceeding.

152. Mr. Stanley testified to the reliability of the groundwater modeling completed by the Navy. Stanley Test. at NAVY0026028, NAVY0026033; Stanley Expert Report at NAVY0026094, Sidebar 9; Supplemental Testimony of Curtis Stanley at 27-28. Mr. Stanley could not attest to whether the groundwater modeling complied with the ASTM Standards for Developing Groundwater Models. Hr’g Tr. Vol. III, Testimony of Curtis Stanley, 740-741. Mr. Stanley indicated that his colleague Dr. Panday may have considered this question, but he could not state whether Dr. Panday had found that the groundwater modeling complied with the applicable standard. It is concluded that there is no evidence in the record to support the conclusion that the groundwater model complies with industry standards.

153. With regard to the reports prepared under Section 6 and 7, including the groundwater conceptual site model, groundwater flow model, and geologic model, Mr. Stanley testified that it is critical to validate the data that is used to create the models. *Id.* at 676-677. He further testified that he had personally reviewed all such data and can attest to its accuracy and its validity. *Id.* at 677-679. Mr. Stanley also acknowledged that he has reviewed at least some of the shape files that were used to create the groundwater models. *Id.* at 771. In a declaration submitted in this proceeding, however, Mr. Stanley claimed that he had not “re-investigated, re-examined, or validated” the relevant data and “had no need to, and did not, rely on the modeling software files.” Petitioner Honolulu Board of Water Supply’s Motion to Strike the Testimony of Curtis Stanley, Declaration of Ella Foley Gannon (“Gannon Decl.”), Ex. B. Given this contradictory evidence, Mr. Stanley’s testimony will be given no probative value.

II. CONCLUSIONS OF LAW

A. The Navy's Red Hill Facility is Subject to Hawaii State Law

1. Federal facilities are required to comply with all federal, state, interstate, and local solid and hazardous waste requirements (including statutes, regulations, permits, reporting requirements, and administrative and judicial orders and injunctions). *See* 42 U.S.C. § 6991f(a).

2. The express waiver of sovereign immunity contained in the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.*, subjects the Navy to the same substantive and procedural requirements as any person under state laws regulating USTs. *See* 42 U.S.C. § 6991f(a) (“The United States hereby expressly waives any immunity otherwise applicable to the United States with respect to any such substantive or procedural requirement (including, but not limited to, any injunctive relief, administrative order or civil or administrative penalty or fine referred to in the preceding sentence, or reasonable service charge).”).

3. As such, the Navy's Red Hill facility is subject to federal law, as well as Hawaii State law, statutes, and regulations. The Navy must comply with H.R.S. and HAR.

B. Standing Requirements

4. The BWS has demonstrated an interest in the outcome of the Navy's permit application. *Mottl v. Miyahira*, 95 Haw. 381, 389 (2001) (requiring personal interest in outcome of controversy to establish standing); *see* Kawata Test. at ¶ 18 (“The basal aquifer beneath the RHBFSF is the groundwater resource from which the BWS provides drinking water to residents and visitors from Moanalua to Hawaii Kai.”); Hr'g Tr. Vol. X, Testimony of Erwin Kawata, 974:6-10 (“the Board is extremely concerned about the Red Hill Facility, given the

quantity, the size of the tanks, the quantity of fuel present, and its location above a critical drinking water resource just a hundred feet away.”).

5. The Sierra Club has also demonstrated an interest in the outcome of the Navy’s permit application. *See* Hr’g Tr. Vol. IX, Testimony of Jodi Malinoski, 951:6-8 (“The Sierra Club and our members are very concerned about the, not just the drinking water, but the health of the groundwater as well.”).

6. The BWS and the Sierra Club have interests that have either been injured or have interests that are likely to be threatened by continued operations at the Red Hill facility. *See Sierra Club v. Dep’t of Transportation*, 115 Haw. 299, 329 (2007) (A threatened injury under the traditional injury-in-fact test may be shown based on direct personal interests in the site of a project coupled with concerns of actual injury should the project go forward without adequate environmental review).

C. The DOH Has a Public Trust Responsibility

7. The Hawaii Constitution guarantees that “[a]ll public natural resources are held in trust for the benefit of the people” and directs the State, and by extension the DOH, “to protect, control and regulate the use of Hawaii’s water resources for the benefit of its people.” *See* Haw. Const. art. XI, §§ 1 & 7. This public trust doctrine has been elevated to the level of a constitutional mandate in Hawaii. *In Re Water Use Permit Applications*, 94 Haw. 97, 131 (2000).

8. As a Hawaii state agency, the DOH has a constitutionally mandated public trust responsibility to “protect, control and regulate” Oahu’s water for the “benefit of the people.” Haw. Const. art. XI, §§ 1 & 7.

D. The Navy Has the Burden of Proof

9. The Navy's burden is not relieved or otherwise shifted as a result of this contested case. The parties opposing the issuance of a permit do not bear the burden of proving that a permit should not be granted. Rather, the party requesting the permit maintains its burden of proof notwithstanding a challenge to the issuance of the permit. *See, e.g., Matter of Conservation Dist. Use Application HA-3569*, 143 Haw. 379, 384 (2018) (permit applicant has burden of proof); *see also Mauna Kea Anaina Hou v. Bd. Of Land and Natural Res.*, 136 Haw. 376, 399 (2015) (accepting permit applicant's acknowledgement of its burden and requiring applicant to prove it met permit requirements).

10. The Navy bears the burden of proof as the party who is seeking a permit. As the party with the burden of proof, the Navy must "submit sufficient information to the satisfaction of the director that the technical, financial, and other requirements of this chapter are or can be met and the installation and operation of the UST or tank system will be done in a manner that is protective of human health and the environment." HAR § 11-280.1-323.

11. As a party opposing a permit where its issuance would jeopardize constitutional rights and public trust resources, the BWS and the Sierra Club have no burden of proof in this proceeding.

E. The Administrative Order of Consent Process

12. Before and throughout this contested case proceeding, the Navy has been undergoing an Administrative Order of Consent ("AOC") process related to a 2014 fuel release at Red Hill. The AOC process is a separate process from this permitting process and contested case proceeding.

13. Despite the processes being separate, many of the documents generated through the AOC process provide important background, data, and information related to Red Hill operations.

F. Permitting Process

14. H.R.S. § 342L-31(a) states that “No person shall install or operate an underground storage tank or tank system brought into use after the effective date of the tank or tank system standards established in section 342L-32 unless a permit is obtained from the department and upon payment of a fee.”

15. HAR § 280.1-323(a) states that “No person shall install or operate an UST or tank system without first obtaining a permit from the director.”

16. The DOH’s UST regulations recognize that compliance with the requirements of Chapter 342L of the H.R.S. is a prerequisite for the issuance of a permit to operate. *See* HAR § 280.1-323(c).

17. The DOH’s UST regulations are careful to limit the agency’s authority to approve permit applications “only if the applicant has submitted sufficient information to the satisfaction of the director that the technical, financial, and other requirements of this chapter are or can be met and the installation and operation of the UST or tank system will be done in a manner that is protective of human health and the environment” and authorizes the DOH to impose conditions on a permit where “reasonably necessary to ensure compliance with this chapter and any other relevant state requirements, including conditions relating to equipment, work practice, or operation.” HAR §§ 280.1-323(b), 280.1-328.

18. The regulations authorize the DOH to impose conditions on a permit where “reasonably necessary to ensure compliance with this chapter and any other relevant state

requirement, including conditions relating to equipment, work practice, or operation.” HAR §§ 280.1-323(b), 280.1-328.

19. The Navy is subject to the DOH’s UST regulations, including but not limited to its corrosion prevention rules, leak prevention and detection practices, and permitting requirements. The Navy is also subject to the HRS and the Hawaiian Constitution, particularly the Constitution’s guarantee of a “clean and healthful environment.”

20. The Navy must demonstrate that it can comply with all statutes and regulations in order to be granted a permit, and the DOH is permitted to impose conditions on a permit if necessary.

G. Releases

21. H.R.S. § 342L-32 states “(b) Underground storage tank and tank system standards shall include, but are not limited to the following specifications: (1) The tank and tank system shall be designed, constructed, installed, upgraded, maintained, repaired, and operated to prevent releases of the stored regulated substances for the operational life of the tank or tank system...”

22. H.R.S. § 342L-33 states that “The department, pursuant to chapter 91, shall adopt standards of performance for maintaining a release detection system, including, but not limited to, inventory control, tightness testing, and any other methods designed to identify releases from the underground storage tank or tank system in a manner consistent with the protection of human health and the environment.”

23. Under H.R.S. § 342L-32 and § 342L-33, the Navy must construct and maintain its tank and tank systems “to prevent releases of the stored regulated substances for the operational life of the tank or tank system” and must “maintain[] a release detection system,

including, but not limited to, inventory control, tightness testing, and any other methods designed to identify releases from the underground storage tank or tank system in a manner consistent with the protection of human health and the environment.”

24. The Red Hill Facility cannot prevent releases because, throughout its 80-year operation, the Facility has had episodic releases of fuel totaling approximately 175,000 gallons of product released, including a fuel release as recent as May 6, 2021. *See* DeNovio Test. at ¶ 9.b; DeNovio Expert Report at i, 3, 20-36, tbl. 1.1-1; Supp. DeNovio Test. at ¶ 8.

H. Corrosion

25. Under HAR § 11-280.1-20, “[e]ach tank must be properly designed, constructed, and installed, and any portion underground that routinely contains product must be protected from corrosion, in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory...” Every UST, not just those in contact with the ground, is subject to this regulation. HAR § 11-280.1-20(b).

26. HAR § 11-280.1-20(b) delineates five different ways that tanks can be “protected from corrosion.” First, tanks can be constructed of fiberglass-reinforced plastic. HAR § 11-280.1-20(b)(1). The Navy cannot comply with this requirement because the USTs are constructed of steel. Testimony of Blake Whittle, 11:1-2 (“The Red Hill Facility consists of 20 steel-lined tanks...”).

27. Second, HAR § 11-280.1-20(b)(2) permits tanks to be constructed of steel and cathodically protected. Although the Red Hill USTs are constructed of steel, they are not cathodically protected per the regulations. Hr’g Tr. Vol. 1, Testimony of Danae Smith, 137:14-16 (“Our fuel constructed tanks that are steel encased in concrete don’t have the cathodic protection on it.”).

28. Third, HAR § 11-280.1-20(b)(3) permits tanks to be constructed of steel and clad or jacketed with a non-corrodible material. Although the Red Hill USTs are constructed of steel, they are not clad or jacketed with a non-corrodible material. *Compare* Hr'g Tr. Vol. 1, Testimony of Black Whittle, 66:3-67:11 (Navy witness Blake Whittle stating that the tanks are clad and jacketed with concrete) *with* Norfleet Expert Report at 64 (the Red Hill USTs “are not clad or jacketed systems” under applicable regulations and they “cannot be considered clad or jacketed as such terms are defined by or understood in industry practice”); *see also* Hr'g Tr. Vol. II, Testimony of Frank Kern, 306:18-19 (“...we all know that concrete cracks...”); *see also* Hr'g Tr. Vol. III, 535:2-9 (Navy witness Dr. Gaur Johnson acknowledging that “concrete cracks” and that “fuel could go through the cracks in the concrete” into the subsurface environment). The Red Hill USTs’ concrete structural support has not prevented the USTs’ steel liners from corroding.

29. Fourth, HAR § 11-280.1-20(b)(4) permits tanks to be constructed of metal without additional corrosion protection provided that the tank is installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life. Although the Red Hill USTs are constructed of metal, the tanks are not installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life.

30. Fifth, HAR § 11-280.1-20(b)(5) allows compliance with the regulations if the “tank construction and corrosion protection are determined by the department to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than [HAR § 11-280.1-20(b)] (1) to (4).”

The Red Hill USTs' construction and corrosion protections have not been determined by the department to be designed to prevent the release or threatened release of any fuel.

31. The Navy has not demonstrated that its USTs are properly “protected from corrosion” per the HAR regulations and requirements.

I. Leak Detection

32. HAR § 11-280.1-41 requires UST systems with field-constructed tanks like those at Red Hill to be monitored for releases.

33. HAR § 11-280.1-33(a)(4) requires that owners and operators of UST systems must ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store regulated substances, including the requirement that “[p]rior to the return to use of a repaired UST system, any repaired USTs must pass a tank tightness test in accordance with section 11-280.1-43(3)”.

34. HAR § 11-280.1-43(3) requires that tank tightness testing “must be capable of detecting a 0.1 gph leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensations, and the location of the water table.”

35. The Navy has not demonstrated that it can detect leaks occurring at 0.1 gph for repaired tanks under HAR § 11-280.1-43(3). *See* Hr’g Tr. Vol. 1, Testimony of Danae Smith, 140: 2-4 (“Q. So you can’t meet that standard [0.1 gph leak detection]. A. We have not asked the test vendor to meet that standard, so I cannot confirm that.”).

36. HAR § 11-280.1-43(10) requires an annual tank tightness test that can detect a 0.5 gph leak rate as a release detection method for field-constructed USTs. *See* HAR § 11-280.1-43(10)(A).

37. The Navy has not demonstrated that it can detect leaks occurring at 0.5 gph under HAR § 11-280.1-43(10)(A). *See* Smith Test. at 9:13-10:2; Hr’g Tr. Vol. II, Testimony of Christopher Caputi, 230:7-12 (Navy witness Mr. Christopher Caputi testifying that the Navy relies upon a third party vendor to both assess the accuracy of and calibrate the equipment used to perform tank tightness testing on the Red Hill USTs).

J. Protective of Human Health and the Environment

38. The Hawaii Constitution, Article XI, § 1 provides that “[a]ll public natural resources are held in trust by the State for the benefit of the people.”

39. The Hawaii Constitution, Article XI, § 9 provides that “[e]ach person has the right to a clean and healthful environment, as defined by laws relating to environmental quality.”

40. The Supreme Court of Hawaii has stated that the right to a clean and healthful environment is defined by existing law relating to environmental quality.” *In re Application of Maui Electric Company, Ltd.*, 141 Haw. 249, 261 (2017). The court went on to clarify that “[d]eveloping a body of case law defining the content of the right could involve confusion and inconsistencies. On the other hand, legislatures, county councils and administrative agencies can adopt, modify or repeal environmental laws or regulation laws in light of the latest scientific evidence and federal requirements and opportunities. Thus, the right can be reshaped and redefined through statute, ordinance and administrative rule-making procedures and not inflexibly fixed.” *Id.*

41. This means that Hawaii statutes and the Hawaii DOH, or other related agencies, define a healthful environment as ensured by the Hawaii Constitution.

42. The State of Hawaii Environmental Policy states that it is the policy of the state to “conserve natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State’s unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii.” H.R.S. § 344-3.

43. H.R.S. § 344-4(2)(A) and (D) also outline state environmental policy, stating that it is state policy to “[e]ncourage management practices which conserve and fully utilize all natural resources” and “[e]ncourage management practices which conserve and protect watersheds and water sources, forest, and open space areas.”

44. In order to uphold Hawaii constitutional requirements of public trust and a “clean and healthful environment,” all Hawaii operators are subject to the H.R.S. and HAR related to environmental policy. The Navy is thus subject to H.R.S. § 344-3 and § 344-4, and any other relevant Hawaii state law, statutes, or regulations.

45. The Navy cannot fulfill its legal obligations to operate Red Hill in a manner that ensures a “clean and health environment” because it cannot safeguard Oahu’s water from contamination. *See DeNovio Test.* at ¶ 9.b; *DeNovio Expert Report* at i, 3, 20-36, tbl. 1.1-1 (showing that numerous episodic releases from the Red Hill USTs have occurred and sampling from under and around Red Hill has demonstrated the existence of petroleum contamination in the very aquifer that sustains Oahu’s water supply); *see also Norfleet Test.* at 8, app. C *and*

Supp. DeNovio Test. at ¶ 8 (showing that at least 73 fuel release incidents at Red Hill have been documented, including a reported a release of approximately 27,000 gallons of jet fuel from Tank 5 in January 2014 and a reported a release of approximately 1,000 gallons of jet fuel from supply piping in the lower access tunnel underneath the Red Hill USTs during the refilling of Tank 20 on May 6, 2021, totaling more than 175,000 gallons of product); Norfleet Expert Report at 27, fig. 10 (demonstrating that moisture trapped between the outside face of the Red Hill USTs' steel liner and concrete shell causes corrosion to form on the backside of the liner, and that corrosion progresses inward with time.).

III. RECOMMENDED DECISION

1. The DOH finds that the Navy cannot operate the Red Hill facility in accordance with State law. Further, the DOH finds that the Navy's Red Hill facility is not operated, and will not operate, in a manner that is protective of human health and the environment. The DOH cannot grant a permit to operate the Red Hill facility in the manner proposed by the Navy in its permit application for the following reasons:

a. The Navy cannot comply with the requirements of State law to prevent releases for the operational life of the USTs and UST system;

b. The Navy cannot comply with the requirements of State law to prevent corrosion of the USTs;

c. The Navy cannot comply with the requirements of State law to detect leaks at a rate of 0.1 gph for repaired USTs prior to returning them to service nor has it demonstrated that it can detect leaks at a rate of 0.5 gph for nonrepaired USTs (in accordance with annual leak detection rate requirements); and

d. The Navy cannot operate the Red Hill facility in a manner that is protective of the human health and the environment.

2. The Navy shall immediately commence planning to either construct new aboveground storage tanks in a location that does not overlie Oahu's sole-source aquifer or upgrade the Red Hill USTs with tank-within-a-tank secondary containment that provides for, at minimum, an interstitial space of sufficient width to enable the inspection, maintenance, testing, and physical repair of the exposed faces of the inner and outer barriers. The Navy shall apply for all applicable permits to relocate the Red Hill USTs or upgrade them with secondary containment within 18 months of this order or the Red Hill USTs shall be permanently closed in accordance with HAR § 11-280.1-71.

DATED: Honolulu, Hawaii, July 13, 2021.

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DEPARTMENT OF HEALTH

STATE OF HAWAII

In the Matter of the Application of

UNITED STATES NAVY

For an Underground Storage Tank Permit for
the Red Hill Bulk Fuel Storage Facility

DOCKET NO. 19-UST-EA-01

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing document was served upon the
following, via email, to their last known email address on July 13, 2021:

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DOCKET NO. 19-UST-EA-01, IN THE MATTER OF THE APPLICATION OF UNITED STATES NAVY FOR AN UNDERGROUND STORAGE TANK PERMIT FOR THE RED HILL BULK FUEL STORAGE FACILITY – PETITIONER HONOLULU BOARD OF WATER SUPPLY’S POST-HEARING MEMORANDUM; PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDED DECISION; CERTIFICATE OF SERVICE