UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

CENTER FOR BIOLOGICAL DIVERSITY, Plaintiff, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Defendant.	CASE NO. C13-1866JLR ORDER ON CROSS MOTIONS FOR SUMMARY JUDGMENT

I. INTRODUCTION

Before the court are the parties' cross motions for summary judgment. (*See* CBD Mot. (Dkt. # 33); EPA Mot. (Dkt. # 34).) This case concerns the water quality problem of ocean acidification and its effects on aquatic life in the coastal and estuarine waters of the states of Washington and Oregon. Plaintiff Center for Biological Diversity ("CBD") claims that Defendant United States Environmental Protection Agency ("EPA")

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arbitrarily and capriciously approved Washington's and Oregon's decisions not to identify any waters experiencing ocean acidification as impaired under Section 303(d) of the Clean Water Act, 33 U.S.C. § 1251 *et seq.* Having considered the submissions of the parties, the submissions of amici curiae, the administrative record, and the relevant law, and having heard oral argument, the court denies CBD's motion for summary judgment and grants EPA's motion for summary judgment.

II. BACKGROUND

A. Ocean Acidification

Ocean acidification is a long-term decrease in pH of the earth's oceans. On a worldwide scale, the primary driver of ocean acidification is carbon uptake: seawater absorbs increased carbon dioxide (CO_2) emissions, which leads to a series of chemical reactions that make the seawater more acidic. WA-00731 ("Pelejero 2010") at 1.[1] The leading cause of increased atmospheric CO_2 is combustion of fossil fuels. *Id.* It is estimated that anthropogenic sources of atmospheric carbon dioxide have increased the acidity of average open-ocean surface waters by about 30%. WA-000731 ("Feely 2010") at 4. In coastal regions, other local factors can exacerbate the acidification process. WA-000712 ("Blue Ribbon Panel") at 4. Regional drivers include both natural phenomena, such as upwelling of deep ocean water and freshwater inputs from rivers, and

[1] The parties have provided the court with an electronic copy of the administrative and supplemental administrative records for EPA's decisions to approve Washington's and Oregon's Section 303 lists of impaired waters. (*See* Dkt. ## 27, 28.) References found in Washington's record are denoted by the prefix "WA-" followed by a six-digit page number, and references found in Oregon's records are denoted by the prefix "OR-" or "OR2-" followed by a six-digit page number. If the same six-digit page number contains multiple references (or as otherwise necessary for clarity), the court will refer to the references by their first author and year of publication, or other appropriate identifier.

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anthropogenic factors such as nutrient deposits from agricultural runoff, carbon deposits from stormwater runoff and industrial pollution, and local emissions of nitrogen and sulfur oxides. *Id.* at xii; WA-000712 ("Feeley 2012") at xii, 33, 37.

The changing ocean chemistry affects marine organisms and ecosystems in various ways, with some of the clearest impacts being felt by organisms whose shells and skeletons are composed of calcium carbonate ($CaCO_3^{2-}$). Pelejaro 2010 at 1; Blue Ribbon Panel at 10. Specifically, the same chemical reactions that increase the acidity of the ocean reduce the concentration of carbonate ions (CO_3^{2-}) that shellfish rely on to build shells. Pelejaro 2010 at 1; Blue Ribbon Panel at 10. As a result, marine organisms face difficulties forming and maintaining calcium carbonate-based shells and skeletons. Pelejaro 2010 at 1; Blue Ribbon Panel at 10. Additionally, the reduction of precipitated carbonate ions decreases the saturation states of important biominerals such as aragonite and calcite. Blue Ribbon Panel at 10; Feely 2010 at 3. Seawater with such decreased saturation states is chemically corrosive and can dissolve the shells of small crustaceans and immature shellfish. Feeley 2010 at 4; Blue Ribbon Panel at 10. Because many small calcifiers provide habitat, shelter, or food for other marine plants and animals, ocean acidification is also a threat to the broader marine environment. Blue Ribbon Panel at xiv, 16-20; *see also* Feeley 2012.

B. The Clean Water Act

The Clean Water Act employs two main regulatory approaches to achieve water quality: (1) technological controls on effluents discharged from point sources and (2)

water quality standards. This case concerns water quality standards. *See Pronsolino v. Nastri*, 291 F.3d 1123, 1126 (9th Cir. 2002); *see generally* 33 U.S.C. § 1251 *et seq.*

Each state is required to set water quality standards for all waters within its boundaries. *Pronsolino*, 291 F.3d at 1126; 33 U.S.C. § 131(a)-(c); 40 C.F.R. § 130.3. These standards, which include designated beneficial uses, numeric and narrative criteria, and anti-degradation policies, set goals for improving or maintaining water quality. 40 C.F.R. § 130.3. Wherever attainable, the standards should "provide water quality for the protection and propagation of fish, shellfish, and wildlife and for recreation." *Id.*

Pursuant to Section 303(d) of the Clean Water Act, every two years each state must generate a list of impaired water bodies for which existing pollution controls are insufficient to meet the water quality standards applicable to the water body. 33 U.S.C. § 1313(d); 40 CFR § 130.7(d)(1). Section 303 requires the states to submit their impaired waters lists to the EPA for approval. 33 U.S.C. § 1313(d); 40 CFR § 130.7(d)(1). If EPA disapproves a list, it must identify within 30 days the waters that should have been listed as impaired. 33 U.S.C. § 1313(d); 40 CFR § 130.7(d)(1).

After a water body is listed as impaired, the state must establish a total maximum daily load ("TMDL") of each pollutant that the water body can receive and still meet water quality standards. 33 U.S.C. § 1313(d); 40 CFR § 130.7(d)(1); *see also Pronsolino*, 291 F.3d at 1127-28. The state must incorporate TMDLs into the state's statutorily required water quality management plan. 33 U.S.C. § 1313(e); *Pronsolino*, 291 F.3d at 1128. The state, however, retains the responsibility and discretion to

implement the TMDLs by controlling pollution from nonpoint and point sources.[2] 33 U.S.C. § 1313(e); *Pronsolino*, 291 F.3d at 1128. As such," TMDLs are primarily informational tools that allow the states to proceed from the identification of waters requiring additional planning to the required plans." *Pronsolino*, 291 F.3d at 1128.

In 2010, EPA issued a memorandum recognizing the "seriousness of aquatic life impacts associated with" ocean acidification, and instructing that "States should list waters not meeting water quality standards, including marine pH [water quality criteria], on their 2012 303(d) lists." WA-01116-31 ("EPA 2010 OA Memo") at 1, 4.

C. Washington's and Oregon's Section 303(d) Lists

Several of Washington's water quality standards implicate ocean acidification. Most of Washington's coastal waters are designated as "extraordinary quality" or "excellent quality" for aquatic life uses, which include "clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning." WAC 173-201A-612; WAC 173-201A-210(1)(a). With respect to numerical criteria, waters of extraordinary or excellent quality must meet a pH range of 7.0-8.5 with a human-caused variation within that range of 0.2 or 0.5 units, respectively.[3] WAC 173-201A-612; WAC 173-201A-210(1)(f). Additionally, for both

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[2] Point sources are discrete conveyances, such as pipes or tunnels. *Pronsolino*, 291 F.3d at 1126. Nonpoint sources are non-discrete sources, such as agricultural runoff. *Id.* The Clean Water Act establishes federal controls for pollution from "point sources," but provides "no direct mechanism to control nonpoint source pollution." *Id.* at 1126-27. Instead, the Act provides federal grants to states to accomplish the task of regulating nonpoint sources. *Id.*

[3] Washington assigns waters to one of five categories. WA-001373-78; *see also* WA-001218. As relevant here, Category 1 waters are waters in attainment of water quality standards, Category 2 waters

aquatic life uses and shellfish harvesting, "deleterious material concentrations must be below those which have the potential . . . to adversely affect characteristic water uses [or] cause acute or chronic conditions to the most sensitive biota dependent upon those waters. WAC 173-201A-260(2)(a). Finally, "[n]o degradation may be allowed that would interfere with, or become injurious to, existing or designated uses." WAC 173-201A-310.

Washington's 2010 Section 303(d) list, however, did not identify any coastal or estuarine waters as impaired due to pollutants associated with or conditions attributable to ocean acidification.[4] When reviewing Washington's list, EPA independently evaluated numerous relevant ocean acidification references, as well as Washington's analysis of ocean acidification data and information. WA-00011-20 (EPA review of Washington's analysis of ocean acidification data); WA-000021-65 (EPA's review of ocean acidification references). EPA approved Washington's 303(d) list in full in December, 2012. WA-000001-2 ("WA Approval").

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are waters of concern, Category 3 waters lack sufficient data to make a water quality determination, Category 4 waters are impaired but do not require a TMDL, and Category 5 waters are impaired. WA-001373-78. Pursuant to Washington's Water Quality Program Policy, waters violate Washington's pH standard, and therefore are placed in Category 5, only if the data shows that a minimum of three excursions from the pH standard exist and at least 10% of values in a given year do not meet the pH criterion. WA-13399-40. An excursion is a pollutant value that is above or below a water quality standard criterion expressed as a range. WA-01416.

[4] Washington did, however, place Puget Sound in Category 2 as a water of concern for "potential impacts to fish and shellfish habitat from human activities, including conditions that make the waters more vulnerable, such as . . . ocean acidification." WA-000154. Washington concluded that "some credible data create concerns of possible impact to designated uses, but fall short of demonstrating that there is a persistent problem." *Id.*

Similarly, several of Oregon's water quality standards implicate ocean acidification. Oregon's coastal waters are designated for the beneficial uses of "fish and aquatic life," as well as fishing. *See* OAR 340-041-0220 *et seq.* Narrative water quality criteria provide that "[w]aters of the state must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities," OAR 340-041-0011, and that the "creation of . . . conditions that are deleterious to fish or other aquatic life . . . may not be allowed," OAR 340-041-0007(10). Oregon's anti-degradation policy provides that any existing level of water quality necessary to support propagation of fish and shellfish must be maintained and protected. *Id.* at -0004(6).

Oregon's 2010 Section 303(d) list, however, did not identify any coastal or estuarine waters as impaired due to pollutants associated with or conditions attributable to ocean acidification. EPA originally partially disapproved Oregon's 303(d) list, finding that Oregon had not reasonably assembled and evaluated all readily available data and water-quality information. OR1-000001 ("OR Disapproval"). Specifically, Oregon had failed to consider data for numerous pollutants available in Oregon's own Laboratory Analytical and Storage Retrieval ("LASAR") database. OR1-00008. Accordingly, EPA independently reviewed this and other available water quality data and, on December 14, 2012, issued a decision adding 870 additional impaired segments to Oregon's 303(d) list. OR1-00008-9; *see also* OR2-000001-9 ("OR Approval"). These additions, however, were unrelated to ocean acidification: EPA independently evaluated Oregon's ocean acidification information and approved Oregon's assessment that the information did not require listing any marine waters as impaired. *See* OR2-0000286-91.

D. CBD's Challenge

During the appropriate notice and comment periods, CBD submitted comments and scientific studies to Washington, Oregon, and EPA arguing that Washington's and Oregon's water quality standards were violated due to ocean acidification. *See, e.g.*, WA-000066-70; WA-000071-86; WA-000198; WA-00813; OR2-000286; OR2-004614; OR004557. In this lawsuit, CBD challenges EPA's approval of Washington's and Oregon's 303(d) lists as arbitrary and capricious because the lists do not identify any coastal waters as impaired by ocean acidification. (*See generally* Compl.)

The court previously denied the Western States Petroleum Association and American Petroleum Institute's (collectively, "API") motion to intervene, but granted API amicus curiae status. (*See* 2/18/14 Order (Dkt. # 22).) Later, the court also granted amicus curiae status to the Ecology Department of the State of Washington ("Ecology"), the Pacific Coast Federation of Fishermen's Association, Southern California Trawlers' Association and Institute of Fisheries Resources (collectively, "Fishing Associations"), and climate Ken Caldeira and Jane Lubchenco (collectively, "the Scientists"). (Dkt. ## 23, 46, 49.) CBD and EPA stipulated to a modified briefing schedule for their cross-motions for summary judgment. (Sched. Ord. (Dkt. # 26).) These motions, as well as the amici curiae briefs, are now before the court.

III. ANALYSIS

A. Summary Judgment Standard

Federal Rule of Civil Procedure 56 permits a court to grant summary judgment where the moving party demonstrates (1) the absence of a genuine issue of material fact

and (2) entitlement to judgment as a matter of law. *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986); *see also Galen v. Cnty. of L.A.*, 477 F.3d 652, 658 (9th Cir. 2007). The moving party bears the initial burden of showing the absence of a genuine issue of material fact. *Celotex*, 477 U.S. at 323.

If the moving party does not bear the ultimate burden of persuasion at trial, it can show the absence of an issue of material fact in two ways: (1) by producing evidence negating an essential element of the nonmoving party's case, or (2) by showing that the nonmoving party lacks evidence of an essential element of its claim or defense. *Nissan Fire & Marine Ins. Co. v. Fritz Cos.*, 210 F.3d 1099, 1106 (9th Cir. 2000). If the moving party will bear the ultimate burden of persuasion at trial, it must establish a prima facie showing in support of its position on that issue. *UA Local 343 v. Nor-Cal Plumbing, Inc.*, 48 F.3d 1465, 1471 (9th Cir. 1994). That is, the moving party must present evidence that, if uncontroverted at trial, would entitle it to prevail on that issue. *Id.* at 1473.

If the moving party meets its burden of production, the burden then shifts to the nonmoving party to identify specific facts from which a factfinder could reasonably find in the nonmoving party's favor. *Celotex*, 477 U.S. at 324; *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 252 (1986). In determining whether the factfinder could reasonably find in the nonmoving party's favor, "the court must draw all reasonable inferences in favor of the nonmoving party, and it may not make credibility determinations or weigh the evidence." *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150 (2000). When adjudicating cross-motions for summary judgment, a court "evaluate[s] each motion separately, giving the nonmoving party in each instance the benefit of all

reasonable inferences." *A.C.L.U. of Nevada v. City of Las Vegas*, 466 F.3d 784, 790-91 (9th Cir. 2006).

B. Standing

Before reaching the merits of the action, the court addresses CBD's standing to bring this challenge. API raises the issue of Article III standing in its amicus curiae brief[5] (API Br. (Dkt. # 44)), and even if it did not, the court has "an independent duty to assure that standing exists, irrespective of whether the parties challenge it." *Washington Envtl. Council v. Bellon*, 732 F.3d 1131, 1139 (9th Cir. 2013) (citing *Summers v. Earth Island Inst.*, 555 U.S. 488, 499 (2009)).

A plaintiff must demonstrate standing for each claim that he or she seeks to press and for each form of relief sought. *DaimlerChrysler Corp. v. Cuno,* 547 U.S. 332, 352 (2006). A plaintiff also bears the burden of proof to establish standing "with the manner and degree of evidence required at the successive stages of the litigation." *Lujan v. Defenders of Wildlife,* 504 U.S. 555, 561 (1992). At the summary judgment stage, a

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[5] As a preliminary matter, the court addresses API's motion to file a reply brief on the issue of standing. (API Mot. for Reply (Dkt. # 58).) In granting amicus curiae status, the court cautioned that an amicus curiae "shall not file reply memoranda . . . unless authorized in advance by the court." (2/18/14 Order at 21 (citing Federal Rule of Appellate Procedure 29(f).) Because the Western District of Washington's Local Rules do not address the situation of amicus curiae, the court looked to the Federal Rules of Appellate Procedure for guidance. (*See id.*) The Federal Rules of Appellate Procedure permit amicus reply briefs with court permission. *See* Fed. R. App. P. 29(f).

The court is aware that the Ninth Circuit's Circuit Rule 29-1 disallows amicus reply briefs at the federal appellate level. Nonetheless, the court concludes that a reply brief is warranted here. First, API is the only entity to contest the issue of standing in this litigation. As such, its input on the issue will be of use to the court. Second, standing is a critical jurisdictional requirement that should be resolved on a full record and thorough briefing. Finally, CBD will not be prejudiced by the reply brief because CBD has taken full advantage of the two opportunities it was afforded show standing, first in its opening motion and then in its combined response and reply (CBD Resp. (Dkt. # 57)). For these reasons, the court GRANTS API's motion to file its proposed reply brief (API Reply (Dkt. # 58-1)).

plaintiff cannot rest on mere allegations, "but must set forth by affidavit or other evidence specific facts, which for purposes of the summary judgment motion will be taken to be true." *Bellon*, 732 F.3d at 1139 (quoting *Lujan*, 504 U.S. at 561).

Where, as here, the plaintiff is an organization, it may assert standing on behalf of its members as long as the "members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization's purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs., Inc.*, 528 U.S. 167, 181 (2000); *see also Bellon*, 732 F.3d at 1139. The court finds that CBD meets the last two criteria, which API does not challenge.[6] As such, the crux of the standing inquiry is the first criterion: whether CBD's members would otherwise have standing to sue in their own right. An individual has Article III standing to sue if (1) he or she suffered an injury in fact that is concrete, particularized, and actual or imminent; (2) the injury is fairly traceable to the challenged conduct; and (3) the injury is likely to be redressed by a favorable court decision. *Bellon*, 732 F.3d at 1139-40 (citing *Lujan*, 504 U.S. at 560-61);

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[6] Specifically, CBD is a non-profit organization dedicated to the conservation of imperiled species, and has previously engaged in efforts to protect marine species in Washington and Oregon. (Galvin Decl. (Dkt. # 33-6) §§ 5-9.) As discussed in more detail in the following section, CBD's members assert aesthetic and environmental interests in the Pacific Northwest shellfish and coastal marine habitats endangered by ocean acidification. (*See generally* Antoine Decl. (Dkt. # 33-2); Weitzer Decl. (Dkt. # 33-3); Moritz Decl. (Dkt. # 33-4); Easton Decl. (Dkt. # 33-5).) These members rely on CBD to represent their interests in protecting marine species from threats like ocean acidification. (*See, e.g.*, Antoine Decl. ¶ 5; Weitzer Decl. ¶ 5.) Accordingly, the interests at stake in this litigation are germane to CBD's purpose. Moreover, the participation of individual members in the lawsuit is not required.

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see also Friends of the Earth, 528 U.S. at 180-81. The court addresses each element below.

1. Injury in fact

"[E]nvironmental plaintiffs adequately allege injury in fact when they aver that they use the affected area and are persons for whom the aesthetic and recreational values of the area will be lessened by the challenged activity." *Friends of the Earth*, 528 U.S. at 183; *see also Natural Res. Def. Council v. EPA*, 526 F.3d 591, 601 (9th Cir. 2008) (stating that an environmental plaintiff can satisfy the injury requirement by showing that the challenged activity impairs his or her "aesthetic and environmental well-being"). "[N]othing necessitates a showing of existing environmental harm." *Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 860 (9th Cir. 2005). Rather, "an increased risk of harm can itself by injury in fact for standing." *Id.*; *Ecological Rights Found. v. Pac. Lumber Co.*, 230 F.3d 1141, 1151-52 (9th Cir. 2000) ("'A plaintiff need not wait until his lake becomes barren and sterile or assumes an unpleasant color and smell before he can invoke the protections of the Clean Water Act.'") (quoting *Friends of the Earth, Inc. v. Gaston Copper Recycling Corp.*, 204 F.3d 149, 160 (4th Cir. 2000) (internal punctuation omitted)). Therefore, an individual can establish 'injury in fact' by "showing a connection to the area of concern sufficient to make credible the contention that the person's future life will be less enjoyable—that he or she really has or will suffer in his or her degree of aesthetic or recreational satisfaction—if the area in question remains or becomes environmentally degraded." *Ecological Rights Found.*, 230 F.3d at 1149.

CBD submits declarations from several of its members attesting to specific aesthetic and recreational injuries they are suffering or will suffer due to ocean acidification. Specifically, Jessica Antoine regularly visits the beaches in Netarts Bay, Pacific City, and Oswald West State Park in Oregon to go tidepooling, clamming, and purchase oysters, and is concerned that her ability to harvest clams and other shellfish and explore tidepools with her family will decrease due to ocean acidification. (Antoine Decl. ¶¶ 7-17.)

David Weitzer visits the Washington and Oregon coastlines, including Willapa Bay in Washington and Gearhart, Seaside, Indian Beach, Canon Beach, Hug Point, Arch Cape, Falcon Cove, and Manzanita in Oregon, on average six times per year in order to dig for butter, steamer, and razor clams; harvest oysters, mussels, and barnacles; surf; and investigate tidepools to observe hermit crabs, small fish, chitons, starfish, anenomes, urchins, and other organisms. (Weitzer Decl. ¶¶ 6-15.) Over the last 10 years he has noticed that there are fewer and fewer oysters and clams available to harvest, the quality of the oyster shells has declined (they are now more brittle), the number and diversity of species in the tidepools has declined, and the number of shells washed ashore is reduced. (*Id.*) He is concerned that ocean acidification is responsible for these changes. (*Id.*)

Anna Moritz regularly visits Puget Sound, including Golden Gardens Park, Richmond Beach, and Whidbey Island, as well as the coasts of Washington and Oregon, including Fort Stevens State Park, Nehalem Bay, Manzanita, and Westport, to go tidepooling and beachcombing with her family. (Moritz Decl. ¶¶ 5-17.) Additionally, she plans to camp with her family at Rialto Beach on the Olympic Peninsula this

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upcoming summer. (*Id.*) She is concerned that if the region's coastal waters continue to increase in acidification, fewer shelled animals will survive, limiting her and her family's opportunities for and enjoyment in finding shells, sea stars, sand dollars, and tidepool creatures during their trips to Puget Sound and the Washington coast. (*Id.*)

Katherine Easton owns a house on the water on Camano Island, in Puget Sound, which she visits almost every weekend during the summer, fall, and spring to walk through the extensive tideflats by her house and examine crabs, clams, and other creatures. (Easton Decl. ¶¶ 6-12.) She worries that ocean acidification is harming shellfish and small prey species that will affect the entire food web, making it more difficult for her to view not only shellfish, but also whales, seals, and other marine creatures in the Sound. (*Id.*)

These alleged harms and increased risk of harms fall squarely into the category of aesthetic and recreational injuries countenanced by the Supreme Court in *Friends of the Earth*. *See Friends of the Earth*, 528 U.S. at 183; *Ocean Advocates*, 402 F.3d at 860. Moreover, these alleged harms span a sample set of beaches and coastline that is geographically representative of Washington's and Oregon's coastlines and estuaries. *See Alaska Center for Environment v. Browner*, 20 F.3d 981, 985 (9th Cir. 1994) (finding that a plaintiff seeking state-wide environmental relief was not required to demonstrate harm over the entire state but was only required to establish that a representative number of areas were adversely affected by the government's action); *Defenders of Wildlife v. U.S. Envtl. Prot. Agency*, 420 F.3d 946, 957 (9th Cir. 2005) *rev'd and remanded sub nom. on unrelated grounds Nat'l Ass'n of Home Builders v. Defenders of Wildlife*, 551

U.S. 644 (2007); *Sierra Club v. Johnson*, No. C 08-01409 WHA, 2009 WL 482248, at *3 (N.D. Cal. Feb. 25, 2009). Moreover, API does not challenge the legal sufficiency of CBD's members' statements regarding injury. Accordingly, the court finds that the declarations of CBD's members adequately provide "specific facts" regarding their imminent, concrete injuries to establish injury in fact.[7] *See Lujan,* 504 U.S. at 561; *Natural Res. Def. Council*, 526 F.3d at 601; *Friends of the Earth*, 528 U.S. at 183.

2. Causation and redressability

The "fairly traceable" and "redressability" components for standing overlap and are "two facets of a single causation requirement." *Bellon*, 732 F.3d at 1146 (quoting *Allen v. Wright*, 468 U.S. 737, 753 n.19 (1984)). "The two are distinct insofar as causality examines the connection between the alleged misconduct and injury, whereas redressability analyzes the connection between the alleged injury and requested judicial relief." *Id.*

To satisfy the causality element, CBD must show that the injury is causally linked or "fairly traceable" to the EPA's alleged misconduct, and not the result of misconduct of some third party not before the court. *Id.* (citing *Lujan*, 504 U.S. at 560-61). The causal connection "cannot be too speculative or rely on conjecture about the behavior of other parties, but need not be so airtight at this stage of litigation as to demonstrate that the plaintiffs would succeed on the merits." *Ocean Advocates*, 402 F.3d at 860 (quoting

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[7] CBD also alleges that its members have suffered an informational injury from EPA's conduct. (CBD Resp. at 10-11 (citing *Fed. Elections Comm'n v. Akins*, 524 U.S. 11 (1998)).) Because the court concludes that CBD has shown a substantive injury, the court does not address CBD's theory regarding informational injury.

Ecological Rights Found., 230 F.3d at 1151). A "causal chain does not fail simply because it has several 'links,' provided those links are not hypothetical or tenuous and remain plausible." *Maya v. Centex Corp.*, 658 F.3d 1060, 1070 (9th Cir. 2011) (quoting *Nat'l Audubon Soc., Inc. v. Davis*, 307 F.3d 835, 849 (9th Cir. 2002)) (internal punctuation omitted). Moreover, CBD need not show that EPA is the "sole source" of its members' injuries, and "need not eliminate any other contributing causes to establish its standing." *Barnum Timber Co. v. EPA*, 633 F.3d 894, 901 (9th Cir. 2011); *see also Ocean Advocates*, 402 F.3d at 860 (finding causation because although other factors also caused the plaintiffs' injury, the link between the agency's action and the injury was "not tenuous or abstract").

A plaintiff meets the redressability requirement if it is likely, even if not necessarily certain, that his injury can be redressed by a favorable decision. *See Bonnichsen v. United States*, 367 F.3d 864, 873 (9th Cir. 2004); *Beno v. Shalala*, 30 F.3d 1057, 1065 (9th Cir. 1994) (stating that a plaintiff "must show only that a favorable decision is *likely* to redress his injury, not that a favorable decision *will inevitably* redress his injury"). However, relief "that does not remedy the injury suffered cannot bootstrap a plaintiff into federal court."[8] *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 107 (1998).

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[8] A plaintiff that challenges the violation of "a procedural right to protect his concrete interests can assert that right without meeting all the normal standards" for traceability and redressability. *Natural Res. Def. Council v. Jewell*, 749 F.3d 776, 782-83 (9th Cir. 2014); *see also Massachusetts v. EPA*, 549 U.S. 497, 517-18 (2007). Such a litigant "need only demonstrate that he has a procedural right that, if exercised, *could* protect his concrete interests and that those interests fall within the zone of interests protected by the statute at issue." *Jewell*, 749 F.3d at 783 (internal quotation omitted); *see also Salmon*

a. *Washington Environmental Council v. Bellon*

API argues that *Washington Environmental Council v. Bellon*, 732 F.3d 1131, 1139 (9th Cir. 2013) precludes CBD from establishing that the EPA's approval of the 303(d) lists caused its members' injuries and that a favorable ruling would redress those injuries. (*See* API Br.) In *Bellon*, the Ninth Circuit held that plaintiffs alleging aesthetic and recreational injuries linked to climate change in Washington did not have standing to challenge EPA's approval of Washington's decision not to regulate the greenhouse gas emissions of the state's five local oil refineries under the Clean Air Act. *See id.* at 1136-43. The Court reasoned that, because climate change was the cumulative result of greenhouse gas emissions from numerous independent sources intermingling on a global scale, the plaintiffs were unable to show that their localized injuries were either fairly traceable to or redressable by EPA's failure to require greenhouse gas emission limits on the local oil refineries. *Id.* at 1143-44; *but see Massachusetts v. EPA*, 549 U.S. at 524; *Covington v. Jefferson Cnty.*, 358 F.3d 626, 654 (9th Cir. 2004) (Gould, J., concurring); *Washington Envtl. Council v. Bellon*, 741 F.3d 1075, 1080 (9th Cir. 2014) (Gould, J., dissenting from denial of rehearing en banc).

Spawning & Recovery Alliance v. Gutierrez, 545 F.3d 1220, 1226 (9th Cir. 2008). This lower standard does not apply to CBD because CBD does not assert a procedural right in this action. The Clean Water Act's citizen suit provision, which applies to nondiscretionary duties by EPA, is inapplicable to CBD's challenge. (*See Compl.* ¶ 9); 5 U.S.C. § 706(2)(a); 33 U.S.C. § 1365(a); *Natural Res. Def. Council*, 542 F.3d at 1245. Furthermore, CBD does not allege that EPA failed to adhere to any procedure mandated by statute or regulation. Rather, CBD challenges EPA's substantive decision to approve two 303(d) lists excluding waters allegedly impaired by ocean acidification. *See City of Dover v. EPA*, No. CV 12-1994(JDB), 2014 WL 1410399, at *8 (D.D.C. Apr. 14, 2014) (finding that challenge to EPA's approval of New Hampshire's 303(d) list did not allege violation of a procedural right); *see generally Massachusetts*, 549 U.S. at 517-18. Therefore, the standing requirements are not lowered for CBD.

The parties here agree that oceanic uptake of atmospheric, anthropogenic carbon is the primary driver of ocean acidification on a global scale. (*See* CBD Resp. at 16; API Br. at 7); *see also* Feeley 2012 at 9. API reasons that, because CBD cannot point to a mechanism under the Clean Water Act that addresses global carbon emissions in an appreciable way, and because the record lacks evidence regarding the effect of local carbon emissions on local ocean acidification, *Bellon* precludes CBD from showing causation and redressability. (*See* API Br. at 9-11.)

CBD, however, bases its causation and redressability arguments on a different premise. CBD contends that regional human-caused drivers exacerbate ocean acidification along Washington's and Oregon's coasts, and that local pollution controls can reduce the input from these drivers. (*See, e.g.*, CBD Mot. at 15.) CBD maintains that, if its suit to add acidified-impaired waters to the states' 303(d) lists is successful, these local measures could be employed to implement the applicable TMDLs, thereby alleviating its members' injuries. (*See* CBD Resp. at 14.); *see also* 33 U.S.C. § 1313(e); *Pronsolino*, 291 F.3d at 1128.

Framed as such, causation and redressability are two sides of the same coin: CBD's members' injuries are traceable to EPA's conduct and redressable by a favorable ruling to the extent that coastal waters improperly not identified as acidified-impaired are influenced by sources that can be mitigated by local actions. Accordingly, the court addresses these two standing elements together in the following sections.

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b. CBD's evidence

CBD relies on several scientific studies in the administrative record, as well as the 2012 report by the Washington State Blue Ribbon Panel on Ocean Acidification,[9] and a declaration by Dr. Burke Hales, Professor of Oregon Ecology and Biogeochemistry at Oregon State University (Hales Decl. (Dkt. # 57-1)) to establish causation and redressability. This evidence shows that "although atmospheric CO2 is the major driver of acidification globally, near the coasts—particularly highly populated or developed areas—other drivers that generate additional CO_2 in the water column also contribute significantly to acidification." Feeley 2012 at 9. In particular, "acidification in Washington State coastal waters is driven by a combination of factors, particularly in the deep waters of Puget Sound and the nearshore regions." *Id.* at 13. Similarly, regional drivers also affect the acidification of Oregon's coastal waters. *Id.* at 9-15.

CBD identifies the following regional drivers that influence Pacific Northwest coastal waters. First, the "near-surface coastal waters off Washington and Oregon" are unusually susceptible to conditions of respiration and hypoxia (low oxygen levels), which are caused by algae growth stimulated by excessive nutrients. Feeley 2012 at 12. These processes are "acknowledged to be important drivers of ocean acidification, particularly when the land nearby is highly populated or agriculturally developed." *Id.* In such areas, "human activity increases the amount of nutrients such as nitrate, phosphate, and iron

[9] The Washington State Blue Ribbon Panel on Ocean Acidification ("Blue Ribbon Panel"), which included scientists, industry representatives, and state, local, and federal policy makers, was convened under the auspices of the National Oceanic and Atmospheric Administration's National Shellfish Initiative to develop recommendations to respond to ocean acidification and reduce its harmful causes and effects in Washington. Blue Ribbon Panel at xvi.

flowing off the land" from sources such as wastewater treatment facilities, stormwater outfalls, concentrated animal feedlots, grazing lands, and urban runoff. *Id.*; Blue Ribbon Panel at 43. For example, human sources of nitrogen in Puget Sound have increased steadily to the point where they form a "considerable contribution" to nitrate levels that exceed natural conditions. Feeley 2012 at 29, 33. "In particular, Hood Canal, South Puget Sound, and other shallow, enclosed bays and estuaries are particularly susceptible to periodic, sometimes catastrophic low oxygen levels that can lead to fish kills and other biological impacts."[10] Blue Ribbon Panel at 44.

Second, "Washington's marine waters are affected by several major rivers (the Columbia, Frasier, and Skagit), and thousands of smaller rivers and streams draining the watershed." Feeley 2012 at 14. Dissolved and organic carbon inputs from rivers "can have a substantial influence on the marine carbon system in coastal waters." Feeley 2012 at 15. Anthropogenic sources of dissolved carbon include stormwater runoff and municipal and industrial wastewater, as well as land use change and road development. *Id.*; Blue Ribbon Panel at 12, 43. Additionally, anthropogenic sources of iron and silicate pollutants contribute to hypoxia and acidification. Blue Ribbon Panel at 14. The Columbia River plume delivers a "large supply" of nutrients and particulates to the

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[10] Puget Sound is particularly vulnerable to anthropogenic nutrient flows. "As an estuary with [approximately] 4,000 [kilometers] of shoreline, Puget Sound has an extensive land-water interface, with large fluxes of freshwater, sediments, organic matter, nutrients, and pollutants entering the sound from a variety of natural and urbanized landscapes. Within Puget Sound, circulation is sluggish in many of the restricted inlets of Hood Canal and South Sound so that terrestrial inputs may have relatively localized impacts. For instance, localized inputs of nitrogenous nutrients, such as are associated with development and urbanization, have been observed to stimulate enhanced primary production in surface waters in certain parts of Puget Sound with restricted circulation and developing shorelines." Feeley 2010 at 443 (internal citations omitted).

Columbia Estuary and adjacent Washington and Oregon coasts. Feeley 2012 at 19; Blue Ribbon Panel at 14-15. Smaller estuaries, such as Willapa Bay in Washington, face similar problems on a smaller scale. Blue Ribbon Panel at 29, 43.

Finally, deposition of nitrogen and sulfur compounds from anthropogenic nitrous oxides and sulfur oxide emissions "can lead to reduced pH and alkalinity." Feeley 2012 at 14. Estimates based on data and model results "show that in coastal regions fossil fuel combustion and agricultural practices produce increased atmospheric inputs of strong acids . . . and bases . . . to the coastal ocean that can further reduce the pH by as much as an additional 50 %. Feeley 2010 at 446. The effect of these gases is more important in coastal areas than in the open ocean due to the coastal areas' proximity to the sources of the emission. Feeley 2012 at 37.

In addition, CBD's evidence shows that "Washington's marine waters are particularly vulnerable to ocean acidification because of regional factors that exacerbate the acidifying effects of global carbon dioxide emissions." Blue Ribbon Panel at xii; *see also* Feeley 2012 at xi ("Washington State is particularly vulnerable because of its location and regional oceanography.") One of the most important natural regional factors is coastal upwelling. *Id.* With respect to natural regional drivers, Dr. Hales agrees that "[t]he coastal and estuarine waters of the Pacific Northwest have always been naturally poised near important biological thresholds . . . . The addition of a small amount of additional CO_2 has combined with the natural character of the system to dramatically increase the frequency, intensity, and duration of . . . low-pH events." (Hales Decl. (Dkt.

57-1) ¶ 8.)[11] Dr. Hales confirms that "[l]ocal inputs from human activities such as runoff, erosion, pollution, or sewage can contribute to carbonate chemistry and pH changes in coastal areas in Oregon and Washington." (*Id.* ¶ 11.) He warns that, for systems such as the Pacific Northwest "with carbonate-chemistry conditions that are already showing impact on local organisms," intensification caused by local anthropogenic sources "can have significant consequences." (*Id.*)

CBD's evidence also identifies multiple local mitigation measures that can address "local and regional 'hot spots' of ocean acidification." *See generally* WA-000731 ("Kelly 2011") at 1036-37; Blue Ribbon Panel at 44-46; (Hales Decl. ¶ 12 ("[I]n certain

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[11] EPA moves to strike Dr. Hales' declaration for two reasons. First, EPA complains that Mr. Hales' declaration is not a part of the administrative record. Dr. Hales' declaration, however, was submitted for the limited purpose of satisfying Article III standing requirements. (*See* CBD Resp. at 16-19.) The court does not rely on this declaration to judge the merits of CBD's claims against EPA. EPA cites to no authority requiring that standing be established on the administrative record, and, to the extent that is EPA's position, EPA fails to explain why it challenged Mr. Hales' standing declaration but not CBD's members' declarations. Both the Ninth Circuit and the Supreme Court have relied on scientists' declarations when evaluating standing in environmental cases. *See, e.g.*, *Bellon*, 732 F.3d at 1143 ("Thus, according to the unchallenged declaration of [intervenor's] expert . . . ."); *Massachusetts*, 549 U.S. at 522 (quoting declaration from a climate scientist); *see also Barnum Timber Co. v. EPA*, 835 F. Supp. 2d 773, 778 (N.D. Cal. 2011) (relying on extra-record expert declarations to find standing). Therefore, the court finds that EPA's motion to strike on that ground is not well-taken.

Second, EPA complains that the declaration was included with CBD's combined response and reply brief, rather than with CBD's original motion for summary judgment. (*See* EPA Reply (Dkt. # 59).) A court should not consider new evidence submitted in a reply brief without giving the opposing party an opportunity to respond. *Provenz v. Miller*, 102 F.3d 1478, 1483 (9th Cir. 1996). Based on the parties' stipulated modified briefing schedule, however, the court is unconvinced that it is appropriate to view Dr. Hales' declaration as submitted in a reply brief. The accompanying brief is a combined response to EPA's cross motion for summary judgment, reply to EPA's response to CBD's motion for summary judgment, and response to the amicus briefs filed in support of EPA, which were filed after CBD's original motion. (*See* Sched. Order.) The challenge to CBD's standing was not raised until amicus briefs were filed. (*See* API Br.) More importantly, EPA had the opportunity to address Dr. Hales' declaration in its own reply brief, which was due after CBD's combined response and reply. (*See id.*) EPA chose not to address the evidence substantively, but rather moved to strike it. (*See* EPA Reply at 19.) Additionally, API, the only entity that has raised the issue of standing, has been granted a full opportunity to respond to the declaration. (*See* API Reply (Dkt. # 58-1).) API concedes that Dr. Hales' declaration "generally states what has already been stated in the record." (*Id.* at 7.) For these reasons, the court denies EPA's motion to strike Dr. Hales' declaration.

systems, management of local inputs and proactive mitigation measures can counteract the trend towards ocean acidification.").) For example, pollution controls, improved onsite water treatment facilities, reduction of coastal erosion, and stormwater surge prevention can reduce residential and agricultural runoffs that contain nutrients and organic carbon pollutants. Kelly 2011 at 1036-37; Blue Ribbon Panel at 44-46. The Blue Ribbon Panel found: "Reducing inputs of nutrients and organic carbon from local sources will decrease acidity in Washington's marine waters that are impacted by these local sources and thereby decrease the effects of ocean acidification on local marine species." Blue Ribbon Panel at 43. After noting that it is important to "gather more data regarding the relative importance of local sources of acidifying pollutants," the Blue Ribbon Panel cautioned:

> We should not put nutrient control efforts on hold while this scientific work is done, however. On the contrary, the Panel recommends that existing nutrient and organic carbon reduction programs be enhanced and strengthened; these pollutants are already lowering dissolved oxygen levels and causing a variety of significant ecosystem impacts in some areas.

Id. at 44-46 (identifying, as an example mitigation tactic, a sewage treatment plant in South Puget Sound that "has been removing nitrogen for its effluent for several years, with significant benefits to [the inlet] where the plant's discharge is located"). Similarly, emission limits on nearby sources of airborne pollutants can reduce nitrous and sulfur oxide deposition. Kelly 2011 at 1037.

In addition to methods to reduce harmful inputs, on-site remediation options include coastal and riparian buffers, as well as wetland and seawater restoration, such as the addition of crushed shells to counter corrosive conditions. Kelly 2011 at 1037; Blue

Ribbon Panel at 56-57. With respect to estuarine restoration, Dr. Hales reports that restoration of marsh grasses and tidal ecosystems in Coos Bay, Oregon, has gradually increased the pH of the estuary, counter to the global trend. (Hales Decl. ¶ 12). As such, the "local drawdown of carbon by seaweeds and seagrasses holds some promise for local and short-term mitigation effects in Puget Sound and other areas of Washington State." Feeley 2012 at 67.

Finally, CBD provides ample evidence regarding the negative effects that ocean acidification can visit on shellfish and other marine animals. *See, e.g.*, Feeley 2012 at 57-90 (discussing various taxonomic groups' and ecosystems' negative responses to ocean acidification conditions that influence biological processes); Blue Ribbon Panel at 17-23 (summarizing the effects of carbonate reduction on small marine organisms and overall marine habitat response and concluding: "Acidification-driven changes in populations of keystone species could have strong domino effects on local ecosystems."); Feeley 2010 at 3.

c. API's arguments

API argues that CBD's evidence is insufficient to show causation and redressability for two reasons, neither of which are persuasive. First, API contends that CBD has not shown standing because the relative contributions of global and regional anthropogenic sources to local ocean acidification remain unclear, and therefore it is uncertain that reductions by local mitigation techniques will be sufficient to ameliorate harm to shellfish and other marine animals. (API Br. at 17; API Reply at 7); *see, e.g.*, Feeley 2012 at 9 ("These inputs and their relative importance will vary with space and

time, and some may not be appreciable drivers in all locations."); Blue Ribbon Panel at 45 ("[W]e know that nutrients and organic carbon exacerbate local ocean acidification but we do not yet know the specific magnitude of that impact. The relative contribution of local sources has not been quantified in Washington . . . .").

CBD, however, need not establish causation and redressability with "scientific certainty." *See Ecological Rights Found.*, 230 F.3d at 1152-53. The record establishes that local anthropogenic sources do have some acidifying effect on nearby coastal waters, and that acidified waters are harmful to marine animals. *See, e.g.*, Feeley 2012 at 9-15; Blue Ribbon Panel at 17-23. The fact that research regarding the extent of those effects is ongoing is not fatal to CBD's challenge. After all, CBD is not required to show that sources addressable under the Clean Water Act are the "sole source" of its members' injuries, and it "need not eliminate any other contributing causes to establish its standing." *Barnum Timber Co.*, 633 F.3d at 901. Even if the effect of local sources is relatively small, the Supreme Court has made clear that it is an "erroneous assumption that a small incremental step, because it is incremental, can never be attacked in a federal judicial forum." *Massachusetts*, 549 U.S. at 524. To the contrary: "That a first step might be tentative does not by itself support the notion that federal courts lack jurisdiction to determine whether that step conforms to law." *Id.* This principle rings especially true here, where CBD has put forth evidence that the waters of the Pacific Northwest are naturally poised near a tipping point, such that the even a small increment of acidity can have dramatic biological consequences. (*See* Hales Decl. ¶¶ 8, 11); Feeley 2012 at xi; Blue Ribbon Panel at xii; Feeley 2010 at 18 ("The additional pH . . .

decreases associated with these anthropogenic stressors may cross critical thresholds for organisms living near the edge of their physiological tolerances and may thus appear as abrupt and major changes in the health of an ecosystem."). As the Blue Ribbon Panel concluded:

> Washington's shellfish industry and native ecosystems cannot rely on emissions reductions alone . . . . Our marine waters are continuing to acidify and reducing carbon dioxide emissions takes time. To rely solely on those reductions would result in significant—and in some cases irreversible—economic, cultural, and environmental impacts. Additional local actions, including local source reduction and adaptation and remediation, are necessary to "buy time" while society collectively works to reduce global carbon dioxide emissions.

Blue Ribbon Panel at xvii. While it may be true that local mitigation will not reverse the global trend of ocean acidification, it by no means follows that the court lacks jurisdiction to address EPA's decisions regarding steps to slow or mitigate it in local waters. *See Massachusetts*, 549 U.S. at 525. Because CBD's evidence shows that local drivers of ocean acidification can have disproportionate and biologically significant effects on local Pacific Northwest waters, standing is established.

Second, API contends that CBD has not shown standing because CBD has not identified which specific local mitigation techniques are applicable to the beaches identified in its members' declarations. (API Br. at 18; API Reply at 7.) CBD, however, has shown that a range of human causes contribute to ocean acidification in the coastal regions its members visit, which causes are significant in each region, and which mitigation or remediation techniques are applicable to each cause. For example, Puget Sound, and in particular shallow areas in south Puget Sound, suffers from high

anthropogenic nutrient loading, which can be addressed by various point source and non-point source pollution controls. Feeley 2012 at 12, 29, 33; Blue Ribbon Panel at 43-46; Kelly 2011 at 1036-37. CBD members regularly visit beaches and islands in Puget Sound, including Camano Island, Whidbey Island, Golden Gardens Park, and Richmond Beach. (Moritz Decl. ¶¶ 5-17; Easton Decl. ¶¶ 6-12.) Similarly, the Oregon and Washington coasts adjacent to the Columbia River estuary are affected by nutrients and particulates delivered by the Columbia River plume, which can also be addressed by a variety of point source and non-point source pollution controls. Feeley 2012 at 14, 15, 19; Blue Ribbon Panel at 12, 14, 15, 29, 43; Kelly 2011 at 1036-37. CBD members regularly visit nearby beaches, including Gearhart, Canon Beach, Netarts Bay, and Hug Point in Oregon, and Willapa Bay, Washington. (Weitzer Decl. ¶¶ 6-15; Antoine Decl. ¶¶ 7-17.) Smaller bays visited by CBD members, such as Willapa Bay, are similarly influenced by freshwater inputs, and are candidates for estuary restoration efforts. *See* Kelly 2011 at 1037; Blue Ribbon Panel at 29, 43, 56-57; Hales Decl. ¶ 12; Feeley 2012 at 67; (Weitzer Decl. ¶¶ 6-15; Antoine Decl. ¶¶ 7-17.) Additionally, the effects of anthropogenic pollution and emissions are intensified in coastal areas near populated or developed areas. Feeley 2012 at 9, 13, 37; Feeley 2010 at 446. Almost all of the coastline segments identified by CBD's members fit that bill, particularly the segments in Puget Sound. *See* Feeley 2012 at 95; (Easton Decl. ¶¶ 6-12; Moritz Decl. ¶¶ 5-17; Weitzer Decl. ¶¶ 6-15; Antoine Decl. ¶¶ 7-17.)

By connecting local anthropogenic causes to the regions visited by its members and identifying potential local mitigation techniques, CBD has set forth "specific facts"

establishing a plausible connection between CBD's members' injuries and EPA's decision to approve the states' 303(d) lists without including acidification-impaired waters. *See Lujan,* 504 U.S. at 561; *Defenders of Wildlife*, 420 F.3d at 957 (finding standing where plaintiff's members described general regions within the state where they engaged in activities related to endangered species and where commercial and residential development that depended on the challenged permitting decision was occurring). The connection is neither abstract nor hypothetical. *Nat'l Audubon Soc., Inc.*, 307 F.3d at 849; *Ocean Advocates*, F.3d at 860. Those same "specific facts" show that the connection between CBD's members' injuries and the requested relief—a designation of impaired coastal waters or a remand for EPA to reconsider the 303(d) lists—is likely rather than merely "speculative." *See Lujan,* 504 U.S. at 561; *Beno*, 30 F.3d at 1065. Ninth Circuit precedent "require[s] no greater precision." *Defenders of Wildlife*, 420 F.3d at 957.

This conclusion is bolstered by the EPA's own guidance that "if a designated use is not supported and the segment is impaired or threatened, the fact that the specific pollutant is not known does not provide a basis for excluding the segment from being listed as impaired." EPA OA Memo at 9 ("[I]f marine pH exceeds the State's criterion, but the source-stressor is unknown (e.g., carbon deposition, nutrient enrichment, industrial discharge, natural background) then EPA expects the segment to be listed."); *see also* WA-01170; 33 U.S.C. § 1313; *Pronsolino*, 291 F.3d at 1138 ("Water quality standards reflect a state's designated *uses* for a water body and do not depend in any way

upon the source of pollution.").[12] After all, the purpose of the TMDLs triggered by a 303(d) listing is to gather the information necessary to guide states' implementation of remedial measures. *Pronsolino*, 291 F.3d at 112 (upholding EPA's determination that TMDLs are required even for waters affected only by non-point sources); *City of Arcadia v. U.S. Envtl. Prot. Agency*, 411 F.3d 1103, 1105 (9th Cir. 2005). For that reason, the Ninth Circuit confirmed an environmental organization's standing to challenge the EPA's failure to establish TMDLs for Alaska's listed waters notwithstanding the argument that the organization could not show that Alaska's discretionary implementation of any TMDLs would in fact improve water quality.[13] *Alaska Ctr. for Env't v. Browner*, 20 F.3d 981, 984 (9th Cir. 1994). The Ninth Circuit ruled that the "argument is untenable, because Congress has determined that the relief plaintiffs seek is the appropriate means of achieving desired water quality." *Id.* So, too, here. The relief CBD seeks—the listing of acidified-impaired waters—is the necessary forerunner to the establishment of TMDLs or other water quality improvement techniques, and, according to Congress, the appropriate means of achieving desired water quality. *See* 33 U.S.C. § 1313; *see also Florida Pub. Interest Research Grp. Citizen Lobby, Inc. v. EPA*, 386 F.3d 1070, 1085

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[12] *See also* WA-001231 (EPA 2006 Listing Guidance) ("[I]f a designated use is not supported and the segment is impaired or threatened, the fact that the specific pollutant is not known does not provide a basis for excluding the segment . . . . The segments must be listed unless the state can demonstrate that no pollutant(s) causes or contributes to the impairment.").

[13] API argues that *Alaska Center* is inapposite because it concerned a challenge under the citizen suit provision of the Clean Water Act to enforce a mandatory duty, and therefore was subject to the lowered standing requirements applicable to procedural injuries. (API Reply at 8.) The Ninth Circuit opinion in *Alaska Center*, however, makes no mention of the lowered standing requirement, and instead applies the ordinary standing requirement as set forth in *Lujan*. *See Alaska Ctr. for Env't*, 20 F.3d at 985. Therefore, the principles articulated in *Alaska Center* are relevant to CBD's case.

(11th Cir. 2004) (finding causation and redressability because "the continued pollution of the state's waterbodies . . . is fairly traceable to the EPA's failure to review [Florida's] Impaired Waters Rule, since use of the Rule could result in polluted waterbodies being left off the Impaired Waters List and not being cleaned.") For this reason, also, the court finds that CBD has shown causation and redressability.

3. Summary

Because CBD has set forth "specific facts" establishing injury in fact, causation, and redressability, as well as the remaining prerequisites for organizational standing, CBD's claims are properly before the court. *See Bellon*, 732 F.3d at 1139.

C. Merits

Having found standing, the court turns to the merits of CBD's claims. CBD raises two arguments: (1) EPA's explanation for its decision to approve Washington's and Oregon's Section 303(d) lists runs counter to the evidence before the agency and is implausible in light of that evidence, and (2) Washington and Oregon failed to consider all existing and readily available water quality data when creating their impaired waters lists. The court reviews both of these challenges under the arbitrary and capricious standard.

1. Arbitrary and Capricious Standard

EPA's decision to approve the 303(d) lists is reviewable under the Administrative Procedures Act ("APA"). 5 U.S.C. § 706(2)(A); *Dioxin/Organochlorine Ctr. v. Clarke*, 57 F.3d 1517, 1521 (9th Cir. 1995); *Envtl. Def. Fund, Inc. v. Costle*, 657 F.2d 275, 283 (1981). Specifically, the court must set aside EPA's action if it was "arbitrary,

capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). A decision is arbitrary and capricious within the meaning of the APA only if "the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Dioxin/Organochlorine Ctr.*, 57 F.3d at 1521; *see also Motor Vehicle Mfr. Ass'n v. State Farm Ins.*, 463 U.S. 29, 44 (1983). The arbitrary and capricious standard is "highly deferential, presume[s] the agency action to be valid and requires affirming the agency action if a reasonable basis exists for its decision." *Kern Cnty. Farm Bureau v. Allen*, 450 F.3d 1072, 1076 (9th Cir. 2006) (internal punctuation omitted). The reviewing court may not substitute its judgment for that of the agency; rather, the agency's decision must be affirmed if the agency has articulated a "rational connection between the facts found and the choice made." *Motor Vehicle Mfr. Ass'n*, 463 U.S. at 44. The court's deference to the agency's judgment "is highest when reviewing an agency's technical analyses and judgments involving the evaluation of complex scientific data within the agency's technical expertise." *League Of Wilderness Defenders Blue Mountains Biodiversity Project v. Allen*, 615 F.3d 1122, 1130 (9th Cir. 2010).

2. Motions to Strike

EPA has moved to strike various evidence introduced by CBD and amici Fishing Associations and the Scientists as improper extra-record evidence. (*See* 1st Mot. to Strike (Dkt. # 50); 2d Mot. to Strike (Dkt. # 51); EPA Reply at 19-20.) Judicial review

pursuant to the APA is based solely on the administrative record in existence at the time of the agency's decision. 5 U.S.C. § 706; *Camp v. Pitts*, 411 U.S. 138, 142 (1973); *Friends of the Earth v. Hintz*, 800 F.2d 822, 828 (9th Cir. 1986). There are, however, exceptions to this rule. *Hintz*, 800 F.2d at 828. Specifically, district courts are permitted to admit extra-record evidence "(1) if admission is necessary to determine whether the agency has considered all relevant factors and has explained its decision, (2) if the agency has relied on documents not in the record, (3) when supplementing the record is necessary to explain technical terms or complex subject matter, or (4) when plaintiffs make a showing of agency bad faith." *Lands Council v. Powell*, 395 F.3d 1019, 1030 (9th Cir. 2005) (citing *Sw. Ctr. for Biological Diversity v. U.S. Forest Serv.*, 100 F.3d 1443, 1450 (9th Cir. 1996) (internal punctuation omitted); *see also Asarco, Inc. v. U.S. Envtl. Prot. Agency*, 616 F.2d 1153, 1160 (9th Cir. 1980) ("If the reviewing court finds it necessary to go outside the administrative record, it should consider evidence relevant to the substantive merits of the agency action only for background information . . . or for the limited purposes of ascertaining whether the agency fully explicated its course of conduct or grounds of decision."). "Though widely accepted, these exceptions are narrowly construed and applied." *Lands Council*, 395 F.3d at 1030. Moreover, regardless of these exceptions, "[p]arties may not use 'post-decision information as a new rationalization either for sustaining or attacking the agency's decision.'" *Hintz*, 800 F.2d at 829 (quoting *Ass'n of Pac. Fisheries v. EPA*, 615 F.2d 794, 811-12 (9th Cir. 1980)).

In their respective briefs, the Scientists cite to 13 and the Fishing Associations cite to 3 extra-record articles, studies, and websites that they contend fall under the exceptions

either for material necessary to explain technical terms and complex subject matter or for background material. (*See generally* Fishing Br. (Dkt. # 47); Scientists Br. (Dkt. # 43-1); Fishing Resp. (Dkt. # 54); Scientists Resp. (Dkt. # 53).) The court is grateful for the amici's involvement in the case and willingness to educate the court on the topic of ocean acidification. Nonetheless, the court concludes that it must strike this evidence for the following reasons.

First, to the extent the references explain the basic scientific concepts and consequences associated with ocean acidification, they are cumulative of the extensive administrative record already before the court. *See Northcoast Envtl. Ctr. v. Glickman*, 136 F.3d 660, 665 (9th Cir. 1998) (upholding district court's decision to "strike cumulative and unnecessary documents outside the administrative record"); (*see, e.g.*, Scientists Br. at 1 n.2 (citing NOAA, PMEL Carbon Program, *What is Ocean Acidification?* to explain the basics of ocean acidification).)

Second, as amici concede, most of the references post-date EPA's decisions to approve Washington's and Oregon's 303(d) lists in December 2012. *See* WA Approval; OR Approval; (Fishing Resp. at 9; Scientist Br. at 10 n.27; Mot. to Strike 1 at 5 n.4.) Although post-decision information may be admissible to the extent it can be "deemed a clarification or an explanation of the original information before the [a]gency," the Ninth Circuit has made clear that parties may not use "post-decision information as a new rationalization either for sustaining or attacking the agency's decision." *Ass'n of Pac. Fisheries*, 615 F.2d at 811-12; *see also Bunker Hill Co. v. EPA*, 572 F.2d 1286, 1292 (9th Cir. 1977) (permitting extra-record evidence because it was "merely explanatory of the

original record" and "[n]o new rationalization of the [agency's decision] was offered"). The Scientists, however, use the post-decision evidence not merely to explain information originally before EPA, but rather to advance a substantive rationale for overturning EPA's decisions. (*See, e.g.*, Scientists Br. at 18 (arguing that EPA should have listed Willapa Bay as impaired because a 2013 article "conclusively linked" oyster deaths at a local hatchery to ocean acidification and a 2014 article stated that wild oysters in the bay were unable to reproduce successfully).)[14]

Precedent forecloses the Scientists' arguments that EPA's decisions should be reversed in light of the post-decision evidence cited in their briefs. *See Sw. Ctr. for Biological Diversity*, 100 F.3d at 1450-51 (upholding district court's decision to strike extra-record reference that constituted post-decision information). Although scientific knowledge regarding ocean acidification has continued to evolve since the date of EPA's decisions, those decisions must not be judged with hindsight. *See Ass'n of Pac. Fisheries*, 615 F.2d at 811-12; *Asarco*, 616 F.2d at 1160 ("Consideration of [extra-record] evidence to determine the correctness or wisdom of the agency's decision is not permitted."). The referenced information is more appropriate for consideration by the states and EPA during the next update of the states' 303(d) lists. *See* 33 U.S.C. § 1313(d); 40 CFR § 130.7(d)(1) (requiring states to update their impaired waters lists

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[14] (*See also* Scientists Resp. at 3 (stating that it is their "expert opinion" that "there is sufficient scientific evidence of the threats posed by ocean acidification to warrant the listing of coastal waters in the Pacific Northwest" and suggesting "that the court should consider the information they provided in determining whether EPA's interpretation of the available evidence was reasonable").

every two years). Accordingly, the court strikes these references, as well as the text related to such references, from amici's briefs.[15]

CBD and the Fishing Associations also provide evidence of pH monitoring datasets for Washington waters that are not included in the administrative record. (*See* Fishing Br. at 8-12; CBD Resp. at 13, Attach. A.) Specifically, the Fishing Associations cite the Washington Department of Ecology's own long-term marine monitoring data, which is published on Ecology's website, and provide tables summarizing the pH data from various monitoring points in recent years. (Fishing Br. at 9-11; Append. A.) CBD relies on the same data and summaries. (*See* CBD Resp. at 13.) In addition, CBD cites to pH monitoring datasets from the United States Geological Survey ("USGS"), Storage Retrieval ("STORET"), and National Ocean and Atmospheric Administration ("NOAA")

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[15] Specifically, the court strikes the following references and related text: (1) *Fisheries Economics of the US* (2012) (FEUS 2012) (Pacific Report); (2) Washington Shellfish Initiative; (3) Craig Welch; *Sea Change: Oysters dying as coast is hit hard*, Seattle Times, September 11, 2013; (4) NOAA, PMEL Carbon Program, *What is Ocean Acidification?*; (5) International Geo-sphere Biosphere Program, *Ocean Acidification, Summary for Policymakers, Third Symposium on Oceans in a High CO2 World*, (2013); (6) Ocean Acidification in the Pacific Northwest (May 2014); (7) Hettinger, A., E., et al. 2013, *Larval carry-over effects from ocean acidification persist in the natural environment*, *Global Change Biology*; (8) Evans *et al.*, *Transcriptomic responses to ocean acidification in larval sea urchins from a naturally variable pH environment*, Molecular Ecology (2013); (9) Grossman, Elizabeth, *Northwest Oyster Die-offs Show Ocean Acidification Has Arrived.* Yale Environment 360 November 21, 2011; (10) Waldbusser *et al.*, *A developmental and energetic basis linking larval oyster shell formation to acidification sensitivity*, Geophysical Research Letters Vol. 40, Issue 10, pages 2171-2176 (May 2013); (11) Phys. Org, *Ocean acidification killing oysters by inhibiting shell formation, study finds* (June 12, 2013); (12) Kroecker *et al.*, *Impacts of ocean acidification on marine organisms: quantifying sensitivities and interaction with warming*, Global Change Biology (2013); (13) Wittmann, A.C., Pörtner, H.-O., *Sensitivities of extant animal taxa to ocean Acidification*, Nature Climate Change (2013); (14) Doney, Scott, *Oceans of Acid: How Fossil Fuels Could Destroy Marine Ecosystems*, Nova Next (Feb. 2, 2014); (15) Memorandum from Denise Keehner, Director Office of Wetlands, Oceans, and Watersheds to Water Division Directors Regions I-10, *Information Concerning 2014 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions* (September 3, 2013); (16) *Information Concerning 2014 Clean Water Act Sections 303(d)* (Sept. 3, 2013) ("EPA 2014 Guidance").

databases, and provides tables and text summaries of pH data from recent years. (CBD Resp. at 13, n.16, n.17.)

CBD and the Fishing Associations rely on this evidence to support their argument that EPA's failure to evaluate these datasets was arbitrary and capricious and in violation of EPA's regulations. (CBD Resp. at 10-13; Fishing Br. at 9-10.) EPA does not dispute the authenticity of these databases. (Mot. to Strike 1 at 5.) Rather, EPA argues that admission of the data "presents an unnecessary risk of confusion."[16] (*Id.* at 6.)

The court concludes that this evidence falls within the exception for evidence necessary to determine whether the agency has considered all relevant factors. *See Lands Council*, 395 F.3d at 1030. The Ninth Circuit has recognized that "[i]t will often be impossible, especially when highly technical matters are involved, for the court to determine whether the agency took into consideration all relevant factors unless it looks outside the record to determine what matters the agency should have considered but did not." *Asarco, Inc.*, 616 F.2d at 1160. Here, the court cannot evaluate CBD's claim that EPA failed to evaluate monitoring data in violation of EPA's regulations without knowing which data EPA allegedly failed to evaluate and whether that data is relevant to EPA's decision to approve Washington's 303(d) list. *See, e.g.*, *Sierra Club, Inc. v. Leavitt*, 488 F.3d 904, 920 (11th Cir. 2007) (holding that documents showing that EPA's

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[16] To the extent that EPA argues that the evidence filed with CBD's combined response and reply brief is untimely, the court is unpersuaded. EPA was provided a full and fair opportunity to address that evidence in its own reply brief, which it declined to do. (*See* Stip. (Dkt. # 26); EPA Reply.) Unlike the standard briefing schedule, in which the nonmovant has only one opportunity and a lesser number of pages to brief the issues, here both parties have stipulated to two opportunities and the same number of pages to address the issues. (*See* Sched. Order.) Because EPA had ample opportunity to respond to the evidence, the court denies EPA's motion to strike the evidence as untimely.

categorical failure to consider data older than 7.5 years led to impaired waters being excluded from Florida's 303(d) list could be considered on remand "as extra-record material necessary to determine whether EPA considered all relevant factors in making its decision"). Therefore, this evidence is admissible for the purpose of determining whether EPA considered all relevant factors before approving Washington's 303(d) list. *See Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 760 n.5 (9th Cir. 1996) ("To the extent [the extra-record] declaration is submitted to show that the [agency] overlooked factors relevant to a proper population viability analysis, we will consider it.").

CBD and the Fishing Associations, however, go beyond that and also argue that these datasets show repeated violations of Washington's numerical pH water quality standard that compel EPA to include numerous waters on Washington's 303(d) list. (CBD Resp. at 13, n.16, n.17; Fishing Br. at 10-11.) Yet, courts that go outside the record must consider that evidence only for the "limited purpose" of ascertaining whether the agency considered all the relevant factors. *Asarco, Inc.*, 616 F.2d at 1160. "Consideration of the evidence to determine the correctness or wisdom of the agency's decision is not permitted." *Id.* If a court determines that an agency's course of inquiry was insufficient, the proper course is to "remand the matter to the agency for further consideration and not compensate for the agency's dereliction by undertaking its own inquiry into the merits." *Id.* (finding that district court "went too far" in considering extra-record evidence because the "technical testimony [that] was plainly elicited for the

purpose of determining the scientific merit of the EPA's decision" necessarily "led the district court to substitute its judgment for that of the agency").

Accordingly, the court admits the extra-record dataset evidence only for the limited purpose of showing that additional pH data from Washington coastal and estuarine locations and relevant time periods were available to Washington and Oregon, and later to EPA, at the times of their respective decisions regarding the states' impaired waters lists, and that this data may show violations of Washington's water quality standards.[17] The court does not consider CBD's or the Fishing Associations' substantive arguments regarding what listing conclusions the extra-record data would support or compel, if any.

The court deals with EPA's remaining motions to strike below, in the context of the arguments that the contested evidence supports.

3. Evidence before the agency

CBD's first argument is that the evidence before EPA at the time of EPA's decision to approve Washington's and Oregon's 303(d) lists showed violations of Washington's numerical pH standard, as well as violations of Washington's and Oregon's narrative standards regarding aquatic life. The court addresses each contention in turn below.

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[17] The court considers this data, with one exception. The court strikes CBD's reference to the "NANOOS" data (CBD Resp. at 10 n.17) because CBD cites only data from 2014 and earlier data is not publicly available. *See Sw. Ctr. for Biological Diversity*, 100 F.3d at 1450-51. As such, there is no indication before the court that "NANOOS" data for years prior to EPA's approval of Washington'd and Oregon's 2010 Section 303(d) lists exists.

a. Washington's numerical pH standard

CBD's argument regarding Washington's numerical pH standard is founded on the Wootton study and accompanying data, which CBD submitted to Washington's Ecology Department ("Ecology") for review. WA-000731 ("Wootton 2008"); WA-000092-93. The Wootton study analyzed eight years of pH data from a tidepool on Tatoosh Island, which is located off the northwestern tip of Washington's Olympic Peninsula at the mouth of the Strait of Juan de Fuca. *See generally* Wootton 2008; WA-000092-93. The data show a decline in pH that can be fitted to a linear trend with a rate of change of 0.046 units per year, for an estimated total of 0.368 units over eight years.[18] Wootton 2008 at 18849; WA-000824-25 (Dr. Wootton's comments on Washington's 2010 draft assessment). The study concluded that the best-fit parameter for explaining the change was the contribution of atmospheric CO_2. WA-000825; Wootton 2008 at 18850. CBD argues that, because the data show a decline in more than 0.2 units from 2000 to 2008 and the study attributes the decline to atmospheric carbon dioxide, EPA's failure to list the Strait of Juan de Fuca or other adjacent Washington waters as impaired runs contrary to the evidence. (CBD Mot. at 19-21; Kilduff Decl. (Dkt. # 57-2) (analyzing and explaining the raw Wootton data with graphs and tables and concluding that the pH of the tidepool fell steadily since 2000).[19]

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[18] CBD notes that the greatest deviation—from the lowest pH value in 2000 to the lowest pH value in 2008—was a total of 0.68 units. (Kilduff Decl. (Dkt. # 57-2) ¶¶ 7-8.)

[19] EPA moves to strike Dr. D. Patrick Kilduff's declaration as improper extra-record evidence. (EPA Reply at 14.) The court finds that this declaration meets the exception for evidence "necessary to explain technical terms or complex subject matter." *Lands Council*, 395 F.3d at 1030. Specifically, Dr.

Ecology evaluated the Wootton study and data and concluded that the data did not show impairment of Washington waters because (1) the study did not provide conclusive evidence that the pH change was due to human sources rather than natural inputs, (2) the monitoring site is located within the Makah Indian reservation and therefore outside Ecology's regulatory authority, and (3) the characteristics of the single sampling location are unique and therefore the data could not be extrapolated to adjacent waters. WA-000092-94 (Ecology assessment of CBD's ocean acidification references); *see also* WA-000067 (Ecology response to CBD's comments); WA-000417 (Ecology response to CBD's comments). In addition, Ecology now points out that Washington's numerical pH standard refers to a change of 0.2 pH units *per year*, and, as such, the study's evidenced change of 0.046 units per year does not violate the standard. (Ecology Br. at 12.)

When reviewing Washington's 303(d) list, EPA undertook an independent evaluation of the Wootton study and data and concluded that, "for a variety of reasons, including the unique sampling location in the study, information from [the Wootton] documents was insufficient to determine the attainment status of Washington's marine pH criteria." WA-000015 (EPA review of Ecology's analysis of ocean acidification information). The court finds that Washington "offered a reasoned explanation for the

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Kilduff "used the Wootton_ 2009 Hydrolab Data Filtered.xls from the Administrative Record # WA-000731 to generate the graphs and summary tables." (Kilduff Decl. ¶ 4.) It should go without saying that the court is not capable of interpreting the raw data on its own. Without Dr. Kilduff's explanation, the court would not have been able to evaluate the data as a basis for CBD's challenge separate and distinct from the Wootton article. Because Dr. Kilduff's declaration is merely explanatory of the original record before EPA, it is admissible. *See Bunker Hill Co.*, 572 F.2d at 1292.

choices it made, and EPA was within the bounds of its judgment and expertise to approve it." *Vigil v. Leavitt*, 381 F.3d 826, 838 (9th Cir. 2004).

First, EPA, relying on the analysis of Carol Brown of EPA's Pacific Coastal Ecology Branch in the Office of Research and Development, concluded that Wootton does not establish that the observed pH changes were human-caused. Specifically, Wootton's model did not take into consideration natural processes, such as river discharge effects. WA-001338 ("Brown 2012"); WA-000015. Ms. Brown's model, on the other hand, showed that the pH decline observed off Tatoosh Island could have been related to changes in river discharge, upwelling, and chlorophyll levels, and therefore reflected local, natural conditions rather than large-scale anthropogenic pH declines across ocean waters.[20] *See* Brown 2012 at 8-15, 20-22; WA-000016. EPA has "discretion to rely on [its] own experts' reasonable opinions to resolve a conflict between or among specialists," even if the court finds a contrary view more persuasive. *Greater Yellowstone Coal. v. Lewis*, 628 F.3d 1143, 1148 (9th Cir. 2010), *as amended* (Jan. 25, 2011). The court will not second-guess EPA's conclusions that the Wootton study does not conclusively establish that the observed pH changes were human-caused, and therefore does not show violations of Washington's numerical pH standard.[21] *See Kern*

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[20] In addition, EPA relied on Feeley 2010, which concluded that the decline in pH at Tatoosh Island was "probably explained by a combination of factors, including enhanced upwelling of waters of the Washington coast resulting from changes in regional ocean circulation." Feeley 2010 at 18; *see also* WA-00015.

[21] CBD's reliance on EPA's guidance that states should list waters as violating designated uses even though the causative pollutant is unknown is misplaced. *See* EPA OA Memo at 9; WA-001231.

Cnty. Farm Bureau, 450 F.3d at 1076 ("[W]e may not substitute our judgment for that of the agency.").

Second, even if the Wootton study did prove violations of Washington's numerical pH standard, EPA was justified in determining that the study's results did not require listing adjacent waters, such as the Strait of Juan de Fuca. States do not have jurisdiction over tribal waters such as Tatoosh Island.[22] *See* WA-001304-05. Ms. Brown concluded that the results from Tatoosh Island were not indicative of ocean trends in nearby waters because "[t]he oceanography in this region is influenced by numerous physical factors including complex bathymetry, upwelling . . . and the presence of large-scale eddies and multiple river plumes." Brown 2012 at 2. EPA agreed with Ecology that these factors "make the Tatoosh Island sampling location highly unique," and therefore

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That guidance is inapposite to numerical standards, such as Washington's pH standard, that define only anthropogenic variances as excursions.

The court has struck as improper post-decision evidence the Scientists' references to and reliance on EPA's 2014 Guidance regarding "natural conditions" provisions. *See supra* Section III.C.2; *but see* EPA 2014 Guidance (stating that EPA's position on "natural conditions" provisions has remained unchanged since EPA's 2006 and 2008 guidance letters, which are located in the administrative record at WA-1170 and WA-01149, respectively). If the court had not stricken this line of argument, the Scientists' reliance on EPA's 2014 guidance regarding "natural conditions" provisions would be similarly misplaced. (*See* Scientists' Brief at 4-5 (citing *Information Concerning 2014 Clean Water Act Sections 303(d)* (Sept. 3, 2013) ("If the pollutant concentrations do not meet the EPA-approved water quality standards, and anthropogenic sources of the pollutant are present, the water is considered impaired and should be included on the State's Section 303(d) list even if natural sources of the pollutant are present.").) "Natural conditions" provisions permit standards to be adjusted to account for natural conditions that cause violations. *See* WAC 173-201A-260; (*see also* Ecology Br. at 7.) Washington, however, did not rely on its "natural conditions" provision to determine that the Strait of Juan de Fuca was not impaired.

[22] The record does not show that the Makah Tribe has requested that Washington list its waters. *See* WA-002138; WA-000181; WA-000208. Even if the Makah Tribe had so requested, EPA's policy is to take no action to approve or disapprove state listings of tribal waters because the tribe or EPA, not the State, retains ultimate responsibility for those waters. WA-001304-05.

unrepresentative of other Pacific Northwest coastal waters. WA-000016. EPA concluded that, because ocean acidification in the Pacific Northwest is affected by a variety of location-specific natural and anthropogenic processes, those variables "make the extrapolation of this data across a large geographic range . . . difficult and inappropriate." WA-000015.

Because analysis of the Wootton data requires an evaluation of complex scientific data within EPA's specialized technical expertise, EPA's conclusion that the data cannot be extrapolated to show water quality violations in adjacent waters is entitled to great deference. *See Envtl. Def. Ctr., Inc. v. EPA*, 344 F.3d 832, 869 (9th Cir. 2003). For these reasons, EPA's approval of Washington's 303(d) list that did not include waters based on the Wootton study was not arbitrary and capricious.

b. Washington's and Oregon's narrative standards

CBD maintains that EPA's conclusion that the administrative record does not demonstrate impaired health of wild Pacific Northwest shellfish populations due to ocean acidification is counter to the evidence and without a substantial basis in fact. (CBD Mot. at 19.) CBD's challenge is based on several categories of evidence: observations of shellfish decline; laboratory studies; hatchery studies; and data regarding aragonite saturation. (*See* CBD Mot.)

For its part, EPA contends that a finding of impairment is unwarranted because (1) the record lacks in situ field studies or other documentation showing adverse effects on indigenous aquatic life populations in either state attributable to stressors caused by ocean acidification, and (2) the other evidence relied on by CBD in place of such studies is

inconclusive and therefore insufficient to show impairment of the states' designated aquatic life uses. (EPA Mot. at 24).

In approving the states' 303(d) lists, EPA reviewed the states' analyses of the ocean acidification data and information, including the information submitted by CBD, and explained why the information was inadequate to show non-attainment of narrative standards. *See* WA-000001 (EPA approval letter); WA-000011-20 (EPA review of Ecology's analysis of ocean acidification data) ("No data or information was presented demonstrating impaired health of wild, natural populations in Washington waters, therefore an impairment determination for the aquatic life designated uses cannot be made at this time."); WA-000021-65 (EPA review of ocean acidification references); WA-000066-70 (Ecology's response to CBD's ocean acidification comments) ("[N]one of the studies provided conclusive evidence that aquatic uses in the natural environment were being threatened or impaired by environmental alterations related to ocean acidification."); OR2-000286-91 (EPA evaluation of Oregon's ocean acidification information); OR2-000275 (EPA's response to Oregon ocean acidification comments). The court finds that EPA has articulated a reasonable basis for its decision and therefore must be affirmed. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076. The court addresses each category of CBD's evidence in turn below.

i. Observations

CBD's evidence regarding observations of declining wild shellfish populations in the Pacific Northwest is scant. The *New Yorker* article that CBD relies on for its assertion that "ocean acidification puts 'a whole category of organisms that have been

around for hundreds of millions of years . . . at risk of extinction,'" makes no mention of shellfish in Washington or Oregon coastal waters and provides only a narrative summary of ocean acidification research, rather than any original analysis or data regarding shellfish populations. WA-000731 ("Kolbert 2006"). Beyond that, CBD supports its assertion that the oyster population in Willapa Bay, Washington has "crashed" with citations to the reports by the Blue Ribbon Panel and the Southern California Coastal Water Research Project ("SCCWRP"). (CBD Mot. at 19-20.) These reports contain only short, conclusory assertions about the declining presence of oysters in Willapa Bay that are unsubstantiated by any data or studies. *See* Blue Ribbon Panel at 3; WA-000731 ("SCCWRP") at B-5. Moreover, these reports lack any explanation of possible reasons for the decline. *See* SCCWRP at B-5 ("[T]here have been other periods of 4 to 6 years where sets of wild oysters have been poor. It is unknown if the present declines in wild sets will end, as other periods have, or if the declines will continue.") EPA's determination that these unsupported statements were inconclusive regarding the non-attainment of narrative standards attributable to ocean acidification is reasonable. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076.

CBD also cites to the Wootton study, which documented transitions among species near Tatoosh Island and created a model to predict changes in the populations of California mussels, blue mussels, and goose barnacles as a function of mean annual pH. (*See* CBD Mot. at 19); Wootton at 18849, 18859. EPA concluded that, for the same reasons as discussed above in Section III.C.3.a, "it would also be inappropriate to extrapolate the biology data collected near Tatoosh Island from the Makah waters to

waters of the State, based on the unique environment of the sampling location." WA-000016 ("The sampling location in the Wootton . . . study is highly unique and there is not sufficient information to determine if it is representative of conditions in Washington's state waters. . . . Further information would be needed on the condition of organisms in State waters in order to determine whether there is an aquatic life use impairment."). As discussed above in Section III.C.3.a, EPA's decision not to extrapolate the Wootton data to other waters was reasonable. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076.

ii. Laboratory studies

CBD also relies on laboratory studies that correlate ocean acidification conditions, such as pH and CO_2 levels and aragonite saturation, with adverse impacts on shellfish. (CBD Mot. at 15, 21-23).[23] CBD contends that because some waters along the Pacific Northwest coast have experienced CO_2 and aragonite saturation levels within the range of levels that the studies show can be harmful to shellfish,[24] EPA is required to list those

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[23] *See* CBD Mot. at 15, 22 (citing WA-000731 ("Crim 2011") at 272 (studying the effects of various CO_2 concentrations on abalone larvae); *id.* ("Hettinger 2012") at 30 (studying the effects of pH levels on oyster development); *id.* ("Gaylord 2011") at 2586 (studying the effects of elevated CO_2 levels on the shell strength of California mussels); *id.* ("Talmage 2009") (studying the effects of elevated CO_2 concentrations on larval hard clams); *id.* ("Abbasi 2011") (studying the effects of aragonite saturation state on coral and plankton calcification); *id.* ("Doney 2011") (same); *id.* ("NRC 2010") (studying the effects of aragonite undersaturation on coral and pteropods).

[24] (*See, e.g.*, CBD Mot. at 20, 22 (citing Feeley 2008 (finding seasonal upwelled seawater undersaturated with respect to aragonite up to 80 meters below the surface along the Pacific Northwest continental shelf in the summer of 2007); Feeley 2010 (finding that areas in Puget Sound in February 2008 were undersaturated with respect to aragonite to varying extents and depths); Feeley 2012 (discussing unpublished data regarding CO_2 values in upwelled water along the Washington and Oregon coasts); Juranek 2012 (calculating aragonite saturation on the Oregon continental shelf near Newport,

waters. (*Id.* at 20, 22.)

EPA, however, found that the laboratory studies did not reflect natural conditions, and therefore could not be extrapolated to show harm to wild populations. *See* WA-000016-17; OR2-000287-89 ("These particular lab-based studies alone are not sufficient to determine whether [water quality standards] are being met in State waters because water quality parameters are manipulated and therefore, may not represent the actual condition in the water body."). Specifically, EPA found that the laboratory experiments suffered from a "reduced ecological complexity," and therefore "did not provide evidence of the condition of natural assemblages of organisms in State Waters." WA-000016-17 (citing WA-000731 ("Honish 2012") (finding that the predictive ability of laboratory studies is limited)); OR2-000288 (same).[25] EPA also found that the studies "do not provide sufficient information to account for the potential adaptation and acclimation of wild assemblages, so it would not be appropriate to apply those findings to an attainment decision in natural waterbodies." WA-000017; *see also* OR2-000289. Moreover, the authors of the articles themselves had recognized some of these concerns. *See* OR2-000287; WA-000019; *see, e.g.*, Juranek 2012 (stating, after calculating aragonite saturate states in Oregon waters, that it is "unclear how organisms on the central Oregon coast are directly affected by these conditions"); Feeley 2010 ("[F]ield data on the impacts of CO_2

Oregon, and finding persistence of water with a low aragonite saturation state during the upwelling season from May through November 2007).)

[25] *See also, e.g.*, Talmage 2009 (describing the experiment setup: "[T]he CO_2 gas mixtures from the proportionator system were continuously delivered to the bottom of four replicated, polypropylene 1-liter beakers containing 0.2-mm filtered seawater from eastern Shinnecock Bay, New York.. . . . For each experiment, approximately 100 larvae were distributed to each experimental beaker.")

on the local marine ecosystems of Puget Sound do not exist."). EPA also noted that "there are no clear chemical thresholds at which dissolved carbon dioxide becomes deleterious to natural marine populations." OR2-000289.

EPA concluded: "[A]ll of these variables make the extrapolation of data/information from the laboratory . . . studies submitted by CBD, for the purposes of determining non-attainment of water quality standards, difficult and inappropriate in these circumstances. More information is needed on the biological condition within the waterbody (e.g., in situ field studies documenting the health of aquatic life populations) or laboratory studies that are designed to account for natural variability and ecological complexity within a particular system." OR2-000288; *see also* WA-000017 ("No data or information was presented demonstrating impaired health of wild, natural populations in Washington waters, therefore an impairment determination for the aquatic life uses cannot be made at this time.") Because EPA has articulated a "rational connection between the facts found and the choice made," its decision must be affirmed. *Motor Vehicle Mfr. Ass'n*, 463 U.S. at 44.

iii. Hatcheries

CBD argues that EPA improperly disregarded evidence that Oregon and Washington shellfish hatcheries, namely Whiskey Creek Hatchery on Netarts Bay, Oregon, and Taylor Shellfish Hatchery on Dabob Bay, Washington, experienced multi-year oyster die-offs beginning in 2005 and 2006, respectively. (CBD Mot. at 21 (citing Blue Ribbon Panel at 700-701).) CBD relies specifically on the Barton study of Whiskey Creek Hatchery, which draws seawater for oyster rearing directly from Netarts Bay,

Oregon. OR2-01521 ("Barton 2012") at 70-71. The Barton study found that larval production and growth at Whiskey Creek Hatchery was negatively correlated with the aragonite saturation state of the bay water in which the oysters were spawned and reared for the first 48 hours of life. *See* Barton 2012 at 705; Feeley 2012 at 71.

To begin, the court finds that EPA rationally determined that the Barton study, which considered only circumstances specific to Netarts Bay, could not be extrapolated to require listing of distant or dissimilar Washington and Oregon waters. EPA found that the natural variability of surface ocean carbonate chemistry influences how ocean acidification impacts shellfish from region to region, and that Netarts Bay therefore could not serve as a proxy for other coastal waters. *See* OR2-000287-88 (citing Freidrich 2012); Barton 2012 at 699-700, 703 (describing the two majors forcing driving Netarts Bay's carbon chemistry fluctuations: upwelling and metabolic variability). EPA identified differences between Netarts Bay and other Pacific Northwest waters and concluded: "All of these variables make the extrapolation of data across a large geographical range for the purposes of determining non-attainment of water quality standards in local water bodies difficult and inappropriate in these circumstances." OR2-000287. As EPA noted, the Barton study cautioned that "two significant shortcomings exist with regard to understanding acidification effects on natural populations of organisms in variable coastal and estuarine habitats: prediction of how carbonate conditions will vary in coastal and estuarine environments with increasing atmospheric CO_2 and a better understanding of the fundamental biology underlying the responses of multicellular organisms to acidification." Barton 2012 at 709; *see* OR2-000287; OR-

000275. In light of these reasons, the court finds that EPA's decision that the circumstances observed at Netarts Bay, Oregon, did not requiring listing other Pacific Northwest waters was neither arbitrary nor capricious. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076.

A closer question is whether it was arbitrary and capricious for EPA to approve Oregon's 303(d) list that did not include Netarts Bay as impaired. To begin, EPA's contention that Oregon's narrative standards were not violated because the seawater measured in Netarts Bay did not violate Oregon's numerical pH standard (EPA Mot. at 21) is misguided. The Supreme Court has made clear that waters are impaired if they fail to meet either narrative standards or numerical criteria. *PUD No. 1 of Jefferson Cnty. v. Washington Dep't of Ecology*, 511 U.S. 700, 715-16 (1994).

Nonetheless, the court concludes that, taking into account the deference due to EPA's technical expertise, EPA has articulated a "satisfactory explanation" for its conclusion that the hatchery shellfish die-offs did not require listing Netarts Bay as impaired. *See Humane Soc'y of U.S. v. Locke*, 626 F.3d 1040, 1048 (9th Cir. 2010); *League Of Wilderness Defenders Blue Mountains Biodiversity Project*, 615 F.3d at 1130. EPA based its decision on the fact that the Barton study did not present any data or information "demonstrating impaired health of wild, natural populations in Oregon waters." OR-000289. CBD maintains that EPA's focus on "wild" and "natural" populations was improper because the Oregon water quality standards do not explicitly contain such restrictions. (CBD Mot. at 22-23.) Rather, the Oregon water quality standards require that "[w]aters of the state must be of sufficient quality to support

aquatic species without detrimental changes in the resident biological communities," OAR 340-041-0011, and that the "creation of . . . conditions that are deleterious to fish or other aquatic life . . . may not be allowed," OAR 340-041-0007(10). The court finds that in the absence of a statutory definition of "resident biological communities" or similar guidance from the State of Oregon, EPA's interpretation of the standards is not arbitrary and capricious. The mere fact that the Whiskey Creek oysters are grown in tanks filled with water drawn from Netarts Bay does not make them "residents" of the Bay in the ordinary sense of the word. *See* Barton 2012 at 700 (explaining Whiskey Creek Hatchery's process of raising oysters in tanks).

Beyond that, EPA shows a rational connection between the evidence available at the time of the listing decision and its conclusion that the Barton study does not show deleterious effects on wild shellfish populations. *See Motor Vehicle Mfr. Ass'n*, 463 U.S. at 44. The study observed a correlation between saturation state and oyster growth, but at least according to the record before EPA at the time of the listing decision, it remained unclear whether saturation state was responsible for the large-scale die-offs at the hatchery. *See* SCCWRP at 10 (calling for further study because "[i]n addition to changes in carbon chemistry . . . high concentrations of the bacterial pathogen *Vibrio tubaiashii*, lower oxygen concentrations, and higher concentrations of various other chemical species are associated with upwelled water masses and have not been ruled out as contributors to the observed hatchery failures"). EPA also found that because "hatchery operators operate with tendencies that may obscure the relationship between water chemistry and recruitment," there was a need to establish improved linkages between hatchery and

oceanographic data before hatchery studies could reliably be extrapolated to natural populations. OR2-000288 (quoting SCCWRP at 10). Particularly, due to selective breeding programs, hatchery oysters can be genetically different from wild oysters, with potentially reduced fitness and diversity. Feeley 2012 at 90; OR2-000289 (finding that laboratory studies "do not provide sufficient information to account for the potential adaptation and acclimation of wild assemblages"). In addition, hatchery oysters necessarily face different living conditions than wild oysters, although the parties dispute whether the conditions are more or less optimal. (*See* CBD Resp. at 9 (stating, without citing any supporting evidence, that "oysters living in the wild would fare much worse" than hatchery oysters in response to ocean acidification); EPA Reply at 16); Barton 2012 at 706-707 (discussing how hatchery conditions vary from natural conditions).

In conclusion, although the court shares CBD's concerns regarding the conditions in Netarts Bay, Oregon, the court may not substitute its judgment for that of the agency. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076. EPA's decision does not run contrary to the evidence, as EPA has cited multiple peer-reviewed scientific sources to justify its decision. *See Dioxin/Organochlorine Ctr.*, 57 F.3d at 1521. Moreover, EPA's position is not so implausible that cannot be ascribed to the product of agency expertise or a difference in view. *Id.* As such, EPA's decision stands. *See Barnum Timber Co. v. EPA*, 835 F. Supp. 2d 773, 782 (N.D. Cal. 2011).

iv. Aragonite saturation

CBD contends that EPA entirely ignored the aspect of aragonite saturation. *See* CBD Mot. at 23-24.) This contention is not well taken. The record shows that EPA

reviewed all of the articles and studies regarding aragonite undersaturation named in CBD's motion. *See* OA-000292 (list of ocean acidification references EPA reviewed and EPA's comments as to why each study is or is not relevant to Oregon's water quality standards);); WA-0000021 (list of ocean acidification references that EPA reviewed and EPA's comments as to why each study is or is not relevant to Washington's water quality standards). EPA then explained the deficiencies of the laboratory studies concerning ocean acidification. *See* OR-000286 (EPA's summary of its evaluation of Oregon's ocean acidification information); WA-000011 (EPA's review of Ecology's review of Washington's ocean acidification information). The mere fact that the EPA's summary did not call out the aragonite studies by name is insufficient to show that EPA ignored the studies.

EPA correctly notes that Washington and Oregon have established no numerical criteria for aragonite saturation, and the fact that coastal waters are undersaturated for aragonite is not alone a basis for listing the waters as impaired under the states' narrative criteria. Rather, under both Washington and Oregon's narrative criteria, there must be some link between aragonite saturation and effects on aquatic life or uses. *See* WAC 173-201A-612, -210(1)(a), -260(2)(a);-310.; OAR 340-041-0220, -0011; OAR 340-041-0007(10), -0004(6). For this link, CBD relies entirely on the laboratory studies discussed above in Section III.C.3.b.ii. However, as explained above, EPA had a reasonable basis for determining that the laboratory studies did not establish impairment of aquatic life water quality standards. Therefore, EPA's conclusion that CBD's aragonite evidence did not require listing of Washington's or Oregon's coastal waters was not arbitrary or

capricious.

v. Summary

The amici Scientists contend that EPA improperly focused on the deficiencies of each piece of evidence in isolation and therefore failed to recognize the cumulative import of the evidence. (Scientists Br. at 20.) As discussed above, however, EPA's scientific assessment of the applicability of each category of evidence to the problem at hand, was not implausible or contrary to the evidence. Those assessments remain valid whether viewed together or in isolation, because no category of evidence solves the problems identified with the other categories of evidence. In this context, the whole is not greater than the sum of its parts.

Moreover, the Scientists cannot avoid the fact that the record evinces no documentation of adverse effects on wild aquatic life populations in Washington or Oregon attributable to ocean acidification. *See* WA-000011-20; OR2-000286-91. The science surrounding ocean acidification and its causes and effects is complicated and still-developing. "'[I]n an area characterized by scientific and technological uncertainty . . . this court must proceed with particular caution, avoiding all temptation to direct the agency in a choice between rational alternatives.'" *Ctr. for Biological Diversity v. EPA*, 749 F.3d 1079, 1088 (D.C. Cir. 2014) (quoting *Envtl. Def. Fund, Inc. v. Costle*, 578 F.2d 337, 339 (D.C. Cir. 1978) (alterations in original).) Accordingly, this court will not second guess EPA's decision to require more conclusive evidence before identifying coastal waters as acidified-impaired. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076; *League Of Wilderness Defenders Blue Mountains Biodiversity Project*, 615 F.3d at 1130.

For all of these reasons, the court finds that EPA's approval of Washington's and Oregon's impaired waters lists was neither implausible nor contrary to the evidence.

4. Existing and readily available water quality data

CBD's second argument, echoed by the Fishing Associations is that Washington and Oregon improperly ignored certain marine pH data, and therefore EPA's approval of Washington's and Oregon's lists without independently evaluating data from these sources was arbitrary and capricious. (CBD Mot. at 29-34; Fishing Mot. at 13-18.) EPA's regulations require that "[e]ach State shall assemble and evaluate all existing and readily available water quality-related data and information to develop the [Section 303(d)] list." 40 CFR 130.7(b)(5). If a state decides not to rely on certain existing and readily available data or information, the state must provide EPA with documentation explaining the rationale for that decision. 40 CFR 130.7(b)(6).[26] If a state fails to assemble and evaluate all existing and readily available data, EPA may not approve the state's 303(d) list until EPA undertakes its own evaluation of the overlooked data. 40 CFR 130.7(d)(2); *see also* OR Disapproval (partially disapproving Oregon's 2010 303(d) list for failure to evaluate certain water quality data); OR Approval (identifying impaired waters from the overlooked water quality data).

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[26] Each state must also provide EPA documentation showing (1) a description of the methodology used to develop its 303(d) list, (2) a description of the data and information used to identify listed waters, and (3) any other reasonable information requested by EPA. 40 CFR 130.7(b)(6). As such, there is no requirement for the state to provide EPA data that the state did not rely on in creating its 303(d) list, unless EPA requests such data for an independent evaluation. *See* WA-0001202, -1208 ("EPA 2006 Guidance") ("EPA will generally limit its review of a state listing submission to the data and information assembled by the state . . . if the state was reasonably diligent in assembling available data and information and soliciting data and information from the public.").

EPA concluded that Washington and Oregon complied with all statutory and regulatory requirements in deciding that their state waters did not exhibit impairments associated with ocean acidification. *See* WA Approval; OR Approval. CBD and the Fishing Associations, however, identify four data sources that they contend the states improperly ignored, namely, Ecology's own long-term marine monitoring database, the USGS database, the STORET database, and the NOAA database. (*See generally* CBD Mot.; Fishing Mot.) The court addresses each state's decision in turn below.

a. Oregon's list

The Oregon administrative record contains a spreadsheet of pH data that Oregon considered when making its listing decision. *See* OR2-000480. CBD and the Fishing Associations have identified no additional pH monitoring datasets from Oregon waters. (*See generally* CBD Mot.; CBD Resp.; Fishing Mot.) And they have provided no explanation as to why monitoring datasets from Washington's coastal waters would be relevant to Oregon's listing decision. As such, the court has no basis on which to judge CBD's challenge to EPA's approval of Oregon's 303(d) list for failure to consider all existing and readily available water quality data. Therefore, CBD's challenge with respect to Oregon's 303(d) list fails.

b. Washington's list

The Washington administrative record does not contain any marine pH data that Washington considered when making its listing decision. *See generally* Administrative Record. CBD and the Fishing Associations claim that Ecology improperly failed to consider two types of potentially relevant marine pH data: (1) data collected by Ecology,

and (2) data collected by various other federal agencies. The court addresses each type of data below.

i. Ecology's long-term marine monitoring data

Ecology's long-term marine water quality monitoring database stores pH measurements taken at numerous sampling locations in Puget Sound and other coastal estuaries from 1989 to the present. *See* Department of Ecology, *Long-term marine water quality data*, Marine Water Monitoring, http://www.ecy.wa.gov/apps/eap/marinewq/mwdataset.asp (last visited February 3, 2015). CBD and the Fishing Associations present evidence suggesting that these measurements show repeated water quality violations of Washington's numerical pH standard in Puget Sound, Gray's Harbor, and Willapa Bay. (Fishing Br. at 10-11, App. A; CBD Resp. at 13.)

CBD requested that Ecology consider this data in CBD's 2011 comments on Ecology's draft 2010 assessment of Washington's marine waters. WA-000813. Ecology, however, concluded that the data was unreliable because it was prone to large, unquantifiable measurement errors. *See* WA-000069 (Ecology response to CBD's ocean acidification comments). Therefore, Ecology declined to rely on the data to make listing decisions. *See id.*

In addition, Ecology found that without the long-term monitoring data, there was otherwise insufficient data from the sampling locations to meet the minimum requirements of Washington's Water Quality Policy. *See* WA-000097 (Ecology's Water Quality Assessment spreadsheet ("WQA"), located in the record at 65684-2010WQA-

ALL(rev1).xls) (identifying water segments, including Willapa Bay, Hood Canal, Grays Harbor, Admiralty Inlet, Port Townsend, and Oakland Bay, by sampling location number and concluding: "There is insufficient data to meet minimum requirements . . . .").[27] Accordingly, Ecology was unable to make a listing decision regarding those water segments. *See id.* (changing sampling locations to Category 3: water segments lacking sufficient data for an attainment decision). For each segment Ecology explained: "This listing is being moved . . . to Category 3 because questions have been raised about the accuracy of the pH measurements. Ecology will focus efforts on pH in current Puget Sound studies and monitoring to ensure that pH measurements measured in the marine environment are reliable, and will focus on technical issues regarding collection of marine pH data." *See, e.g.*, *id.* (changing Oakland Bay (sampling location OAK004) and Port Townsend (sampling location PTH005) to Category 3); *see also* WA-001363-64.

When reviewing Washington's 303(d) list, EPA requested additional documentation showing that Ecology considered all existing and readily available pH data and information. *See* WA-000095-96. In response, Ecology explained its decision not to rely on the long-term marine monitoring data as follows:

> The Ecology marine monitoring unit conducted an assessment of pH data collected via electrode probe, performing comparative analyses during the same 2008 research voyage where NOAA scientists (Drs. Feeley & Alin) collected measurements of DIC [dissolved organic carbon] and total alkalinity to calculate pH changes in Puget Sound waters. Based on the

[27] Ecology's spreadsheet that identifies and discusses the data it considered for each water segment and each pollutant references pH data from all of the long-term monitoring sampling locations identified in the Fishing Association's brief. (*Compare* WQA *with* Fishing Br. at 10-11, App. A.) For brevity's sake, the court identifies only a few representative sampling locations in this order. Nonetheless, the court's conclusions apply with equal force to all sampling locations.

> results of these comparative surveys and communicat[ions] by Dr. Feely to Ecology's marine monitoring unit, the data generated by electrode pH probe could be subject to large (+/- 0.5 pH units), non-quantifiable errors and are inadequate to assess changes in pH due to anthropogenic contribution. Based on this, a decision was made that the pH data does not represent credible data in accordance with Water Quality Policy 1-12 and should not be used for the Water Quality Assessment purposes.

WA-000153. Overall, EPA "conclude[d] that the [s]tate properly assembled and reasonably evaluated all existing and readily available data and information," and that the state also properly "provided to the EPA its rationale for not relying on particular existing and readily available water quality-related data and information as a basis for listing waters." WA-000006 (EPA's review of Washington's 2010 303(d) list). Moreover, EPA specifically reviewed Ecology's rationale for not relying on the long-term monitoring data and decided: "Ecology cited communication from Dr. Feeley of NOAA, which validated its decision not to use some existing data sets for Puget Sound for impairment decisions due to the large, non-quantifiable error the pH probes used to collect the Puget Sound data are subject to. The EPA finds Ecology's conclusion that some existing data were not valid for making impairment decisions to be reasonable." WA-000017.

The court agrees that Washington "offered a reasoned explanation for the choices it made, and EPA was within the bounds of its judgment and expertise to approve it." *See Vigil*, 381 F.3d at 838. Ecology evaluated the long-term monitoring data by comparing the pH measurements of Ecology's electrode probes with concurrent pH calculations taken by NOAA researchers in Puget Sound, and concluded that the probe

measurements were prone to substantial,[28] non-quantifiable errors that rendered them unreliable for assessing water quality attainment. WA-000069. Ecology then communicated its rationale for not relying on the electrode probe data to EPA. WA-000153. EPA considered the rationale and deemed it reasonable. WA-000017. The plain language of EPA's regulations requires nothing more. *See* 40 CFR 130.7(b)(5), (6).

CBD contends that Ecology's explanation insufficiently describes how Ecology evaluated the data before excluding it. (CBD Resp. at 12.). There is, however, no requirement that a state forward to EPA all evidence it considered regarding a body of water. *Barnum Timber Co. v. EPA*, 835 F. Supp. 2d 773, 782 (N.D. Cal. 2011). Rather, a state must only send a "description of the data" used to identify waters and a "rationale" for any decision not to rely on readily available data. *Id.*; *see also* 40 CFR 130.7(b)(5), (6). Although EPA would have been within its rights to request additional information regarding the methodology of Ecology's comparative analysis, the court declines to find that EPA's regulations required it to do so. *See* 40 CFR 130.7(b)(6); EPA 2006 Guidance at 37; *see also Decker v. Nw. Envtl. Def. Ctr.*, 133 S. Ct. 1326, 1337 (2013) (holding that agencies' interpretations of their own regulations are entitled to deference).

Ecology's explanation adequately sets forth its basis for excluding the data, namely: a comparative survey of other pH measurements that revealed large errors in its probes' data and communications with NOAA scientists regarding the errors. WA-000153. There is no indication—in the administrative record or otherwise—that

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[28] Because pH is measured on a logarithmic scale from 0 to 14, each one-unit change corresponds to a ten-fold change in acidity. *See, e.g.*, Feeley 2010 at 4.

Ecology's methodology was flawed, perfunctory, or otherwise inadequate. Moreover, Ecology applied its Water Quality Policy neutrally to the long-term monitoring pH data: Ecology changed water segments to Category 3 regardless of their current status of attainment, non-attainment, or waters of concern, and applied the change to segments that exhibited either, or both, low and high pH excursions. *See, e.g.*, WQA (discussing sampling locations at Port Townsend (PTH005), Gray's Harbor (GYS004), Oakland Bay (OAK004), and Budd Inlet (BUD005)). Finally, EPA's decision to accept Ecology's rationale was informed by its technical expertise and experience in a complex scientific area and, as such, is entitled to great deference. *See Envtl. Def. Ctr., Inc.*, 344 F.3d at 869; *League Of Wilderness Defenders Blue Mountains Biodiversity Project*, 615 F.3d at 1130. For these reasons, the court concludes that it was not arbitrary and capricious for EPA to determine that Ecology's rationale, even without further clarification, was reasonable.

Sierra Club v. Leavitt does not suggest otherwise. *See* 488 F.3d at 912. In *Sierra Club*, the Eleventh Circuit found that Florida's bright line rule that excluded all water quality data older than 7.5 years violated the requirement to evaluate all existing and readily available data, and therefore EPA was required to independently evaluate the reliability of the excluded data before approving Florida's list. *See id.* at 913-14. Unlike the Florida in *Sierra Club*, however, Washington actually analyzed its long-term monitoring pH data and identified a problem specific to that data. *See* WA-000153. CBD and the Fishing Associations cite no authority requiring EPA to perform an additional, independent evaluation of either the data or Washington's analysis.

To the contrary, EPA's decision regarding the evaluation of complex scientific data that lies within the agency's technical expertise is entitled to deference. *See Envtl. Def. Ctr., Inc.*, 344 F.3d at 869. Therefore, the court finds that EPA's decision not to independently review Ecology's marine monitoring data was not arbitrary, capricious, or contrary to law. *See Thomas v. Jackson*, 581 F.3d 658, 664-65 (8th Cir. 2009) (deferring to EPA's approval of the state's finding that the monitoring data for certain water segments was insufficient because the plaintiffs "offer[ed] no explanation or support as to why additional data are required to conclude that the existing data are insufficient").

The remaining arguments raised by the Fishing Associations are unavailing. First, the Fishing Associations rely on extra-record evidence to argue that the electrode probes used by Ecology are designed to be accurate to 0.1 pH units, and therefore Ecology's conclusion that the probes evidenced "large (+/- 0.5 pH)" errors is suspicious. (*See* Fishing Br. at 13-14.) Ordinarily, such extra-record evidence is inadmissible to judge an agency's decision. *See Lands Council*, 395 F.3d at 1030. The Fishing Associations contend that this evidence is admissible as necessary to determine whether EPA considered all of the relevant factors. *See id.* The court declines to decide the issue because even if the evidence were admissible, it would have no bearing on the court's evaluation of EPA's decision.

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To begin, two of the documents are irrelevant to the Fishing Associations' arguments.[29] The third document, an online specification sheet for the probes that Ecology uses to measure coastal pH, states that an accuracy of +/- 0.1 pH unit is "achievable with frequent field calibrations."[30] Yet the fact that the probes are designed to be accurate to 0.1 pH units does not contradict Ecology's observation that the probes were functioning less than optimally in situ. The design specification, without more, does not cast doubt on Ecology's analysis or EPA's finding that Ecology's analysis was reasonable.

Next, the Fishing Associations contend that even after Ecology and EPA determined the data was unreliable, Ecology and EPA should have continued "evaluating" the data by making certain assumptions about the data. (Fishing Br. at 14-15.) Specifically, the Fishing Associations argue that, even assuming the +/- 0.5 pH units error range operated only to under-count pH excursions, and even conceding the +/- 0.5

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[29] The document titled "Washington State Marine Water Quality, 1998-2000" at page 13 merely lists a series of "monitoring data quality objectives," one of which is that the "reporting limit" for pH monitoring is 0.1 pH units. A reporting limit, however, refers to the lowest concentration of a chemical that an instrument can observe with any degree of confidence, not to the accuracy of the instrument. Moreover, this limit is an agency objective, not an instrument specification. Next, the document titled "Stream Sampling Protocols for the Environmental Monitoring and Trends Section, October 2001" sets forth the procedure for collecting pH stream measurements and mentions an "assumed" precision of 0.1 pH units. Precision, however, is not the same as accuracy: accuracy is the proximity of a measurement to the true value, whereas precision refers to the repeatability or reproducibility of a measurement. Moreover, it is unclear that freshwater sampling protocols are applicable to the coastal issues raised in this case. As such, neither of these documents is relevant to EPA's decision. *See* Fed. R. Evid. 401, 402.

[30] (*See* Fishing Br. at 10 (citing *Marine water quality monitoring parameters*, http://www.ecy.wa.gov/apps/eap/marinewq/helpnotes/param_descriptions.html (last accessed February 3, 2015) (describing the pH meter used in Washington since 1989 as the SeaBird SBE 18 sensor) and *SBE 18 pH Sensor*, http://www.seabird.com/products/spec_sheets/18data.htm (last accessed February 3, 2015) (describing the SeaBird SBE 18 as having an accuracy of +/- 0.1 pH).

pH units error range rendered the data inadequate to assess Washington's prohibition of anthropogenic changes greater than 0.2 pH units, the data can still be relied upon to show numerous violations of the 7.0 pH lower limit of Washington's numerical pH standard. (*Id.* at 14-15, Table 4 (tallying measurements below 6.5 pH at various sampling points).) Ecology, however, specifically found that the electrode probes' inaccuracy was substantial and "non-quantifiable." *See* WA-000153. The court declines to require an agency to continue to rely on a dataset that the agency has already determined is inaccurate. Such a requirement would not only be bad law, it would be bad science.

Contrary to CBD and the Fishing Associations' assertions, the court is not condoning a tactic of avoiding the responsibility to assemble and evaluate all existing data by knowingly conducting unreliable monitoring and then choosing to ignore the results. (*See* Fishing Br. at 13; CBD Resp. at 12.) The court does not comment on Ecology's future responsibilities with respect to coastal pH data monitoring now that Ecology is aware of the unreliability of its current monitoring system. The court remains unconvinced, however, that it is any kind of a solution to force continued reliance on error-prone data once an agency has recognized the error. For these reasons, the court finds that EPA did not act arbitrarily or capriciously in declining to conduct an independent evaluation of Ecology's long-term marine monitoring pH data.

ii. USCS, STORET, and NOAA data

CBD also contends that pH data collected by other agencies and stored in the USGS, STORET, and NOAA databases show that locations such as Hood Canal, Padilla Bay, Elwha Estuary, and Bellingham Bay experienced multiple violations of

Washington's numerical pH standard from 2006 through 2012. (*See* CBD at 13, Attach. A.)[31] CBD points out that Ecology did not rely on pH data from these sources to add any marine water segments to its 2010 impaired waters list. (CBD Resp. at 12, n.11); *see also* WQA (sorted for the parameter "pH"). CBD contends that EPA should have noticed that omission and independently sought out and evaluated USGS, STORET, and NOAA marine pH data. (CBD Resp. at 12-13); *see* WA-000021-70 (listing the ocean acidification references and data that EPA relied upon). There is, however, no indication in the record that marine pH data from the USGS, STORET, and NOAA databases were submitted to Ecology (or, later, EPA) for consideration, or that the possibility of obtaining additional marine pH data from the USGS and STORET databases was otherwise raised before Ecology or EPA by CBD or any other party.

"EPA will generally limit its review of a state listing submission to the data and information assembled by the state . . . if the state was reasonably diligent in assembling available data and information and soliciting data and information from the public." EPA 2006 Guidance at 31; *see also Barnum Timber Co.*, 835 F. Supp. 2d at 781 (finding that the Clean Water Act provides EPA only a "limited" role in reviewing states' Section 303(d) lists); 40 CFR 130.7(b)(5). Only if the state was not reasonably diligent is EPA required to independently assemble data and information in order to comply with the Clean Water Act's requirements. *See Alaska Ctr. for Env't*, 20 F.3d at 983; EPA 2006

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[31] Quoting and summarizing NOAA data from *National Estuarine Research Reserve System*, http://cdmo.baruch.sc.edu/get/export.cfm (last accessed February 3, 2015) and USGS and STORET data from National Water Quality Monitoring Council, *Water Quality Data*, http://www.waterqualitydata.us/index.jsp (last accessed February 3, 2015) showing pH measurements less than 7.0 units.

Guidance at 31; 33 U.S.C. § 1313(d)(2); *see, e.g.*, OR1-00008-9 (independently assembling and evaluating water quality data after partially disapproving Oregon's impaired waters list).

EPA found that Washington was reasonably diligent in complying with the requirement to assemble and solicit information from other organizations and individuals. *See* WA-00004. Specifically, EPA found:

> Washington actively sought data collected by other federal agencies, state agencies, tribes, local governments, watershed councils, and private and public organizations and individuals. A call for data was published in the State Register on August 5, 2009, announcing the dates for submittal of information from August 5 to October 15, 2009. Postcards were sent to over 300 names on the State's mailing list including federal, state, and local government agencies and other people expressing an interest . . . .
>
> After the call for data, Ecology evaluated the data and prepared a statewide assessment. Approximately 2 million sample data values were reviewed. Ecology's 2010 Water Quality Assessment database contains over 25,000 water quality records.

WA-00004. In addition, EPA found:

> For the 2010 303(d) list Washington solicited data from August 5 to October 15, 2009, seeking technical information and data on the conditions of Washington's surface waters. Data received during this call for data period and data collected by Ecology were used to develop the draft Integrated Report and 303(d) list. The draft 2010 Integrated Report and 303(d) list were released for public review from June 16 to August 16, 2011. The public comment periods provided the public an opportunity to look at and comment on the Integrated Report including the draft 303(d) list.

WA-00005; *see also, e.g.*, WA-000162 (announcement of Ecology's call for water quality data); WA-000166 (same); WA-000169 (same); WA-000172 (same); WA-000205 (invitation for public comments); WA-000206 (notice of public comment

period). Based on these actions, EPA "conclude[d] that the [s]tate properly assembled and reasonably evaluated all existing and readily available data and information." WA-000006

The court finds that EPA's conclusion that Ecology complied with the requirement to assemble and actively solicit information was reasonable. *See Kern Cnty. Farm Bureau*, 450 F.3d at 1076; *Decker*, 133 S. Ct. at 1337. Because Ecology was reasonably diligent in assembling available data and information, EPA was not required to seek out additional data and information—including marine pH data from the USGS, STORET, or NOAA databases—during its review. *See* EPA 2006 Guidance at 31; *Barnum Timber Co.*, 835 F. Supp. 2d at 781.

CBD contends that it was inconsistent for EPA to independently evaluate USGS and STORET data when adding waters to Oregon's impaired waters list but not when approving Washington's list. (CBD Mot. at 31.) EPA's responsibilities with respect to the two lists, however, were not commensurate. Under EPA's interpretation of its regulations, EPA's duty to independently assemble and evaluate water quality data arose only after it determined that Oregon had not been reasonably diligent in assembling water quality data. *See* OR1-00008-9 (partially disapproving Oregon's list because Oregon did not consider data in its own LASAR water quality database, and then relying on LASAR, USGS, and STORET data to complete the list); *Alaska Ctr. for Env't*, 20 F.3d at 983; 33 U.S.C. § 1313(d)(2); EPA 2006 Guidance at 31. The court cannot say that this position is erroneous or inconsistent with the Clean Water Act. *See Decker*, 133 S. Ct. at 1337; *Barnum Timber Co.*, 835 F. Supp. 2d at 781.

Moreover, not only did no party raise the issue of USGS and STORET pH marine data with EPA, but Ecology's Water Quality Assessment spreadsheet shows that Ecology did rely on USGS and STORET pH data for many non-marine waters. *See, e.g.*, WQA (entries for Palouse River, Columbia River, Ozette River, Soleduck River, Cedar Creek, and Paradise Creek, among others). Ecology's Water Quality Assessment contains over 65,000 entries explaining the data considered for each pollutant within each Washington water segment. *See generally id.* Requiring EPA to *sua sponte* recognize and investigate the absence of USGS and STORET marine pH data (as opposed to the other USGS and STORET data that Ecology indisputably considered) from these tens of thousands of entries would set an impracticably high bar. *See Barnum Timber Co.*, 835 F. Supp. 2d at 781 (emphasizing that the Clean Water Act gives EPA only 30 days to approve or disapprove a state's impaired waters list); 33 U.S.C. § 1313(d)(2) ("The Administrator shall either approve or disapprove such identification and load not later than thirty days after the date of submission.").

Finally, the court notes that CBD's comments on Ecology's draft 2010 assessment of Washington's marine waters stated that NOAA "may have data relevant to assessing the impact of carbon dioxide on coastal waters." WA-000813; *see also* WA-000739. Similarly, EPA's 2010 memorandum on ocean acidification stated that NOAA's National Estuarine Research System "may be useful to States as they assess coastal waters for marine pH impairment." EPA OA Memo at 7. The memorandum, however, specifically does "not impose legally binding requirements on EPA or the States." *Id.* at 5. Moreover, according to the evidence before the court, NOAA's National Estuarine

Research System includes only a single monitoring station in Washington waters. *See* CBD Resp. at 13; *National Estuarine Research Reserve System*, http://cdmo.baruch.sc.edu/get/export.cfm (last accessed February 3, 2015) (listing data for Padilla Bay).

EPA's review of Washington's 303(d) list was "based on its analysis of whether the State *reasonably* considered existing and readily available water quality-related data and information." WA-00004 (emphasis added); *see Barnum Timber Co.*, 835 F. Supp. 2d at 781 (deferring to EPA's discretion when EPA found that a state "reasonably considered existing and readily available water quality-related data and information and reasonably identified waters required to be listed"). Agencies are entitled to deference regarding interpretations of their own regulations. *See Decker*, 133 S. Ct. at 1337. Furthermore, CBD concedes that Ecology received and reviewed over 100 studies, articles, and letters regarding ocean acidification alone, not to mention the prodigious volume of the comments, data, and information the agency received regarding the remainder of the impaired waters list. (*See* CBD Mot. at 9); WA-000071-86; WA-000800; WA-000102-152. Taking all these considerations into account, the court finds that EPA's conclusion that Ecology reasonably considered readily available marine water quality data despite overlooking one pH data point at Padilla Bay does not rise to the level of arbitrary and capricious agency action.[32]

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[32] CBD also contends that EPA and Ecology improperly failed to obtain pH data from Dr. Feeley. (CBD Mot. at 34.) CBD, however, provides no evidence that a relevant pH dataset of Washington waters collected by Dr. Feeley exists, let alone a dataset that suggests violations of Washington's pH standard.

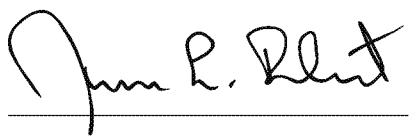
c. Summary

In sum, the court finds that EPA's conclusion that Washington and Oregon satisfied the regulatory requirement to assemble and evaluate all readily available water quality data regarding ocean acidification was not arbitrary and capricious. As such, both of CBD's challenges to Washington's and Oregon's lists are unsuccessful. Because EPA's approval of Washington's and Oregon's Section 303(d) lists is plausible in light of the evidence and EPA reasonably concluded that Washington and Oregon assembled and evaluated all existing and readily available water quality data, EPA is entitled to summary judgment in its favor. *See Celotex Corp.*, 477 U.S. at 322.

IV. CONCLUSION

For the foregoing reasons, the court DENIES CBD's motion for summary judgment (Dkt. # 33) and GRANTS EPA's motion for summary judgment (Dkt. # 34). The court GRANTS IN PART and DENIES IN PART EPA's motions to strike (Dkt. ## 50, 51). Finally, the court GRANTS API's motion to file a reply brief (Dkt. # 58).

Dated this 19th day of February, 2015.



JAMES L. ROBART
United States District Judge

See, e.g., WA-002014 (noting that the Feeley 2008 article did not publish any Washington data, but that such data may nonetheless have been collected); WA-000069 (stating that Dr. Feeley took measurements of dissolved organic carbon and total alkalinity in Puget Sound in 2008). Therefore, the court declines to address that contention.