FISHABLE WATERS

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INTRODUCTION

Tribes have long recognized that degraded environments mean both depletion and contamination of the salmon and other fish,[1] including shellfish, on which they depend. As tribal leaders contemplated litigation against the states in the 1960s to defend their treaty-secured[2] right "to take fish," they sketched the problems for their attorneys in its multiple layers: tribal fishers were being assaulted and harassed on the waters; the state was discriminatorily "regulating" harvest; the once-abundant salmon runs had declined precipitously; the aquatic environments that support the salmon and other fish had become degraded to the point that

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[1] The term "fish," here and throughout, is understood to include all species of fish, including shellfish.

[2] Tribes' fishing rights have been recognized, from the U.S. perspective, through various means, including treaties, agreements, and executive orders. *See, e.g.*, United States v. Anderson, 6 Indian L. Rep. F-129 (E.D. Wash. 1979). This article recognizes the aboriginal origin of tribes' fishing rights, and does not mean to exclude any of the various forms of recognition for these rights by use of the terms "rights," "fishing rights," and "treaty-secured" rights, unless the context suggests otherwise. Nonetheless, the analysis in this article focuses on tribal rights reserved by means of the treaties between the tribes and the United States; a complete analysis of other sources of tribal fishing rights is beyond the scope of this article.

they were no longer a fit home.[3] As the tribes emphasized in the cases they brought before the courts, each of these affronts is a violation of the treaty promises.

With the decisions that emerged from that litigation – including the Boldt decision,[4] and then Rafeedie,[5] and most recently, the order and decision in the "culverts" case[6] – various facets of tribes' rights to take fish have been affirmed by United States courts.[7] Courts have held that, by means of the treaties, tribes reserved their pre-existing, aboriginal right to fish, and that the treaties secured this right in perpetuity. Thus, courts over the years have regularly interpreted the fishing right to encompass the subsidiary rights necessary to render it of continued relevance for tribal fishers. Among other things, courts have recognized that if the watersheds that are home to the fish are significantly degraded, the treaty right can be eviscerated as surely as if tribal members are hauled out of their boats or barricaded from the beaches.[8]

An understanding of the right to take fish reserved by the tribes is important in part because it continues to inform tribes' aspirations for and entitlements to a future in which their exercise of this right is robust, and tribal members' consumption and use of the resources on which they have historically depended is restored. The venues for tribes' efforts to stem depletion and contamination of the fish, to restore crucial habitats, and to ensure resilience in the face of a changing climate are many. Among

[3] *See, e.g.*, Al Ziontz, "Basics of *U.S. v. Washington*: The Early Days," Presentation at the University of Washington Annual Indian Law Symposium, Seattle, Washington (Sept. 6, 2007) (recounting experience as an attorney for the fishing tribes).
[4] United States v. Washington, 384 F. Supp. 312 (W.D. Wash. 1974) (commonly referred to as the "Boldt decision," for the opinion's author, Judge George Boldt).
[5] United States v. Washington, 873 F. Supp. 1422 (W.D. Wash. 1994) (commonly referred to as the "Rafeedie decision," for the opinion's author, Judge Edward Rafeedie).
[6] Order on Cross-Motions for Summary Judgment, United States v. Washington, 2007 WL 2437166 (W.D. Wash.) [hereinafter Culverts Order]; Memorandum and Decision, United States v. Washington, No. 9213RSM, Subproceeding 01-1, slip op. (W.D. Wash. 2013) [hereinafter Culverts Decision]. On March 29, 2013, Judge Martinez issued a decision denying the State of Washington's request for reconsideration of the court's 2007 Culverts Order; incorporating its earlier rulings, including the Culverts Order; and granting the tribes' request for a permanent injunction.
[7] *See also*, Sohappy v. Smith, 302 F. Supp. 899 (D. Or. 1969).
[8] The contours and nuances of the courts' holdings in this line of cases are elaborated more thoroughly below, in Part II.

other things, tribes have worked to address water quality,[9] seeking to clean up and prevent toxicants that are harmful to the fish and to all who depend on the fish for food. Thus, tribes have set their own water quality standards to protect the waters over which they exercise regulatory authority. And tribes have urged their federal and state counterparts – whose environmental standards impact much of the waters that support the treaty resource – to set more protective water quality standards. Tribes' early appeals to federal and state agencies were met by claims that these agencies were powerless to issue more protective standards for dioxins and other toxicants.[10] That is, because the standards were premised on quantitative assessments of human exposure and because these agencies didn't have any quantitative data about tribal members' fish intake, they claimed they couldn't account for the greater risks faced by tribal members who consumed – and were legally entitled to consume – large amounts of fish. Instead, these agencies maintained, they must assume that tribal members, like everyone else, ate just twelve fish meals a year.

So the tribes conducted studies to quantify what they knew to be true about their consumption practices. The Columbia River Inter-Tribal Fish Commission (CRITFC) published a survey of contemporary fish consumption practices in its four member tribes in 1994.[11] The Squaxin Island and Tulalip tribes published a survey of their members' contemporary consumption practices in 1996;[12] and the Suquamish tribe published its survey in 2000.[13] More recent research has been conducted

[9] The terms "water quality" or "waters," here and throughout, are understood to refer to all components of our waters, including surface waters and sediments.

[10] *See* Catherine A. O'Neill, *Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples*, 19 STAN. ENVTL. L. J. 3, 37, 46-51 (2000) [hereinafter O'Neill, *Variable Justice*] (recounting this history).

[11] COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION, A FISH CONSUMPTION SURVEY OF THE UMATILLA, NEZ PERCE, YAKAMA, AND WARM SPRINGS TRIBES OF THE COLUMBIA RIVER BASIN (1994) [hereinafter CRITFC, FISH CONSUMPTION SURVEY].

[12] TOY, ET AL, A FISH CONSUMPTION SURVEY OF THE TULALIP AND SQUAXIN ISLAND TRIBES OF THE PUGET SOUND REGION (1996) [hereinafter TULALIP AND SQUAXIN ISLAND FISH CONSUMPTION SURVEY].

[13] SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY OF THE SUQUAMISH TRIBE OF THE PORT MADISON INDIAN RESERVATIONS, PUGET SOUND REGION (2000) [hereinafter SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY].

by the Swinomish,[14] Lummi,[15] and Colville[16] tribes. In every case, these studies of contemporary tribal practices documented that tribal members consumed fish at markedly greater rates than the twelve meals a year – 6.5 grams per day (g/day) – then assumed by the federal Environmental Protection Agency (EPA)[17] and still assumed by Washington, Idaho, and Alaska.[18] In fact, although these surveys recorded consumption rates for tribal people that reflect contemporary, "suppressed," practices – practices that are artificially diminished relative to historical or "heritage" practices – the rates they document can be more than *two hundred times* the 6.5 g/day figure.

Agencies have had the quantitative data they sought for nearly two decades now – since the CRITFC study was published in 1994. A generation of Indian people has been born and come of age during this time. They have grown up seeing signs along the waterways warning against consuming fish, encountering notices at tribal fisheries departments of toxic shellfish, and clicking on websites containing

[14] *See* Jamie Donatuto & Barbara L. Harper, *Issues in Evaluating Fish Consumption Rates for Native American Tribes*, 28 RISK ANALYSIS 1497, 1500 (2008) (discussing methodology and preliminary findings of Swinomish survey of contemporary tribal fish consumption).

[15] LUMMI NATURAL RESOURCES DEPARTMENT, LUMMI NATION SEAFOOD CONSUMPTION STUDY (2012) [hereinafter LUMMI NATION SEAFOOD CONSUMPTION STUDY].

[16] *See* Confederated Tribes of the Colville Reservation, Office of Environmental Trust, Comments on Ecology's Fish Consumption Rate Technical Support Document (Jan. 17, 2012) *available at* http://www.ecy.wa.gov/programs/tcp/regs/2011-SMS/120120-fish-comments/Colville.pdf (last visited Apr. 20, 2013) (discussing preliminary findings of Colville survey of contemporary tribal consumption and resource use).

[17] U.S. Environmental Protection Agency, Guidelines and Methodology Used in the Preparation of Health Effect Assessment Chapters of the Consent Decree Water Criteria Documents, 45 Fed. Reg. 79,347, App. C (1980).

[18] *See, e.g.,* Water Quality Standards for Surface Waters for the State of Washington, WASH. ADMIN. CODE § 173-201A-240(5) (2011) (adopting "National Toxics Rule" for Washington's human health-based criteria for surface water quality); U.S. Environmental Protection Agency, Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance; Final Rule, 57 Fed. Reg. 60,848 (Dec. 22, 1992) [hereinafter EPA, National Toxics Rule] (enlisting 6.5 g/day fish consumption rate). Note that Washington's cleanup rule, the Model Toxics Control Act (MTCA), currently uses a default fish consumption rate of 54 g/day, halved by a default diet fraction of 0.5, so that the effective default fish consumption rate for cleanup is 27 g/day. Model Toxics Control Act Cleanup Regulation, WASH. ADMIN. CODE § 173-340-730(3) (2012). MTCA also permits site-specific departures from these defaults. Id. at § 173-340-730(3)(c) and (d).

instructions for trimming the fat and discarding the skin so as to avoid the lipophilic toxics harbored there. Yet the state of Oregon only just promulgated water quality standards that reflect a more protective fish consumption rate (FCR) of 175 g/day. Washington, Idaho and Alaska continue to drag their feet. And the EPA lets them. The result is that the old 6.5 g/day number is effectively re-selected by these agencies each day. This paltry amount functions and will continue to function as the *de facto* ceiling on safe consumption as long as it remains in force. Tribal people who consume more fish than this are left to do so at their peril. Yet consumption of contaminated fish is the primary route of human exposure to mercury, PCBs, dioxins, and a host of other toxic substances that cause cancer or other harms.

Federal and state environmental agencies are bound by the treaty promises. They, too, are successors to the treaties. These agencies, additionally, are keepers of the Clean Water Act (CWA), a law that supports a goal of "fishable waters" from Atlantic to Pacific. But, in the Pacific Northwest, state and federal efforts to address toxic contamination have fallen woefully short of the CWA's aspiration and have undermined tribes' treaty-secured rights to take fish that are fit for humans to consume.

This article considers recent experience in the Pacific Northwest with states' water quality standard setting efforts. Given that these standards determine the future health of the waters that support the fish to which tribes have treaty-secured and other rights, this article argues, state and federal agencies' efforts ought to proceed differently. The tribal context – the fact of tribes' unique political and legal status, the presence of tribes' treaty-secured and other rights to take fish, and the implications of these rights – that permeates environmental decisions here in the Pacific Northwest means that the process and the decisions ought to be different than they would be in a different context.[19]

[19] The "different context" suggested here is used in the sense of a place where the tribal context does not obtain. As such, on this continent, it may be purely hypothetical. The point, then, is not to suggest that considerations similar to those present in Washington and the Pacific Northwest won't exist in other places as well; rather, it is to emphasize that tribes' legal status and rights present particular and sometimes unique considerations that must be appreciated.

Thus, this article maintains, agencies' quest for "fishable waters" is one that must be framed by the treaties and other sources of tribal fishing rights. The treaty-secured rights to the fish are the proper touchstone for and measure of agencies' efforts to restore the nation's waters. So while the title of this article borrows a shorthand interpreting Congress' instruction in the CWA,[20] this is not to suggest that the United States can be relieved of its obligations under the treaties by implicitly redefining them according to some narrower conception. To be clear: it is tribes' rights to take fish – adequate in quantity and quality – that define what we, as successors to the treaties, must mean by "fishable waters."

This article comprises seven parts. Part I describes the fish and the fishing peoples indigenous to the Pacific Northwest. The fish were and remain vital to tribal people throughout this region – so much so that the tribes reserved their fishing rights when they negotiated treaties and other agreements with the United States government. These rights and U.S. courts' interpretations of these rights are discussed in Part II. Part III documents the depletion and contamination that have increasingly threatened the salmon and other fish resources since the time of the treaties and observes that the fish have been permitted to become polluted to a degree that they pose a risk to humans and other piscavorous species. Part IV considers tribal fish consumption practices historically, in the present, and in the future. Part V explains the CWA's aspiration for "fishable waters" and how the water quality standards provisions work to effectuate this goal. This Part also explains how a fish consumption rate and other assumptions about people's exposure factor into agencies' risk-based standards. Part VI recounts experience to date with agencies' efforts to update the water quality standards that govern much of the waters in the Pacific Northwest, focusing in particular on recent experience in Washington. Part VII then offers a critique, founded in tribes' treaty-secured right to take fish. This Part argues that tribes' rights have implications for the various arguments and tactics encountered by agencies in Washington and elsewhere in the Pacific Northwest. Among other things, they mean that many arguments that may be plausible as a more general matter, i.e., were the fishing tribes' rights and

[20] *See* discussion *infra* notes 158-59 and accompanying text.

interests not at stake, become untenable here. This article closes by reiterating that we are all successors to the treaties and therefore urges the states and EPA to work together with their tribal partners to chart a path that honors the tribes' treaty-secured rights.

I. THE FISH AND THE FISHING PEOPLES OF THE PACIFIC NORTHWEST

Salmon's range defines the boundaries of the Pacific Northwest.[21] But salmon do not merely delineate the region's boundaries in our minds or on a map. Salmon, functionally, *are* the ecosystems of the Pacific Northwest. They are supported by and themselves support the watersheds that comprise this region, draining a vast area of inland creeks, streams, and lakes and emptying into rivers or bays and, ultimately, into the Pacific Ocean.

The life histories of Pacific salmon vary among and within species but all are anadromous.[22] Adult salmon lay their eggs in freshwater streams and lakes, where their offspring hatch and rear before migrating out to the ocean to forage until they reach maturity. At maturity, adults return to their natal stream or lake to spawn and die, completing the cycle.[23]

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[21] *See, e.g.,* National Oceanic & Atmospheric Administration, National Marine Fisheries Service, Northwest Regional Office, "ESA Salmon Listings," archived website from Jan. 16, 2013 *available at* http://web.archive.org/web/20130116053131/http://www.nwr.noaa.gov/ESA-Salmon-Listings/Index.cfm (last visited Apr. 23, 2013) ("Pacific salmon are the Northwest's biological and cultural icon."); *see also*, THOMAS P. QUINN, THE BEHAVIOR AND ECOLOGY OF PACIFIC SALMON & TROUT 10-12 (2005) (stating that the native range of Pacific salmon actually extends beyond what would be termed the "Pacific Northwest," once reaching, for example, as far south as northern Mexico on the east coast of the Pacific Ocean).

[22] QUINN, *supra* note 21, at 5-6. ("All salmonids spawn in freshwater and some spend their entire lives there. However, many migrate to sea to grow to their final size and then return to freshwater to spawn. This life-history pattern [is] known as *anadromy*"). While all Pacific salmon species are anadromous, some species (e.g., sockeye) have nonanadromous populations and there may be nonanadromous individuals within some populations (e.g., Chinook). *Id.* at 5. *See also, id.,* at 209-213 (discussing kokanee, a nonadanromous form of sockeye); and discussion of residency in some Puget Sound Chinook, *infra* notes 266-68 and accompanying text.

[23] Quinn describes the "three key themes" in the biology of salmonids as anadromy, homing (salmonids "almost invariably return to the site where they were spawned" to spawn as adults), and semelparity ("death inevitably follows reproduction"), and notes

Young salmon may spend anywhere from a few days to two or more years in fresh water before moving to estuarine environments and then entering salt water, i.e., marine environments, although some remain in freshwater their entire lives.[24] Similarly, adult salmon may spend anywhere from one to seven years in saltwater environments, with variation among and between species.[25] Chinook salmon originating in the rivers of the Puget Sound watershed, for example, typically migrate out to the Pacific and forage along the coastal continental shelf.[26] However, a significant portion of these salmon display "resident" behavior, remaining in the Puget Sound during the marine phase of their lives.[27] Salmon migration, both outward and homeward, is impressive in its distance and intricate in its patterns.[28] Salmon, for example, don't leave their various natal tributaries and make a beeline through the Puget Sound and out to the Pacific Ocean. Rather, research "clearly reveals that salmon use the Puget Sound basin widely, and migrate back and forth within it, heavily."[29] In fact, "[m]any authors reported finding extensive juvenile salmon use along the estuarine and nearshore landscape, as well as strong evidence from coded-wire tag data of cross-sound migration.

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that "[e]ach theme is broadly distributed among salmonids but each has interesting and important exceptions." *Id.* at 4-7.

[24] *See generally id.*

[25] *See generally id.*

[26] *Id.* at 42 (describing the migration pattern shown by Chinook and coho salmon, stating: "Many populations of these species remain largely or entirely in coastal waters. In most cases they are generally distributed to the north of their river of origin, but some populations remain relatively close to their natal river and some migrate southward.").

[27] Sandra M. O'Neill & James E. West, *Marine Distribution, Life History Traits, and the Accumulation of Polychlorinated Biphenyls in Chinook Salmon from Puget Sound, Washington*, 138 TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY 616, 626-28 (2009) (while precise estimates are not possible, existing information supports the general conclusion that "a considerable proportion of Puget Sound-origin Chinook salmon display resident behavior").

[28] *See, e.g.,* QUINN, *supra* note 21, at 42 ("Chinook and coho salmon seem to move more slowly homeward than pink, sockeye, and chum salmon. They do not necessarily swim more slowly but they probably swim in a less directed manner and feed more extensively while migrating."); *id.* at 57 ("For reasons that are not clear, the populations [of Fraser River sockeye] that spawn later do not remain on the open ocean, but rather return to coastal waters and move back and forth in the Strait of Georgia for about a month before migrating upriver").

[29] PACIFIC ESTUARY RESEARCH SOCIETY, SALMON IN THE NEARSHORE: WHAT DO WE KNOW AND WHERE DO WE GO? 2 (2004), *available at* http://www.pers-erf.org/SalmonNearshoreFinal.pdf (last visited Apr. 20, 2013).

Fish from north Puget Sound areas are found in central and south Puget Sound studies, and vice versa."[30] The transition between freshwater and saltwater environments, whether during outward or homeward migration, is marked by extraordinary morphological and other changes in all species of salmon. Among these biological changes is the cessation of feeding during homeward migration. The exact point at which salmon stop feeding can vary considerably among populations.[31] Although returning salmon have generally been thought to cease feeding once they enter fresh water, both observation and recent study suggest that salmon may continue to feed in fresh water.[32]

Each stage of the salmon lifecycle has particular habitat requirements. Eggs must incubate in redds (nests) constructed from substrates of a certain composition; juvenile salmonids require waters that are relatively cool and clean; outmigrants depend on particular flow regimes – in short, salmon depend on the particular chemical, physical, and biotic attributes of the freshwater, estuarine, and saltwater environments that are their home at each life stage.

And the salmon contribute to the environments of which they are a part. Thus, for example, the trees that provide the streamside shade necessary to cool the waters for the temperature-sensitive eggs, and that provide the large woody debris in the streams and so the eddies, pools, and channels important to juvenile foraging and other behaviors are in turn

[30] *Id.* at 1; *accord* NORTHWEST INDIAN FISH COMMISSION, STATE OF OUR WATERSHEDS REPORT 244 (2012) [hereinafter NWIFC, 2012 SOW] (summarizing findings from the Squaxin Island tribe at the southernmost end of the Puget Sound that "[a] tremendous amount of marine shoreline and diversity of habitats support rearing and migrating salmonids in the region. Smolts from elsewhere in the Puget Sound, like the Puyallup River [to the north], frequently visit the South Sound before heading to the open ocean.").
[31] QUINN, *supra* note 21, at 56.
[32] Shawn R. Garner et al., *The Importance of Freshwater Feeding in Mature Pacific Salmon: a Reply to the Comment by Armstrong on "Egg Consumption in Mature Pacific Salmon (Onchorhynchus ssp.)"* 67 CANADIAN JOURNAL OF FISHERIES & AQUATIC SCIENCES 2055 (2010) ("Where once it was acceptable to dismiss freshwater feeding by mature Pacific salmon out of hand, there is surprisingly little data to support this belief. Our study instead shows that Pacific salmon do feed in fresh water and that the energetic and physiological benefits may be substantial."); *but cf.* Jonathan B. Armstrong, *Comment on "Egg Consumption in Mature Pacific Salmon (Onchorhynchus ssp.)"* 67 CANADIAN JOURNAL OF FISHERIES & AQUATIC SCIENCES 2052 (2010).

nourished by the phosphorous and nitrogen supplied by decomposing salmon that have returned to spawn. Indeed, "the entire ecosystem – from insects to bears and trees, including the salmon themselves – benefits in complex direct and indirect ways from decomposing salmon."[33]

The fishing peoples have always been a part of this cycle. The fish feed the people; the people take care of the fish. Moreover, as tribal people have explained, Indian people are bound to serve in this role, having covenanted with the salmon to do so, then, now and in the future.[34] This relationship is at the heart of tribal identity and guides tribal life. The Swinomish tribe, for example, explains: "We are the People of the Salmon and our way of life is sustained by our connection to the water and to the lands where we have fished, gathered and hunted since time immemorial."[35]

The salmon were and remain vital to tribal well-being, and central to the identity of the tribes. But other fish and shellfish, too, were and are important to Indian people.[36] As *Tsi'li'xw* Bill James, Lummi Nation Hereditary Chief, explains, "seafood is the lifeline of our people. Everything under the water, our people ate during different times of the year."[37] *Tsi'li'xw* Bill James tells of *Soxwe* (butter clams) and *Swam* (horse clams) and "all of the different clams," as well as "mussels, oysters, cockles, and crabs."[38] He tells of the herring spawn in what is now Bellingham and "how the herring spawn used to be right where the harbor is" and of the eel grass and the places where they used to catch halibut.[39] Today, too, a vast array of species is vital to tribal people. For example:

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[33] *See, e.g.,* QUINN, *supra* note 21, at 129; *see generally, id.* at 129-42 (chapter 7, "The Ecology of Dead Salmon").
[34] *See, e.g.,* David Close, Northwest Indian Fisheries Commission News Release (Apr. 27, 2010) (speaking at the Coast Salish Gathering, David Close (Cayuse) explains "we made a promise – the food would take care of us and we would take care of the food").
[35] Swinomish Indian Tribal Community, "We are …," *available at* http://www.swinomish-nsn.gov/ (last visited Apr. 20, 2013).
[36] The importance of fish, to individual tribal members and to the tribe as a whole, as a source of food and livelihood but also as a center around which tribes' social, cultural, and spiritual lifeways revolve, is also discussed in Part IV, *infra*.
[37] LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 15, at i (2012).
[38] *Id.* at ii.
[39] *Id.* at iii.

> "Seafood consumed by Lummi tribal members is mostly harvested by Lummi tribal members and distributed among families. Seafood is very rarely purchased from a store by Lummi tribal members and the cycle of commercial, ceremonial, and subsistence fisheries openings for Chinook salmon, coho salmon, sockeye salmon, pink salmon, halibut, crab, clams and oysters, geoducks, sea urchins, sea cucumbers, and other species determine the rhythm of life in the community."[40]

For the other tribes in the Pacific Northwest, too, fish and shellfish of every sort are important, among other things as sources of food and income.[41] Tribal members continue to invoke a saying that references this importance: "when the tide is out, the table is set."[42]

The tribes have always relied on these foods, harvesting them in their seasons, managing the resources and the ecosystems that supported them. Although there were differences among the various groups within the region, patterns of use and settlement generally comprised a seasonal round.[43] Pacific Northwest peoples engaged in

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[40] *Id.* at 10.

[41] *See, e.g.,* Port Gamble S'Klallam Tribe, "Finfish," *available at* http://www.pgst.nsn.us/natural-resources/finfish (last visited Apr. 20, 2013) (stating that "[t]he S'Klallam territory comprised most of the northern Olympic Peninsula, with access to a large number of rivers as well as the open waters of the Strait of Juan de Fuca. They also made seasonal migrations north to the San Juan Island area, where they set up temporary fishing camps, and south to Hood Canal where they shared fishing sites with the Skokomish. The waters within these areas produced countless numbers and varieties of fish, most of which the S'Klallam utilized. The most important of these was the salmon since it constituted the principal food of the S'Klallam. Common among the other varieties of fish they caught were halibut, herring, lingcod, smelt, dogfish (a species of shark), and candlefish.); Port Gamble S'Klallam Tribe, "Shellfish," *available at* http://www.pgst.nsn.us/natural-resources/shellfish (last visited Apr. 20, 2013) (stating that "[t]he Port Gamble S'Klallam Tribe has depended upon shellfish as a source of food and for trade or income for thousands of years. Clams, crab, oysters, shrimp and many other species were readily available for harvest year around" and that the tribe "still relies heavily" on these species).

[42] *See, e.g.,* Port Gamble S'Klallam Tribe, "Shellfish," *available at* http://www.pgst.nsn.us/natural-resources/shellfish (last visited Apr. 20, 2013).

[43] Douglas Deur & Nancy J. Turner, *Introduction: Reassessing Indigenous Resource Management, Reassessing the History of an Idea* in KEEPING IT LIVING: TRADITIONS OF PLANT USE AND CULTIVATION ON THE NORTHWEST COAST OF NORTH AMERICA at 3, 10-12

agriculture and mariculture; they managed vast salmon fisheries.[44] As Ronald Trosper has documented, Native peoples of the Pacific Northwest Coast sustainably managed the resources of their ancestral homelands, including the Pacific salmon runs, for at least two millennia prior to contact, despite having sufficient technology and population pressure to have extirpated the salmon resource.[45] As the Coast Salish Gathering explains: "We, the Coast Salish, bring thousands of years of knowledge of management and conservation of the Salish Sea and her tributaries, a knowledge base that began before contact and continues into the present."[46]

(Douglas Deur & Nancy J. Turner, eds., 2005); Swinomish Indian Tribal Community, *13 Moons: The 13 Lunar Phases, and How They Guide the Swinomish People* (2006).

[44] *See generally,* Deur & Turner, *supra* note 43; ROBYN HEASLIP, ACCESS PROTOCOLS AND SOCIAL IDENTITY IN KWAKWAKA'WAKW CLAM MANAGEMENT: FROM COLONIALISM TO CULTURAL REVITALIZATION (Masters Thesis, Simon Frasier University, 2008); Nigel Haggan, et al., *12,000+ Years of Change: Linking Traditional and Modern Ecosystem Science in the Pacific Northwest*, UNIVERSITY OF BRITISH COLUMBIA FISHERIES CENTER, WORKING PAPER 2006-02 (2006). For example, Native peoples employed their considerable skill as hydrological engineers to enhance spawning and rearing habitat, such as by felling trees, by constructing logjams, and by depositing fill material to create back eddies for fish to rest, or to direct the flow of fresh water in order to flush silt and oxygenate spawning gravel. The tribes also enforced prohibitions on polluting the lakes and rivers that were home to the salmon, and undertook habitat restoration. *Id.* at 7, 12. The tribes employed selective harvest practices, which enabled conservation (i.e., escapement of the requisite number of returning spawners to ensure propagation), close observation, and "purposeful husbandry of their salmon stocks." D. Bruce Johnsen, *Salmon, Science, and Reciprocity on the Northwest Coast*, 14 ECOLOGY AND SOCIETY 43 (2009).

[45] *See, e.g.*, RONALD L. TROSPER, RESILIENCE, RECIPROCITY AND ECOLOGICAL ECONOMICS: NORTHWEST COAST SUSTAINABILITY (2009). Professor Trosper undertakes a three-part proof to "establish that the Pacific Northwest peoples are an example of resilience and sustainability" with respect to the salmon fisheries. He demonstrates, first, that these peoples' ways of life did in fact persist for a long time; second, that they had the technology to fish too intensively; and third, that population levels were high in relation to the resource. He concludes that these three conditions were present, such that the peoples of the Pacific Northwest could have lived in an unsustainable relationship with the environment, depleting the fishery resource, but they did not. *Id.* at 6-11. *Accord* Haggan, et al., *supra* note 44 (emphasizing the fact of human habitation and management of their resources on the Pacific Northwest coast for thousands of years); JOSEPH E. TAYLOR, III, MAKING SALMON: AN ENVIRONMENTAL HISTORY OF THE NORTHWEST FISHERIES CRISIS 18 (1999) (concluding, with regard to the Native peoples of the Columbia River Basin, that "[a]boriginal fishing methods *could* fully exploit the region's salmon runs") (emphasis in original).

[46] Coast Salish Gathering, *Coast Salish Gathering Treatise* 3 (2010) (quoting Leah George-Wilson, past Chief of Tsleil-waututh Nation, "We carry 10,000 years of knowing

So vital were these resources, these "first foods," that, while the tribes ceded vast expanses of their homelands through treaties with the United States, they nonetheless took pains to reserve their right to fish – that is, to continue to be fishing peoples, to take care of and be cared for by the fish as they always had.

II. TRIBES' UNIQUE POLITICAL AND LEGAL STATUS AND RIGHTS TO FISH

Tribes comprise distinct *peoples* with inherent rights. Tribes' status as self-governing, sovereign entities pre-dated contact with European settlers. This status, nonetheless, was affirmed by the nascent United States. Among other things, the U.S. viewed the Indian tribes as sovereigns, capable of entering into treaties.[47] Today, tribes are recognized to have a unique political and legal status – a status that sets them apart from every other "subpopulation" or group that might warrant particular consideration in decisions about environmental standards.[48] Tribes' rights and interests, moreover, are protected by a constellation of laws and commitments that are unique among groups affected by federal, state, and other decisions. These include protections secured by treaties, laws, and executive orders that speak to the rights of tribes and their members.

A. Tribal Fishing Rights

The starting place for an analysis of tribal fishing rights is a recognition that, prior to European contact, fishing, hunting, and gathering were vital to the lives of Indian people. Indians' aboriginal title to this land included the right to engage in these practices.[49] When tribes entered into treaties and agreements ceding lands to the United States, they often

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the Salish Sea …"). The Salish Sea name recognizes the Juan de Fuca Strait, the Strait of Georgia, and Puget Sound as a single marine ecosystem. *Id.* at 1.

[47] Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832).

[48] *See, e.g.,* United States v. Mazurie, 419 U.S. 544, 557 (1977) (rejecting lower court's characterization of tribe as mere association of U.S. citizens and finding, instead, that "Indian tribes are unique aggregations possessing attributes of sovereignty over both their members and their territory …"); *see also* Williams v. Lee, 358 U.S. 217 (1959); Morton v. Mancari 417 U.S. 535 (1974).

[49] FELIX COHEN, HANDBOOK OF FEDERAL INDIAN LAW 1154-56 (2012 ed.).

nonetheless reserved a suite of important rights, including their aboriginal fishing rights.

1. The "Right to Take Fish"

The Treaty of Point Elliott provides that "[t]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory...."[50] Although the precise language of the fishing clause varies somewhat in the different treaties with the tribes of the Pacific Northwest, U.S. courts have interpreted these provisions similarly to secure to the tribes a permanent, enforceable right to take fish throughout their fishing areas for ceremonial, subsistence and commercial purposes.[51] For its part, upon entering into treaties and agreements with the various tribes, the U.S. bound itself and its successors to protect the tribes' right to take fish in perpetuity. The treaties, moreover, have the status under the Constitution of "supreme law of the land."[52]

Importantly, all of the rights not expressly relinquished by the tribes were retained. This is a crucial tenet of federal Indian law.[53] As affirmed by the U.S. Supreme Court, the treaties represent "not a grant of rights to the Indians, but a grant of rights *from* them – a reservation of those not granted." [54] Treaty-reserved fishing rights are akin to pre-existing servitudes that burden and "run with" off-reservation lands.[55] The Court has held, for example, that implicit within the treaties' specific reservation

[50] Treaty with the Duwamish, Jan. 22, 1855, U.S.-Duwamish, art. V, 12 Stat. 927 (1859).
[51] *See, e.g.,* Confederated Tribes of the Umatilla Indian Reservation v. Alexander, 440 F. Supp. 553 (D. Or. 1977) (finding that a proposed dam on Catherine Creek would infringe rights guaranteed to the Umatilla tribe by the Treaty with the Walla Walla and stating "[f]urther, while the 1855 treaty spoke only of 'stations,', it is clear that the government and the Indians intended that all Northwest tribes should reserve the same fishing rights. 'It is designed to make the same provision for all the tribes and for each Indian of every tribe. The people of one tribe are as much the people of the Great Father as the people of another tribe; the red men are as much his children as the white men.'" (quoting Governor Stevens)).
[52] *Worcester*, 31 U.S. (6 Pet.) at 519 (1832) ("The constitution [declares] treaties already made, as well as those to be made, the supreme law of the land . . .").
[53] COHEN, *supra* note 49, at 1156-57.
[54] United States v. Winans, 198 U.S. 371, 381 (1905) (emphasis added).
[55] *Id.* (stating "[t]hey imposed a servitude upon every piece of land as though described therein").

of the right to "take fish" are rights of access, including over state or privately owned land.[56] "This principle ensures that reserved treaty rights are not rendered a nullity by shifting patterns of property ownership and development."[57]

Additionally, under federal Indian law, unique canons guide courts' construction of the treaty language.[58] According to the canons, treaties should be construed liberally in favor of Indian tribes; they should be construed as the Indians would have understood them; and any ambiguities should be resolved in the tribes' favor.[59]

The historical record, from both sides, is very clear on the point that protections for the Pacific Northwest tribes' pre-existing fishing rights were crucial to obtaining tribes' assent to the treaties. U.S. courts have recognized this understanding on the part of the treaty negotiators:

> It is perfectly clear … that the Indians were vitally interested in protecting their right to take fish at usual and accustomed places, whether on or off the reservations, and that they were invited by the white negotiators to rely and did in fact rely heavily on the good faith of the United States to protect that right.[60]

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[56] *Id.* (observing that "[n]o other conclusion would give effect to the treaty").
[57] COHEN, *supra* note 49, at 1174; *accord* Grand Traverse Bay of Ottawa & Chippewa Indians v. Dir., Michigan Dept. of Natural Resources, 141 F.3d 635, 641 (6th Cir. 1998) (finding that tribe's reserved fishing rights in Lake Michigan entitled the tribe to mooring access at two municipally owned marinas, given the necessity of using large boats for safety reasons and the fact that the marinas occupied the only harbors within reasonable distance of the reserved fishing locations).
[58] COHEN, *supra* note 49, at 113-19, 1156. ("The canons have quasi-constitutional status; they provide an interpretive methodology for protecting fundamental constitutive, structural values against all but explicit congressional derogation."); *id.* at 118-19.
[59] *See, e.g.,* Minnesota v. Mille Lacs Band of Chippewa Indians, 526 U.S. 172, 194, 196, 200 (1999).
[60] Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 667 (1979) (holding that the treaty fishing clause guarantees to the tribes not merely access to usual and accustomed fishing sites and an "equal opportunity" for Indians, along with non-Indians, to try to catch fish, but instead secures to the tribes a right to harvest a share of each run of anadromous fish that passes through tribal fishing areas).

Accordingly, for more than a century, the courts have regularly interpreted the fishing right to encompass not only the right to harvest but also the subsidiary rights necessary to render it of continued relevance for tribal fishers. Among the facets of the treaty guarantees affirmed by the courts are the points that: (1) "The treaty clauses regarding off-reservation fishing . . . secured to the Indians rights, privileges and immunities distinct from those of other citizens."[61] (2) The rights secured to tribes by treaty are permanent, such that "[t]he passage of time and the changed conditions affecting the water courses and the fishery resources in the case area have not eroded and cannot erode the right secured by the treaties . . ."[62] (3) "[N]either the treaty Indians nor the state . . . may permit the subject matter of these treaties [i.e. the fisheries] to be destroyed."[63] (4) The treaty fishing rights encompass the right to fish in all areas traditionally available to the tribes, and "[agencies] ... do not have the ability to qualify or limit the Tribes' geographical treaty fishing right (or to allow this to occur ...) by eliminating a portion of an Indian fishing ground …," except as necessary to conserve a species.[64] (5) The treaty fishing rights encompass all available species of fish found in the treating tribes' fishing areas, "[b]ecause the 'right of taking fish' must be read as a reservation of the Indians' pre-existing rights, and because the right to take *any* species, without limit, pre-existed the Stevens Treaties."[65] These features of tribes' rights are important in part because they continue to inform tribes' aspirations for and entitlements to a future in which their exercise of their rights is robust, and tribal members' consumption and use of the resources on which they have historically depended is restored.

[61] United States v. Washington, 384 F. Supp. 312, 401 (W.D. Wash. 1974).
[62] *Id.*
[63] United States v. Washington, 520 F.2d 676, 685 (9th Cir. 1975).
[64] *See, e.g.,* Muckleshoot v. Hall, 698 F. Supp. 1504, 1513-14 (W.D. Wash. 1988) (enjoining construction of a marina in Elliott Bay that would have eliminated a portion of the tribes' usual and accustomed fishing areas); *see also* United States v. Oregon, 718 F.2d 299, 305 (9th Cir. 1983) (holding that "the court must accord primacy to the geographical aspect of the treaty rights").
[65] United States v. Washington, 873 F. Supp. 1422, 1430 (W.D. Wash. 1994) (emphasis in original).

2. The "Culverts" Case

The U.S. courts' most recent affirmation of the treaty guarantees is of a piece with these previous cases. In what is known colloquially as the "culverts" case,[66] the court addressed a threat to the tribes' treaty rights posed by environmental degradation. The culverts case is an outgrowth of *United States v. Washington*, in which Judge Boldt divided the questions before the court into two "phases." In Phase II, the district court considered "whether the right of taking fish incorporates the right to have treaty fish protected from environmental degradation."[67] The court in 1980 held that "implicitly incorporated in the treaties' fishing clause is the right to have the fishery habitat protected from man-made despoliation….The most fundamental prerequisite to exercising the right to fish is the existence of fish to be taken."[68] On appeal, the district court's opinion was vacated on jurisprudential grounds.[69] The Ninth Circuit found its "general admonition" inappropriate as a matter of "judicial discretion" and stated that the duties under the treaties in this respect "will depend for their definition and articulation upon concrete facts which underlie a dispute in a particular case."[70] So, in the culverts case, filed in 2001, the tribes brought to the court's attention such a set of concrete facts. Specifically, the tribes cited evidence that the state of Washington had improperly maintained culverts around the state, with the result that miles of salmon habitat were blocked, contributing to a decline in salmon

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[66] Culverts Order, 2007 WL 2437166 (W.D. Wash.); Culverts Decision, No. 9213RSM, Subproceeding 01-1, slip op. (W.D. Wash. 2013).

[67] United States v. Washington, 506 F. Supp. 187, 190 (W.D. Wash. 1980) (Phase II) *vacated by* United States v. Washington, 759 F.2d 1353 (9th Cir. 1985).

[68] United States v. Washington, 506 F. Supp. at 203.

[69] The procedural history of Phase II is discussed at greater length by Judge Martinez in the Culverts Order. *See* Culverts Order, 2007 WL 2437166, at *4-*5. Notably, although the State had argued that the Ninth Circuit's vacatur ought to be understood broadly, as a rejection of the tribes' position, the court disagreed. "The [appellate] court's order did not contain broad and conclusive language necessary to reject the idea of a treaty-based duty in theory as well as in practice. … [its] ruling, then, cannot be read as rejecting the concept of a treaty-based duty to avoid specific actions which impair salmon runs. The court did not find fault with the district court's analysis on treaty-based obligations, but rather vacated the declaratory judgment as too broad, and lacking a factual basis at that time. The court's language, however, clearly presumes some obligation on the part of the State …" *Id.*

[70] United States v. Washington, 759 F.2d at 1357.

numbers and thus an erosion of tribes' ability to exercise their treaty-guaranteed right to take fish. Thus, the district court in the culverts case considered the question "whether the Tribes' treaty-based right of taking fish imposes upon the State a duty to refrain from diminishing fish runs by constructing or maintaining culverts that block fish passage."[71]

In 2007, the district court ruled in favor of the tribes' request for a declaratory judgment to this effect on cross-motions for summary judgment. In finding that the state indeed had the duty urged by the tribes, Judge Martinez considered carefully the intent of the parties to the treaties, in accordance with "well-established principles of treaty construction," citing U.S. Supreme Court precedent for the instruction that "the treaty must therefore be construed, not according to the technical meaning of its words to learned lawyers, but in the sense in which they would naturally be understood by the Indians."[72] Judge Martinez began his analysis by quoting the Court's earlier work in the *U.S. v. Washington* line of decisions, but highlighted language underscoring that among the points of "taking" fish was, ultimately and obviously, eating fish.

> Governor Stevens and his associates were well aware of the "sense" in which the Indians were likely to view assurances regarding their fishing rights. During the negotiations, the vital importance of the fish to the Indians was repeatedly emphasized by both sides, and *the Governor's promises that the treaties would protect that source of food and commerce were crucial in obtaining the Indians' assent.* It is absolutely clear, as Governor Stevens himself said, that neither he nor the Indians intended that the latter "should be excluded from their ancient fisheries," and it is accordingly inconceivable that either party deliberately agreed to authorize future

[71] Culverts Order, 2007 WL 2437166, at *3.
[72] *Id.* at *6 (quoting State of Washington v. Washington State Commercial Passenger Fishing Vessel Association).

> settlers to crowd the Indians out of any meaningful use of their accustomed places to fish.[73]

Notably, Judge Martinez added the emphasis indicated to the material he quoted.

Judge Martinez quoted at length from expert testimony that focused explicitly on the role of the fish as food, forever – "for subsistence and for trade" – noting "[t]he significance of [the] right [to take fish] to the Tribes, its function as an incentive for the Indians to sign the treaties, and the Tribes' reliance on the unchanging nature of that right."[74] He recited from the declaration of historian Richard White:

> Stevens and the other negotiators anticipated that Indians would continue to fish the inexhaustible stocks in the future, just as they had in the past. Stevens specifically assured the Indians that they would have access to their normal food supplies now and in the future. At the Point Elliot Treaty, Stevens began by speaking of subsistence. "[A]s for food, you yourselves now, as in time past, can take care of yourselves." The question, however, was not whether they could now feed themselves, but rather whether in the future after the huge cessions that the treaties proposed the Indians would still be able to feed themselves. Stevens assured them that he intended that the treaty guarantee them that they could. *"I want that you shall not have simply food and drink now but that you may have them forever."*[75]

Judge Martinez noted the parties' likely understandings, given the reliability of the anadromous fishery resource in particular, the "abundance" of the fisheries in general, and their presumed "future

[73] *Id.* at *7 (quoting State of Washington v. Washington State Commercial Passenger Fishing Vessel Association, internal citation omitted, emphasis added by Judge Martinez).
[74] *Id.* at *7-*8.
[75] *Id.* at *9 (quoting Declaration of historian Richard White, emphasis added by Judge Martinez).

'inexhaustability.'"[76] These understandings, and Stevens' promises to the end that this would "forever" be the case, were what persuaded the tribes to sign the treaties. As Judge Martinez observed, "[i]t was not deemed necessary to write any protection for the resource into the treaty because nothing in any of the parties' experience gave them reason to believe that would be necessary." He then quoted historian Joseph Taylor:

> During 1854-55, white settlement had not yet damaged Puget Sound fisheries. During those years, Indians continued to harvest fish for subsistence and trade as they had in the past. Given the slow pace of white settlement and its limited and localized environmental impact, Indians had no reason to believe during the period of treaty negotiations that white settlers would interfere, either directly through their own harvest or indirectly through their environmental impacts, with Indian fisheries in the future. During treaty negotiations, Indians, like whites, assumed their cherished fisheries would remain robust forever.[77]

Thus, Judge Martinez concluded:

> [T]he representatives of the Tribes were personally assured during the negotiations that they could safely give up vast quantities of land and yet be certain that their right to take fish was secure. These assurances would only be meaningful if they carried the implied promise that neither the negotiators nor their successors would take actions that would significantly degrade the resource.[78]

Indeed, Judge Martinez observed, environmental degradation would not have been anticipated by the Indians not only because white settlement had not yet occasioned much by way of adverse environmental impacts, but also because the Indians regulated their own activities in order to prevent environmental harm and ensure the health of the fishery

[76] *Id.*
[77] *Id.* (quoting Declaration of historian Joseph E. Taylor, III).
[78] *Id.* at *10. .

resource.[79] Thus, according to Judge Martinez, "[s]uch resource-degrading activities as the building of stream-blocking culverts could not have been anticipated by the Tribes, who themselves had cultural practices that mitigated negative impacts of their fishing on the salmon stocks."[80]

The significance of the culverts order is widely recognized. While the state, in the wake of the Ninth Circuit's vacatur of the Phase II decision, may have harbored questions about the vibrancy of its treaty-based duty to avoid actions that impair the health of the salmon, its existence was explicitly confirmed by the culverts order. This duty, as the court stated, exists "in theory as well as in practice." Although the parties attempted to settle upon a schedule for the state to fix its stream-blocking culverts in view of this duty, they were unsuccessful and a bench trial on the remedies was held in 2010. On March 29, 2013, Judge Martinez granted the tribes' request for a permanent injunction, and denied the state's request for reconsideration of the court's 2007 culverts order.[81] Judge Martinez incorporated his earlier ruling in its entirety, reiterating that "[t]he Treaties were negotiated and signed by the parties on the understanding and expectation that the salmon runs were inexhaustible and that salmon would remain abundant forever."[82]

The tribes brought their claim to the court in the context of a discrete set of facts and Judge Martinez decided the question in this particularized context, carefully avoiding a broad, acontextual pronouncement.[83] Yet the court's rulings and reasoning in the culverts

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[79] *Accord, e.g.,* TROSPER *supra* note 45; Johnsen, *supra* note 44. In the earliest times, when the balance of power still favored Native people, settlers too in some cases had to observe indigenous rules for consumption and resource management. As Joseph Taylor recounts in the context of the Columbia River Basin, "Clatsop and Chinooks delivered canoe loads of fish …but aboriginal rules still shaped the exchange. During ceremonial periods Indians continued to restrict consumption …Non-Indians grudgingly obeyed as long as Indians could force compliance, but repeated epidemics undermined aboriginal control." TAYLOR, *supra* note 45, at 60.

[80] Culverts Order, 2007 WL 2437166, at *10 (citing Declaration of Robert Thomas Boyd).

[81] Culverts Decision, No. 9213RSM, Subproceeding 01-1, slip op. at 32 (W.D. Wash. 2013).

[82] *Id.*

[83] Culverts Order, 2007 WL 2437166, at*10. Thus, Judge Martinez assured the State of Washington that "[t]his is not a broad 'environmental servitude' or the imposition of an

case send an unmistakable signal. Given an appropriately concrete factual context, the culverts decision can fairly be read to confirm the point that, as successors to the negotiators, federal and state governments may be held to account for the actions they take – or permit others to take – that significantly degrade the treaty resource. Given the court's concern with the *function* of the treaty resource, moreover – its role in securing food and a livelihood for the tribes – governments may be held to account for actions that compromise the treaty resource whether by depletion or by contamination. This point is developed further below, in Part VII.

It should be noted that the tribes' fishing rights encompass geographical areas throughout the Pacific Northwest. In Washington, for example, tribes' adjudicated usual and accustomed or "U & A" areas have been determined to consist in virtually the entirety of the waters within the state's exterior boundaries.[84] As a consequence, environmental standards applicable in this area – whether set by federal, tribal, or state governments – can affect tribes' rights and interests.

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affirmative duty to take all possible steps to protect fish runs as the State protests, but rather a narrow directive to refrain from impeding runs in one specific manner." *Id.* Similarly, in the Culverts Decision, Judge Martinez stated that "[t]he State's duty to maintain, repair or replace culverts which block passage of anadromous fish does not arise from a broad environmental servitude against which the Ninth Circuit Court of Appeals cautioned. Instead, it is a narrow and specific treaty-based duty that attaches when the State elects to block rather than bridge a salmon-bearing stream with a roadbed. The roadbed crossing must be fitted with a culvert that allows not only water to flow, but which insures the free passage of salmon of all ages and life stages both upstream and down. That passage is best facilitated by a stream simulation culvert rather than the less-effective hydraulic design or no-slope culvert." Culverts Decision, slip op. at 35.

[84] This is not to suggest that tribes' rights are limited to the state's exterior boundaries; rather, it is to say that insofar as the state asserts environmental regulatory authority over "the waters of Washington," these waters are burdened by tribes' pre-existing rights. For state recognition of this point, *see, e.g.,* Washington State Governor's Office of Indian Affairs, "Map of Reservations and Ceded Lands," *available at* http://www.goia.wa.gov/tribal_gov/documents/Tribal_Cedres.pdf; *see also,* Washington State Department of Transportation, Model Comprehensive Tribal Consultation Process for National Environmental Policy Act, Appendix B (July 2008) *available at* http://www.wsdot.wa.gov/environment/tribal (summarizing adjudicated "usual and accustomed" areas for western Washington tribes) (last visited Apr. 20, 2013).

B. Other Sources of Rights Unique to Tribes and Their Members

When the rights of tribes and their members are affected by state and federal agencies' decisions, there is a particular constellation of laws and commitments that comes into play. This constellation is unique to tribes – it would not be relevant were only other groups' interests affected, but it must be considered given that tribes' rights are at stake. Although it is beyond the scope of this article to discuss these laws and commitments, it is worth noting them here. In addition to the treaties and agreements between the U.S. and the Pacific Northwest tribes discussed above, numerous federal and state legal commitments recognize the unique duties owed to tribes and their members. Chief among these is the federal trust responsibility, under which doctrine the federal government is held to the heightened standards of a trustee in its decisions affecting tribal resources and rights. Although courts' recent interpretations of this trust responsibility in the context of agencies' environmental decisions have tended toward a narrow rather than robust understanding, the EPA at least has indicated its appreciation of a duty that flows from tribes' unique legal status under the Constitution, treaties, laws, executive orders, and court decisions and from the historical relationship between the federal government and tribal nations.[85]

Other obligations and commitments that are particular to tribes and their members stem from federal civil rights laws that prohibit recipients of federal funds (including state environmental agencies) from administering their programs in a way that discriminates against American Indians;[86]

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[85] *See* Memorandum from Lisa P. Jackson, Administrator, U.S. Environmental Protection Agency, to All EPA Employers (Jul. 22, 2009), *available at* http://www.epa.gov/tp/pdf/reaffirmation-memo-epa-indian-policy-7-22-09.pdf (last visited Apr. 20, 2013) (reaffirming EPA's 1984 Indian policy and explicitly acknowledging its trust responsibility to the tribes); U.S. Environmental Protection Agency, Policy for the Administration of Environmental Programs on Indian Reservations (Nov. 8, 1984), *available at* http://www.epa.gov/tp/pdf/indian-policy-84.pdf (last visited Apr. 20, 2013); *see generally*, COHEN, *supra* note 49, at 430-32. For a more expansive understanding of the federal government's trust responsibility regarding the ecosystems that support salmon, *see* NORTHWEST INDIAN FISH COMMISSION, TREATY RIGHTS AT RISK (2011) [hereinafter NWIFC, TREATY RIGHTS AT RISK].

[86] Civil Rights Act of 1964 § 106, 42 U.S.C. § 2000d (2012); 40 C.F.R. § 7 (2012).

U.S. commitments under international law to protect the rights of indigenous peoples, including rights to traditional resources and to hunt, fish, and gather; [87] federal and state commitments to work with tribes on a government-to-government basis, in furtherance of tribal self-determination; [88] and federal and state commitments to further environmental justice, including specific mention of the need to protect subsistence fishing.[89]

C. Environmental Management Affecting Tribes' Rights to Fish

Federal, state, and tribal governments are all successors in interest to the treaty promises. Each of these governments is therefore bound to pursue the treaties' goals. This point is important because, at present, myriad decisions that result in depletion and contamination of the fish resource get made by non-tribal governments.

For starters, pollution is a notorious scofflaw. It doesn't respect jurisdictional boundaries. So, even if tribes' interests in the health of the fish resource were confined within the borders of their reservations, decisions by "upstream" governments, e.g., about the quantities of contaminants they will permit to be discharged into a particular river or the degree of cleanup they will require of a contaminated site on a particular bay, would often impact "downstream" tribal interests.

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[87] UNITED STATES MISSION TO THE UNITED NATIONS, ANNOUNCEMENT OF U.S SUPPORT FOR THE UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES 6, 8 (2011), *available at* http://usun.state.gov/documents/organization/153239.pdf (last visited Apr. 20, 2013) (acknowledging that the Declaration calls upon the U.S. to acknowledge the "interests of indigenous peoples in traditional lands, territories, and natural resources," and recognizing "that many indigenous peoples depend upon a healthy environment for subsistence fishing, hunting and gathering" and that various Declaration provisions address the consequent need for environmental protections).

[88] *See, e.g.*, WASHINGTON GOVERNOR'S OFFICE OF INDIAN AFFAIRS, CENTENNIAL ACCORD BETWEEN THE FEDERALLY RECOGNIZED INDIAN TRIBES IN WASHINGTON STATE AND THE STATE OF WASHINGTON (1989), *available at* http://www.goia.wa.gov/Government-to-Government/Data/CentennialAccord.htm (last visited Apr. 20, 2013).

[89] *See, e.g.*, EXECUTIVE ORDER 12,898: FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS (Feb. 11, 1994) (singling out the issue of "subsistence consumption of fish and wildlife" in section 4-4, the only subject matter issue receiving specific mention in the Executive Order).

But, as noted above, tribes' rights and interests in the fish also extend beyond reservation boundaries. Indeed, in Washington, adjudicated tribal "usual and accustomed" fishing places under the treaties have been recognized to cover virtually the entirety of the state's waters. Yet, on current understandings, environmental management authority for the vast expanse of waters outside of the reservations boundaries that support the salmon and other fish resides largely in non-tribal governments.[90] Put another way, even if tribal governments work to prevent contamination and depletion and to restore degraded aquatic environments to the fullest extent of their current regulatory authority,[91] tribes' reserved fishing rights are susceptible to being eviscerated by non-tribal management decisions over off-reservation waters.

Tribal environmental management, historically, was crucial to the health of the region's aquatic ecosystems and went hand-in-hand with tribal harvest. Despite a bleak intervening period in which tribal self-determination and governance were challenged as the U.S. embraced policies of assimilation and termination, tribes have worked to keep their legacies as environmental custodians intact.[92] Tribes today are co-managers of the fishery harvest and leaders in environmental regulation

[90] *Cf.* United States v. Washington, 384 F. Supp. 312, 340-42 (W.D. Wash. 1974) (recognizing co-management of harvest by tribes and state).

[91] For a discussion of the sources and contours of tribal environmental management authority in Indian country, *see* COHEN, *supra* note 49, chapter 10. Briefly, tribal environmental management authority is understood to stem from two sources. First, tribes possess inherent powers of self-government. While these powers may be limited in certain respects by federal law, tribes nonetheless retain substantial authority over matters affecting tribal health and welfare. *Id.* at 784. Second, tribes also may exercise powers authorized by Congress. Many environmental statutes, including the federal Clean Water Act, have authorized tribes to assume "primacy" for administering environmental regulatory programs in Indian Country. *Id.* at 787. It is worth noting that, once tribal water quality standards have been approved under the CWA by the EPA, they – like state standards – have been viewed by EPA as imposing certain obligations on "upstream" states to ensure the latter do not issue permits that would result in a violation of "downstream" tribal standards, and courts have upheld this view. *See, e.g.,* City of Albuquerque v. Browner, 97 F.3d 415 (10th Cir. 1996). This potential "extra-territorial" impact for tribal WQS obviously has implications for the ability of tribal environmental managers to affect the health of the fish resource.

[92] *See, e.g.,* CHARLES WILKINSON, BLOOD STRUGGLE: THE RISE OF MODERN INDIAN NATIONS (2005).

and habitat restoration.[93] Yet because of the limited reach of tribal environmental regulatory authority, tribes' efforts must be met with efforts by non-tribal governments if our aquatic ecosystems are to be healthy and resilient and our fisheries robust. As the next Part outlines, the task ahead is not small, given the current degraded state of the habitat, and the consequent depletion and contamination of the fish.

III. FISHERIES – DEPLETION AND CONTAMINATION

Since the time of the treaties, depletion and contamination have increasingly threatened the salmon and other fish resources. The dire state of aquatic environments throughout the Pacific Northwest has led to various designations that at once highlight the imperiled condition of a species or stretch of water and put in motion the machinery of protection under various environmental laws. Thus, several species of salmon (as well as other species, such as the orca, that depend on salmon) have been listed as "threatened" or "endangered" under the Endangered Species Act;[94] miles of streams and rivers and acres of lakes have been deemed "impaired" under the CWA;[95] scores of "sites" have been designated for cleanup of contaminated sediments under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Washington's Model Toxics Control Act (MTCA);[96] and whole systems have been singled out for attention, including the Puget

[93] United States v. Washington, 384 F. Supp. at 340-42. Indeed, tribal water quality standards currently employ the most protective fish consumption rates in the nation. The Confederated Tribes of the Umatilla Indian Reservation, for example, employ a FCR of 389 g/day in its WQS. In some cases, however, these progressive tribal standards have been in place for years, but await EPA approval before they will function as WQS within the meaning of the CWA. This is the case, for example, with the Spokane Tribe's standards, which employ a FCR of 865 g/day.

[94] *See* National Oceanic & Atmospheric Administration, *supra* note 21.

[95] *See* U.S. Environmental Protection Agency, Watershed Assessment, Tracking, and Environmental Results, "National Summary of Impaired Waters & TMDL Information," *available at* http://iaspub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T#imp_water_by_state (last visited Apr. 18, 2013).

[96] PUGET SOUND PARTNERSHIP, 2007 PUGET SOUND UPDATE 139 (2007), *available at* http://www.psp.wa.gov/documents.php [hereinafter PSP, 2007 UPDATE] (last visited Apr. 20, 2013) (compiling list of over 600 sites in the Puget Sound undergoing or awaiting remediation of contaminated marine sediments under federal or state cleanup laws).

Sound and the Columbia River Basin.[97] These actions have been accompanied by several major efforts to assess the health of the salmon and its watersheds; to gauge our progress in addressing threats to salmon recovery; and to judge our success in honoring our obligations as successors to the treaties.[98] These report cards, sadly, deliver poor marks in virtually every category.

This place – the Pacific Northwest – has been greatly altered. In countless ways, it is less hospitable to the salmon and other fish resources than when it resided exclusively in tribal custody. The numbers are grim. Since statehood in 1889, Washington has lost some 70% of its estuarine wetlands, 50% of its riparian habitat, and 90% of its old-growth forest.[99] In the Puget Sound, much of the nearshore habitat that is vital to forage fish and that serves as a refuge and feeding ground on salmon's migratory path has been modified (40%) or armored (27%).[100] For example, although the 2007 Chinook Recovery Plan instructs that impervious surfaces be minimized, and lists this among its key strategies for recovering the salmon, impervious surface cover increased by 35% in Puget Sound between 1986 and 2006.[101] Impervious surfaces lead to increased stream temperatures and decreased biodiversity (including a loss of insect and prey fish species).[102] Indeed, many of these alterations have multiple adverse effects on the salmon, depriving them of suitable habitat and food, and permitting what little remains to be poisoned, as the

[97] Both the Columbia River Basin and the Puget Sound-Georgia Basin have been designated by EPA as priority Large Aquatic Ecosystems. *See* U.S. Environmental Protection Agency, "Large Aquatic Ecosystems," *available at* http://water.epa.gov/aboutow/owow/programs/large_aquatic.cfm (last visited Apr. 20, 2013).

[98] NWIFC, 2012 SOW, *supra* note 30; NATIONAL MARINE FISHERIES SERVICE, 2011 IMPLEMENTATION STATUS ASSESSMENT FINAL REPORT: A QUALITATIVE ASSESSMENT OF IMPLEMENTATION OF THE PUGET SOUND CHINOOK RECOVERY PLAN (Millie Judge); NWIFC, TREATY RIGHTS AT RISK, *supra* note 85; EPA AND CRITFC, COLUMBIA RIVER BASIN CONTAMINANT SURVEY (2002), *available at* http://yosemite.epa.gov/r10/oea.nsf/0/C3A9164ED269353788256C09005D36B7?OpenDocument (last visited Apr. 18, 2013) [hereinafter EPA AND CRITFC, COLUMBIA RIVER BASIN CONTAMINANT SURVEY]; PSP, 2007 UPDATE, *supra* note 96.

[99] NWIFC, 2012 SOW, *supra* note 30, at 18.

[100] *Id.* at 19.

[101] *Id.* at 14.

[102] *Id.*

urban toxic soup or rural pesticide slurry is quickly ushered into streams, lakes, bays, and coasts.

Water quality throughout the region has suffered, and the waters and sediments that are home to the salmon and other fish are also now home to a host of toxic contaminants.[103] Urbanized embayments, shorelines, and rivers tend to be more contaminated than less industrialized areas, although agricultural and silvicultural activities lead to contamination in rural areas as well. Many of these anthropogenic toxicants are harmful to the fish, and associated with increased morbidity and mortality; many of these toxicants also bioaccumulate in fish tissue, and so are harmful to all those that consume the fish. Thus, toxic pollution contributes to both depletion and contamination of the fishery resource. Chinook salmon from the Puget Sound are significantly more contaminated than their counterparts outside the Puget Sound, i.e., in the Georgia Strait, along the outer Washington and Oregon coasts, or in Alaska. Recent evidence showed, for example, that Chinook from sites in Puget Sound contained PCBs at three to five times the levels of Chinook from comparison sites elsewhere.[104] Pacific herring, an important forage fish for salmon, displays a similar geographic pattern in their contaminant levels. Pacific herring from central and southern Puget Sound harbored PCBs at levels four to nine times higher than those from Georgia Basin sites, as evidenced by samples from 1999 to 2004.[105] The most recent data bear out this geographical differential. For Pacific herring, whole body samples from South Puget Sound contained 120-160 ppb PCBs, from the North Puget Sound contained 18 to 41 ppb PCBs, and from coastal ocean locations contained 4 to 12 ppb PCBs.[106] Dungeness crab

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[103] *See, e.g.,* NWIFC, TREATY RIGHTS AT RISK, *supra* note 85 at 10 (noting that, in 2008, "83 percent of waters sampled to compile the state's 305(b) and 303(d) Clean Water Act lists violate state water quality standards and are polluted"); *see generally*, PSP, 2007 UPDATE, chapter 4 "Toxic Contamination."

[104] O'Neill & West, *supra* note 27, at 622; *see generally*, PSP, 2007 UPDATE, *supra* note 96, at 153-56.

[105] PSP, 2007 UPDATE, *supra* note 96, at 152.

[106] James E. West, et al., *Spatial Extent, Magnitude, and Patterns of Persistent Organochlorine Pollutants in Pacific Herring (*Clupea pallasi*) Populations in the Puget Sound (USA) and Strait of Georgia (Canada)*, 394 SCIENCE OF THE TOTAL ENVIRONMENT 369 (2008); James E. West, "Persistent Bioaccumulative and Toxic Contaminants in South Puget Sound's Pelagic Food Web," Presentation at the Fourth Annual South

from an urban location in Puget Sound had six times the PAH levels of Dungeness crab from two non-urban locations.[107]

In absolute terms, the levels of toxic contaminants present in aquatic environments and fish tissue pose reason for concern, with lethal and sub-lethal impacts to the fish. The Puget Sound Partnership, for example, reports that "pre-spawn mortality occurred in 25 to 90 percent of female coho salmon returning to urban streams in the Puget Sound region between 2002 and 2005, suggesting that contaminants from stormwater are posing a threat to the spawning success of salmon in urban streams."[108] Juvenile Chinook salmon from the South Puget Sound have been shown to harbor PCBs in concentrations from 2,500 to 10,000 ng/g lipid, well above the 2,400 ng/g lipid threshold for adverse effects such as depressed growth.[109] Pacific herring embryos have been shown to be exposed to PAHs at some locations in Puget Sound at levels above the threshold for mortality.[110] Pacific herring is a pelagic species, but it spawns adhesive eggs on intertidal and shallow subtidal structures, especially on algae and seagrasses. Its shoreline habitats are particularly susceptible to PAH inputs from sources originating onshore (e.g., runoff and river inputs) and to large and small oil spills.[111]

Contamination is present in the fish at levels that also pose a risk to humans. For example, the Columbia River Basin Contaminant Survey,

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Sound Science Symposium, Squaxin Island (Oct. 30 2012) [hereinafter, West, South Sound Science Symposium Presentation]; E-mail from James E. West to Catherine A. O'Neill, Feb. 6, 2013 (noting that new methods of calculating total PCBs mean that these figures likely underestimate the "true concentrations" of PCBs by "around 33%").

[107] PSP, 2007 UPDATE, *supra* note 96, at 166 (comparing PAHs in Dungeness crab from the Thea Foss Waterway with Dungeness crab from Vendovi Island and the Cherry Point shoreline).

[108] *Id.* at 131.

[109] West, South Sound Science Symposium Presentation, *supra* note 105 (citing James P. Meador, et al., *Use of Tissue and Sediment-Based Threshold Concentrations of Polychlorinated Biphenyls (PCBs) to Protect Juvenile Salmonids Listed Under the US Endangered Species Act*, 12 AQUATIC CONSERVATION: MARINE AND FRESHWATER ECOSYSTEMS 493 (2002) for source of threshold level of 2,400 ng/g lipid).

[110] PSP, 2007 UPDATE, *supra* note 96, at 170-71 (discussing results of experiments showing PAH exposure for Port Orchard/Port Madison sites at levels above 22 ppb threshold at which malformation and ultimately death resulted for exposed herring embryos).

[111] *Id.*

conducted jointly by EPA and CRITFC, tested fish tissue and eggs from twelve anadromous and resident species at twenty sites in the Columbia River Basin.[112] The fish tissues were analyzed for 132 chemicals including 26 pesticides, 18 metals, a host of PCBs, dioxins, furans, and 51 miscellaneous organic chemicals. Of these 132 chemicals, 92 were detected and "all species of fish had some levels of toxic chemicals in their tissues and in the eggs of Chinook and coho salmon and steelhead."[113] Some of these chemicals are carcinogens, some are harmful to human health in other ways. Toxicologists speak in terms of degrees of "risk" when discussing carcinogens, on the theory that there is no threshold below which exposure to these chemicals will not have adverse effects.[114] Toxicologists speak in terms of "hazard" when discussing non-carcinogens, on the theory that a threshold dose can be identified below which exposure to these chemicals can be said to be safe.[115] Both carcinogens and non-carcinogens pose a concern for people who eat relatively large amounts of fish from the Columbia River Basin. When one considers particular species or sites, the risk levels are sobering. For example, at a site between the John Day and McNary dams, a person consuming fish at contemporary levels documented in the CRITFC survey (389 g/day) has an excess cancer risk between 1 in 100 and 1 in 1000 for all four species surveyed (i.e., steelhead, fall Chinook, largescale sucker, and white sturgeon).[116] The hazards from non-carcinogens can also far exceed levels deemed "safe" by EPA. For example, a woman consuming walleye from the Umatilla River at this same contemporary level (389 g/day) is exposed to methylmercury at a level nearly ten times EPA's "reference dose."[117] Because methylmercury is a potent neurotoxin, the

[112] EPA AND CRITFC, COLUMBIA RIVER BASIN CONTAMINANT SURVEY, *supra* note 98.
[113] *Id.* at E-3.
[114] CASSARETT & DOULL'S TOXICOLOGY: THE BASIC SCIENCE OF POISONS 116 (Curtis D. Klaassen, ed., 7th ed. 2008).
[115] *Id.*
[116] EPA AND CRITFC, COLUMBIA RIVER BASIN CONTAMINANT SURVEY, *supra* note 98, at app. N, 2-3 and fig. 6-26. This estimate of risk is for whole body samples and assumes a 70-year (i.e., a lifetime) exposure duration. Environmental agencies generally consider a risk level of 1 in 1,000,000 to be "acceptable" for regulatory purposes. *See* discussions at Part V.B and Part VI.E, *infra.*
[117] *Id.* at app. B1. This estimate is for Umatilla walleye or similarly contaminated species. Three fillet fish tissues samples from the Umatilla River registered methylmercury at concentrations of 0.16 mg/kg; 0.16 mg/kg, and 0.2 mg/kg. The EPA's reference dose, or

adverse impacts are also felt by the next generation, as a developing fetus is particularly susceptible. When one considers multiple species from various sites, the risk levels may improve somewhat, but the figures are still troubling. For an adult consuming at contemporary levels documented in the CRITFC survey (389 g/day) and consuming a mix of species as documented by the survey, "[h]azard indices (less than or equal to 8 at most sites) and cancer risks (7 in 10,000 to 2 in 1,000) were lowest for salmon, steelhead, eulachon and rainbow trout and highest (hazard indices greater than 100 and cancer risks up to 2 in 100 at some sites) for mountain whitefish and white sturgeon."[118] The hazard indices for children at the average and high contemporary ingestion rates documented in the CRITFC survey "were 1.9 times greater than those for adults in CRITFC's member tribes at the average and high ingestion rates, respectively."[119]

Fish consumption advisories blanket the region's waters. Washington, for example, has issued a statewide advisory for mercury.[120] Rivers, including the Pend Oreille, Spokane, Walla Walla, Okanogan, and several portions of the Columbia, are under advisory for various toxic contaminants, ranging from PCBs, to DDT, to PBDEs, to lead.[121] Lakes around the state of Washington are similarly under advisory; for example, advisories for Lake Washington direct people to avoid or restrict consumption of northern pikeminnow, carp, cutthroat trout, yellow perch,

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RfD, for methylmercury is 0.1 µg/kg bodyweight/day, whereas a woman consuming at this contemporary tribal rate is exposed to methylmercury at a dose of 0.96 µg/kg bodyweight/day. This estimate uses the 0.16 mg/kg value for methylmercury concentration and assumes that the average woman weights 65 kg.

[118] Id. at E-6 to E-7. "Hazard indices and cancer risks were also estimated using a hypothetical multiple species diet. This hypothetical multiple species diet was based upon information from the CRITFC fish consumption study (CRITFC, 1994). The hazard indices and cancer risks for the multiple species diet were lower than those for most contaminated species of fish and greater than those for some of the least contaminated species. The risks for eating one type of fish may be an over or underestimate of the risks for consumers of a multiple-species diet depending upon the types of fish and concentration of chemicals in the fish which make up the diet." Environmental agencies generally aim for a Hazard Index of no more than 1.0 for regulatory purposes.

[119] *Id.* at E-7.

[120] Washington Department of Health, "Fish Consumption Advisories" *available at* http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories.aspx (last visited Apr. 20, 2013).

[121] *Id.*

sockeye salmon, rainbow trout, and pumpkin seed.[122] And mercury and PCBs are responsible for advisories regarding Dungeness and other crab, salmon, rockfish, and flatfish in Puget Sound.[123]

Whereas someone in the general population might, in the face of fish consumption advisories, look to substitute food sources with relatively modest accommodations of palate or pocketbook, a member of the fishing tribes might view such risk avoidance as impossible.[124] As Del White, Nez Perce, explains: "People need to understand that the salmon is part of who the Nez Perce people are. It is just like a hand that is part of your body."[125] The next Part takes up efforts to document tribal fish consumption practices, past, present, and future, in an attempt to support environmental standards that clean up and restore degraded environments. By this means, depletion and contamination of the fish can be addressed, and the attendant risks to all those who depend on the fish can be reduced, rather than avoided.

IV. TRIBAL FISH CONSUMPTION PAST, PRESENT AND FUTURE

Fish and all of the lifeways associated with the fish are essential to tribal health and well-being, today as in the past. Fish consumption is thus an embedded practice. Fish are vital to tribal people for the nutrients they provide, of course, but fish consumption is also imbued with social meaning. Every facet of managing, harvesting, distributing, and honoring the fish is woven into the fabric of tribal life. These practices and the knowledge they beget form a central part of the inheritance of each succeeding generation. For this reason, the salmon have been described as a "cultural keystone species" for the Indian peoples of the Pacific Northwest.[126] Fish are important for each individual tribal member, and for

[122] *Id.*
[123] *Id.*
[124] *See* Catherine A. O'Neill, *Risk Avoidance, Cultural Discrimination, and Environmental Justice for Indigenous Peoples*, 30 ECOLOGY L.Q. 1 (2003); Catherine A. O'Neill, *No Mud Pies: Risk Avoidance as Risk Regulation*, 31 VT. L. REV. 273 (2007).
[125] DAN LANDEEN & ALLEN PINKHAM, SALMON AND HIS PEOPLE: FISH AND FISHING IN NEZ PERCE CULTURE 156 (1999).
[126] Ann Garibaldi & Nancy Turner, *Cultural Keystone Species: Implications for Ecological Conservation and Restoration* 9 ECOLOGY AND SOCIETY 1 (2004); *accord* Donatuto & Harper, *supra* note 14, at 1500 (explaining that, for the tribes of the Pacific Northwest,

the tribe as a whole – necessary for health and well-being broadly understood to include not only physiological, but also cultural and spiritual dimensions.[127] As depicted in artwork by Swinomish carver and painter Kevin Paul that graced a recent study, fish are "food for the body, food for the soul."[128]

In the light of this context, a "fish consumption rate" is just a number. But, given that many environmental standards rest on quantitative assessments of the "risk" or "hazard" that will result from exposure to a particular level of contaminants, this number becomes crucial. Fish intake is the primary means by which humans are exposed to a host of toxicants, and the rate of fish consumption turns out to be one of the drivers in the degree of protectiveness of standards affecting water quality.[129] So in order to speak to these risk-based standards, tribes have quantified their rates of fish intake and documented other aspects of tribal consumption practices. And, in keeping with their vision for a future in

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"fish represent a cultural keystone species—species that have significant meaning and identity in tribal values and practices and as such are used in family and place names, educational stories, and ceremonies. Impacts to cultural keystone species degrade overall cultural morale. Therefore, degradation of traditional foods, for example, via contamination, directly impacts the physical health of those consuming the food and is regarded, equally, as an attack on beliefs and values through the 'acknowledged relationship of the people with the land, air, water, and all forms of life found within the natural system.'") (quoting SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY OF THE SUQUAMISH INDIAN TRIBE OF THE PORT MADISON INDIAN RESERVATION, PUGET SOUND REGION (2000)).

[127] *See, e.g.,* Jamie Donatuto et al., *Poisoning the Body to Nourish the Soul: Prioritizing Health Risks and Impacts in a Native American Community.* 13 HEALTH, RISK, AND SOCIETY 103 (2011).

[128] *See* Donatuto & Harper, *supra* note 14, at fig 1., "Swinomish Seafood Spiral"); magnet with artwork and text distributed by Swinomish Indian Tribal Community (on file with author).

[129] Humans are exposed to toxic contaminants in water by means of other routes as well, including via ingestion of water and dermal contact with water and sediments. For these other routes of exposure, too, tribal members are often more exposed than members of the general U.S. population. *See, e.g.,* Barbara L. Harper, et al., *The Spokane Tribe's Multipathway Subsistence Exposure Scenario and Screening Level RME*, 22 RISK ANALYSIS 513 (2002) [hereinafter, Harper, et al., *Spokane Exposure Scenario*]. While this article focuses on exposure via fish consumption for reasons of scope, it is important to consider a more complete and complex picture of how contaminants impact the health and well-being of tribes and their members. *See generally,* Stuart G. Harris, *Risk Analysis: Changes Needed from a Native American Perspective*, 6 HUMAN & ECOLOGICAL RISK ASSESSMENT 529 (2000).

which contamination is cleaned up, ecosystems are resilient, fisheries are healthy, and tribal exercise of their fishing rights is robust, tribes have also sought to contextualize the inquiry and broaden the question.

A. Historical Fish Consumption Practices and Rates

The tribes of the Pacific Northwest are fishing peoples. Historically, fish were vital to tribal life – a central feature of the seasonal rounds by which food was procured for ceremonial, subsistence, and commercial purposes. This fact is self-evident to tribal people. It has also been recognized by U.S. courts, which have observed that, at treaty times, "fish was the great staple of [Indians'] diet and livelihood,"[130] and thus fishing rights "were not much less necessary to the existence of the Indians than the atmosphere they breathed."[131]

There are ample data documenting the role of fish as a dietary mainstay for Indian people prior to contact and at the time of the treaties. There were differences, of course, in the species relied upon and the quantities consumed, from group to group and from year to year. Nonetheless, there is no doubt that fish comprised a staple source of calories, protein, and other nutrients for tribal people throughout the Pacific Northwest. These data, moreover, drawn from multiple lines of scientific evidence, have supported quantified estimates of historical consumption rates. For example, Deward Walker has estimated pre-dam fish consumption rates for the Columbia River tribes (Umatilla, Yakama, and Nez Perce), based on a review of the ethnohistorical and scientific literature. Walker has quantified total fish consumption for these peoples at 1000 g/day.[132] Earlier estimates, for example, by Gordon Hewes, produced figures of similar magnitude. Hewes estimated salmon consumption rates for the Cayuse at 365 pounds/year (453.6 g/day) and

[130] Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 665 n.6 (1979) (citations and internal quotation marks omitted).
[131] United States v. Winans, 198 U.S. 371, 381 (1905).
[132] A. SCHOLTZ, ET AL., COMPILATION OF INFORMATION ON SALMON AND STEELHEAD TOTAL RUN SIZE, CATCH, AND HYDROPOWER-RELATED LOSSES IN THE UPPER COLUMBIA RIVER BASIN, ABOVE GRAND COULEE DAM, Fisheries Technical Report No. 2, Upper Columbia United Tribes Fisheries Center, Eastern Washington University (1985).

for the Umatilla and Walla Walla at 500 pounds/year (621.4 g/day).[133] Hewes' estimates for the Puget Sound tribes were similar. For example, he estimated salmon consumption rates for the Lummi and Nooksack tribes at 600 pounds/year (745.6 g/day), for the Clallam at 365 pounds/year (453.6 g/day) and for the Puyallup, Nisqually, and various other tribes at 350 pounds/year (435 g/day).[134] These and other data have been enlisted in peer-reviewed methodologies for quantitative exposure estimates for various Pacific Northwest tribes. For example, Barbara Harper, et al. concluded that "[h]istorically, the Spokane Tribe consumed roughly 1,000 to 1,500 grams of salmon and other fish per day."[135]

The substantial degree to which fish were relied upon by the tribes at treaty time was emphasized in evidence before the court in *U.S. v. Washington.* Among the findings of fact in that case, Judge Boldt cited the following figure: "Salmon, however, both fresh and cured, was a staple in the food supply of these Indians. It was annually consumed by these Indians in the neighborhood of 500 pounds per capita [i.e., 621.4 g/day]."[136]

B. Contemporary, "Suppressed" Fish Consumption Rates

In contrast to estimates of historical fish consumption rates, recent surveys of tribal populations produce estimates of contemporary fish consumption rates. It is important to recognize that these snapshots of contemporary practices are distorted due to suppression.

> "A 'suppression effect' occurs when a fish consumption rate (FCR) for a given population, group, or tribe reflects a

[133] Gordon W. Hewes, *Indian Fisheries Productivity in Pre-Contact Times in the Pacific Salmon Area*, 7 NORTHWEST ANTHROPOLOGICAL RESEARCH NOTES 133, 136 (1973).
[134] *Id.*
[135] Harper, et al., *Spokane Exposure Scenario*, *supra* note 129, at 518. Harper, et al. improved upon the earlier estimates, among other things by accounting for the greater caloric requirements of an active, subsistence way of life. Thus, for example, while Hewes' estimates assumed a 2000 kcal/day energy requirement, Harper, et al. used a 2500 kcal/day figure, "based on a moderately active outdoor lifestyle and renowned athletic prowess" of Spokane tribal members. *Id.* at 517.
[136] United States v. Washington, 384 F. Supp. 312, 380 (W.D. Wash. 1974) (discussing Yakama consumption).

> current level of consumption that is artificially diminished from an appropriate baseline level of consumption for that population, group, or tribe. The more robust baseline level of consumption is suppressed, inasmuch as it does not get captured by the FCR."[137]

Note that suppression effects may infect attempts to assess consumption practices for various subpopulations or for the general population as well. For example, consumption surveys of women of childbearing age may reflect a current level of consumption that is diminished from levels that women in this group *would* consume, but for the existence of fish consumption advisories due to mercury contamination.[138] However, when tribes are affected, there are two important differences. First, the "appropriate baseline level of consumption" is clear for tribes, whereas it may be subject to debate for other groups. Only tribes have legally protected rights to a certain historical, original, or heritage baseline level of consumption. Second, the causes of suppression have exerted pressure on tribes for a longer period, and in more numerous ways, than on the general population. Whereas those in the general population may have begun to reduce their intake of fish in response to consumption advisories once these became more prevalent in the 1970s and thereafter, tribal members have been excluded from their fisheries, and harassed and imprisoned for exercising their fishing rights, from shortly after the ink on the treaties dried. Indeed, the forces of suppression, often perpetrated or permitted by federal and state governments, have included inundation of fishing places; depletion and contamination of the fishery resource; and years of prosecution, intimidation, and gear confiscation.[139]

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[137] NATIONAL ENVIRONMENTAL JUSTICE ADVISORY COUNCIL, FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE, 43-45 (2002).

[138] Emily Oken, et al., *Decline in Fish Consumption Among Pregnant Women After a National Mercury Advisory*, 102 OBSTETRICS & GYNECOLOGY 346 (2003) (finding that pregnant women with access to obstetric care decreased fish consumption in response to publication of federal advisory warning of mercury contamination in certain species of fish).

[139] Tribal leaders have long observed the myriad causes of suppression operating to diminish tribal fishing and fish consumption. These are usefully summarized in Donatuto

As a consequence, contemporary surveys of tribal populations produce fish consumption rates that are artificially low compared to the appropriate, treaty-guaranteed baseline. The bias introduced by suppression effects, together with tribes' treaty-secured right to catch and consume fish at more robust historical rates, means that it is inaccurate to refer to contemporary figures as "tribal fish consumption rates." Indeed, the snapshot of contemporary consumption practices provided by recent surveys arguably represents a nadir – a low point from which tribes are working to recover as environments are restored and traditional practices reinvigorated.

Rather, contemporary surveys of tribal populations are properly viewed alongside other surveys used to document contemporary fish consumption by the general population and relied upon by government agencies in the environmental regulatory context. These studies of tribal populations are generally conducted in accordance with the conventions of western science, and have been found to be technically defensible by federal and state governments.[140] These studies have been conducted under governmental or inter-governmental auspices, and subjected to internal and external peer review. As such, these studies follow the practice of studies of the national population that have been relied upon by EPA to set its default fish consumption rate for the general population.[141]

In fact, to the extent that contemporary surveys of tribal populations have erred on the side of following conventions developed for general population surveys, they may underestimate even contemporary tribal

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& Harper, *supra* note 14 at 1500-01; *accord* WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW IN INDIAN COUNTRY 25 (2005) ("In the latter half of the nineteenth century, the fishing grounds were quickly enclosed. … In hundreds of confrontations, the Indians met owners who hadn't heard of the fishing 'servitude,' or who didn't believe in it; who knew for sure that access was not here but over there; who would let the gates down, but only for a small and reasonable fee; who would insist the fishery was a private one; …The Indians would be introduced to fences and road closures and padlocks and abutments and signs and guard dogs and firearms that were among the pleasures of all fee-simple property owners….Litigation would begin in 1884, and in a fundamental sense, it would never end. Treaty fishing lawsuits continue today into the 21st century.").

[140] This point is discussed further *infra* at notes 238-41 and accompanying text.

[141] *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, METHODOLOGY FOR DERIVING AMBIENT WATER QUALITY CRITERIA FOR THE PROTECTION OF HUMAN HEALTH (2000) [hereinafter EPA, AWQC METHODOLOGY].

consumption rates.[142] Thus, for example, the study of the Tulalip and Squaxin Island tribes and the study of the Columbia River tribes both hewed to the statistical convention that "outliers" – in this case, representing high-end fish consumption rates – are treated as likely the result of error (for example, in recording a respondent's fish consumption rate) rather than a true value. As such, it is a frequent practice for such outlier data points to be omitted from the dataset that then forms the basis of population values (e.g., the mean, or the 90th percentile) or to be "recoded" to coincide with a number closer to the bulk of the population, such as a number equal to three standard deviations from the mean.[143] But, as has been recognized, some tribal members – particularly those from traditional and fishing families – in fact consume very large quantities of fish, even in contemporary times. Tribal researchers at Umatilla, for example, identified a subset of interviewees (35 of 75) who are "traditional fishers" and who confirmed eating fish "two to three times a day in various forms."[144] The average consumption rate for this group was found to be 540 g/day. Notably, the relatively high fish consumption rates indicated by this subset of tribal members reflect *actual* contemporary consumption, not – as assumed for so-called outliers – error. When outliers are treated automatically as errors, according to statistical convention, the effect is to depress the various percentile values and, importantly, to fail to reflect the consumption practices of those tribal members whose practices today are most consonant with practices guaranteed to the tribes by treaty and to which tribes, in an exercise of cultural self-determination, seek to return. A host of other conventions, detailed by tribal researchers, similarly

[142] *See, e.g.*, Donatuto & Harper, *supra* note 14.
[143] *But cf.* U.S. ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR EXPOSURE ASSESSMENT 65 (1992), *available at* http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=15263 (last visited Apr. 20, 2013) [hereinafter EPA, EXPOSURE ASSESSMENT GUIDELINES] (stating, in contrast to this frequent practice, that "[o]utliers should not be eliminated from data analysis procedures unless it can be shown that an error has occurred in the sample collection or analysis phases of the study. Very often outliers provide much information to the study evaluators.").
[144] Stuart G. Harris & Barbara L. Harper, *A Native American Exposure Scenario*, 17 RISK ANALYSIS 789 (1997).

operate so that, together, these surveys likely underestimate even contemporary tribal fish consumption rates.[145]

Additionally, depending on the time period that is covered by a survey, the recorded rates may undercount contemporary intake if the period is one of relatively low harvest. This has been shown to be the case, for example, for the years in the early 1990s canvassed by the CRITFC survey, during which the tribal harvest was significantly reduced from more recent years, coinciding with severe reductions in fish availability in the Columbia River Basin, for example, 80% for summer Chinook and 94% for fall Chinook.[146] With this concern in mind, the Lummi Nation opted in its recent survey to document consumption practices and rates for the year 1985, a period in contemporary time in which the harvest was more robust than at present, although still suppressed relative to the time of the treaties.[147]

While contemporary rates are not representative of treaty-guaranteed practices, surveys of contemporary tribal consumption document rates of fish intake that are nonetheless markedly greater than for the general population. According to the national survey on which the EPA bases its current default recommendations, the mean fish consumption rate is 7.5 g/day; the 50th percentile rate is 0 g/day; the 90th percentile rate is 17.5 g/day; and the 99th percentile rate is 142.4 g/day.[148]

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[145] *See, e.g.,* Donatuto & Harper, *supra* note 14.

[146] Letter from Babtist Paul Lumley, Executive Director, CRITFC, to Ted Sturdevant, Director, Washington State Department of Ecology 3 (Mar. 19, 2012) (pointing to "the fact that more than 61% of the survey respondents reported that their fish consumption was suppressed by poor fish harvests during the early 1990's" and observing that "[f]ish counts at Lower Granite Dam, reported by the US Army Corps of Engineers (USACE) confirm that spring and summer Chinook availability in the Columbia Basin at the time of the CRITFC survey (1991-1992) was close to 80% lower … and fall Chinook was 94% lower than [in 2002]. Fish availability is similar today compared to 2002 and continues to improve for fall Chinook").

[147] LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 15, at 1.

[148] EPA, AWQC METHODOLOGY, *supra* note 141, at 4-24 to 4-28. Note that these figures do not represent total fish intake, but rather intake of "freshwater" and "estuarine" species only ("marine" species are excluded; salmon are deemed to be "marine," so excluded). Note further that these figures represent per capita rates, i.e., rates for fish consumers and non-consumers alike, according to the 1994-96 Continuing Survey of Food Intake by Individuals. *Id.* Thus, while total fish intake by the general U.S. population, and by fish consumers within that population, is indeed greater than these figures suggest, these

As Table 1 shows, contemporary tribal intake is greater at every point of comparison.[149]

Table 1

Surveyed Population	Fish Consumption at Descriptive Percentiles (grams/day)					
	Mean	50th	90th	95th	99th	Maximum
CRITFC Tribes	63	40	113	176	389	972
Squaxin Island Tribe	73	43	193	247	--	--
Tulalip Tribe	72	45	186	244	312	--
Suquamish Tribe	214	132	489	796	--	1453
Lummi Nation	383	314	800	918	--	--

C. Past and Future

For the tribes, the past informs the future. Historical, original, or "heritage" rates have ongoing relevance for the fishing tribes. This is so given that the treaty guarantees are in perpetuity, given that the tribes in

numbers are used here because these are the values that EPA enlists for regulatory purposes.

[149] Table 1 reflects the summary statistics reported by four recent surveys of contemporary tribal fish consumption. *See*, CRTIFC, FISH CONSUMPTION SURVEY *supra* note 11; TULALIP AND SQUAXIN ISLAND FISH CONSUMPTION SURVEY, *supra* note 12; SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY, *supra* note 13; and LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 15. These statistics in some cases represent conversions from data originally expressed in grams of fish intake/kilogram of bodyweight/day; such conversions necessarily involve a number of judgments and assumptions. As such, this Table enlists the statistics as they have been reported in a number of recent governmental publications, namely, by the Lummi Nation, the Oregon Department of Environmental Quality, and the Washington State Department of Ecology. LUMMI NATION SEAFOOD CONSUMPTION STUDY *supra* note 15, at 57; OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, HUMAN HEALTH FOCUS GROUP REPORT, OREGON FISH CONSUMPTION RATE PROJECT 28 (June, 2008) [hereinafter ODEQ, HHFG REPORT]; and WASHINGTON DEPARTMENT OF ECOLOGY, FISH CONSUMPTION RATES TECHNICAL SUPPORT DOCUMENT 6 (Sept. 2011) *available at* https://fortress.wa.gov/ecy/publications/summarypages/1109050.html (last visited Apr. 20, 2013) [hereinafter ECOLOGY, FCR TSD]. The exceptions are the maximum values, which were not reported in these publications, but the Suquamish value is available at SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY, *supra* note 13, at 11, 25, 71 (my calculations, based on maximum individual rate, in g/kg/day; mean bodyweights for men and women, and percentage of male and female respondents); the CRTIFC value is available at CRTIFC, FISH CONSUMPTION SURVEY, *supra* note 11, at 29.

fact seek to resume fish consumption practices and rates consonant with the treaty guarantees, and given that the tribes envision a future in which ecosystems that support the fish are restored. Thus, for example, the Umatilla tribe looked to "original consumption rates along the Columbia River and its major tributaries" in developing a fish consumption rate for environmental regulatory purposes "because that is the rate that the Treaty of 1855 is designed to protect and which is upheld by case law. It also reflects tribal fish restoration goals and healthy lifestyle goals."[150] Relatedly, recent surveys of Swinomish tribal members showed that they sought to reinvigorate more robust fish consumption practices and to increase their fish intake.[151]

To this end, tribal staff and their colleagues in academia and government have developed methods for creating tribal exposure scenarios, for use in environmental standard setting and other contexts. As Barbara Harper, Anna Harding, Stuart Harris and Patricia Berger explain, "[w]hile contemporary tribal resource use is often higher than in non-native communities, resource uses would be even higher under baseline conditions, (i.e., in the absence of resource degradation and contamination)."[152] Therefore, the method set forth is for tribal-specific exposure scenarios that are "not necessarily intended to capture contemporary resource patterns, but to describe how the resources were used before contamination or degradation, and will be used once again in fully traditional ways after cleanup and restoration."[153]

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[150] STUART G. HARRIS & BARBARA L. HARPER, CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION, EXPOSURE SCENARIO FOR CTUIR TRADITIONAL SUBSISTENCE LIFEWAYS app. 3 (2004).

[151] JAMIE DONATUTO, WHEN SEAFOOD FEEDS THE SPIRIT YET POISONS THE BODY: DEVELOPING HEALTH INDICATORS FOR RISK ASSESSMENT IN A NATIVE AMERICAN FISHING COMMUNITY, 85-89 (Ph.D. dissertation, University of British Columbia 2008) (summarizing survey of Swinomish Indian Tribal Community members, finding multiple causes of suppressed consumption, and finding that 73% of respondents stated that they would like to eat more fish than they do now). *Accord* Donatuto & Harper, *supra* note 14, at 150 (using the term "heritage" rates and describing the relevance of past consumption practices for future consumption practices for the fishing tribes).

[152] Barbara Harper, et al., *Subsistence Exposure Scenarios for Tribal Applications*, 18 HUMAN & ECOLOGICAL RISK ASSESSMENT 810, 811 (2012) [hereinafter, Harper, et al., *Subsistence Exposure Scenarios*].

[153] *Id.* at 810.

In fact, the forward-looking nature of the regulatory decisions to which a FCR is relevant (e.g., determinations of future uses of contaminated sites, restoration of waters to unimpaired, "fishable" status), makes the matter of tribes' future aspirations vital. As Jamie Donatuto and Barbara Harper have pointed out, fish consumption surveys are conducted in order to answer a question posed. The national survey that is the basis for the 6.5 g/day figure currently used in Washington's water quality standards, for example, was conducted in order to gain a picture of then-current consumer dietary preferences for marketing purposes. Conducted in 1973-74, it produced a snapshot of fish intake across the general U.S. population as part of its answer to this question. But ought this number be taken as a level of consumption to which we in the Pacific Northwest aspire in the future? Given the manner in which ambient water quality standards get set by environmental agencies, the implicit answer these agencies give is "yes." The next Part provides background on this standard-setting process under the Clean Water Act. This background will enable the critique of this implicit answer, as well as other bases for criticism of how this process affects tribes' rights and interests, in Parts VI and VII.

V. THE CLEAN WATER ACT'S ASPIRATION FOR FISHABLE WATERS

At the time the federal Clean Water Act was passed, there was a recognition that we had allowed our lifeblood to become contaminated, and an aspiration to return our nation's waters to a more healthful state. So the CWA included instructions to "restore" the "integrity" of our waters and to judge our efforts by whether our waters could sustain ordinary, necessary, even cherished human activities: Are they swimmable? Are they fishable? These instructions reflected a hopeful, future orientation.

This Part first describes the potential for achieving healthy aquatic ecosystems under the CWA and considers how the Act's ambient water quality standards provisions aim to ensure that our waters are fishable. It then discusses the particular role of human health criteria in developing water quality standards under the Act, and outlines EPA's current guidance in this respect.

A. The Potential for Healthy Aquatic Ecosystems under the CWA

The Clean Water Act is an imperfect environmental law and it has failed – now, forty years on – to deliver on even its promises. As a consequence, the salmon and other fish are depleted and contaminated, and their waters an unfit home. Yet, the CWA permits, and often requires, better results. This is so on its face and on current interpretations by EPA and the courts. Several features of the Act are holistic in approach and ambitious in scope. And several features together ought to facilitate respect for tribal rights and interests, given the explicit embrace of tribal self-government in managing tribal resources and given the EPA's trust-imbued responsibility for overseeing the whole.

First, the CWA sets forth as its goal nothing less than "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[154] The CWA stands apart for its holistic vision. Indeed, Robert Adler argues that "in the opening sentence of the federal Clean Water Act, Congress articulated one of the broadest whole ecosystem restoration and protection aspirations in all of environmental law."[155] Although to date there has been less attention devoted to the "physical" and "biological" components of this whole, this need not be the case.[156]

Second, the CWA establishes a federal structure that embraces a measure of tribal innovation and permits attention to aquatic ecosystems' interjurisdictional realities. For water quality-based standards, the CWA sets a sort of federal floor, but permits states and tribes to depart from this

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[154] Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1251(a) (2012).
[155] Robert W. Adler, *The Two Lost Books in the Water Quality Trilogy: The Elusive Objectives of Physical and Biological Integrity*, 33 ENVTL L. 29, 29 (2003). Note that the Spokane Tribe enlarges upon this holistic vision, adding "cultural integrity" to its conceptualization of the objectives of its surface water quality standards. Spokane Tribe of Indians, Surface Water Quality Standards, RESOLUTION 2010-173, § 1(3) (Feb. 25, 2010) ("The purposes of these water quality standards are**:** to restore, maintain and protect the chemical, physical, biological, and cultural integrity of the surface waters of the Spokane Indian Reservation …").
[156] Adler, *supra* note 155. Professor Adler argues that the CWA's holistic vision and understanding remains as its "guiding star" and observes that courts have suggested that it isn't mere rhetoric. *Id.* at n.5 and accompanying text (citing cases).

floor, so long as their standards are at least as protective. Water quality standards are comprised of goals, articulated in the form of "uses" envisioned for each water body, and "water quality criteria," i.e., requirements designed to ensure that the uses are attained.[157] The CWA sets forth a national goal of "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water."[158] The EPA has interpreted this goal to require a baseline "use" of "fishable/swimmable" waters.[159] Authorized states and tribes, however, may identify other more protective designated uses for the various water segments within their respective jurisdictions.[160] Tribes, in particular, have been innovative in going beyond the default use designation in order to articulate their respective understandings of their relationship with the waters and the consequent imperative to protect these waters from assault.[161] Thus, for example, the Isleta Pueblo includes among its designated uses "primary contact ceremonial" use, which, it explains, involves "immersion, and intentional or incidental ingestion of water and it requires protection of sensitive and valuable aquatic life and riparian habitat."[162] The Spokane Tribe similarly includes a "primary contact ceremonial and spiritual" use and adds a separate "cultural" use.[163]

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[157] 33 U.S.C. § 1313(c)(2)(A). The EPA's water quality standards regulation describes water quality standards as being comprised of four parts: designated uses, water quality criteria, an antidegradation policy, and implementation policies. 40 C.F.R. § 131.10 - 131.13 (2012).

[158] 33 U.S.C. § 1251(a)(2).

[159] 40 C.F.R. § 131.2, § 131.4 (unless a state or tribe demonstrates that this use is not attainable, by means of a "use attainability analysis" pursuant to 40 C.F.R. § 131.10(j)).

[160] 40 C.F.R. § 131.2.

[161] Note that tolerance for tribal "innovation" is limited, among other things to innovations within the framework of the CWA and approvable by the EPA. For a critical discussion of the limitations imposed by the TAS model, *see, e.g.,* Darren J. Ranco, *Models of Tribal Environmental Regulation: In Pursuit of a Culturally Relevant Form of Tribal Sovereignty*, 56 FED. LAW. 46 (Mar./Apr. 2009).

[162] Pueblo of Isleta, Surface Water Quality Standards §IV.D, ADOPTED TRIBAL RESOLUTION 92-14 (Jan. 24, 1992), AMENDED TRIBAL RESOLUTION 02-064 (Mar. 18, 2002).

[163] Spokane Tribe of Indians, Surface Water Quality Standards, RESOLUTION 2010-173 § 9(b)(i) and (ii) (Feb. 25, 2010). Cultural use is defined broadly to mean "the use of waters to support and maintain the way of life of the Spokane Tribal People, including, but not limited to: use for instream flow, habitat for fisheries and wildlife, and preservation of habitat for berries, roots, medicines and other vegetation significant to the values of the

Crucially, the CWA recognizes that aquatic ecosystems are fluid: contaminants move, waters move, sediments move, aquatic creatures move. The Act and EPA's implementing regulations thus include several provisions designed to address this ecological reality. Each state and tribe is directed to "consider" downstream uses and "ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters when designating their own uses."[164] EPA may veto issuance of a discharge permit by a state or tribe given its impact on the waters of another state or tribe,[165] and a federal permit may be denied if EPA determines that it would result in the violation of state or tribal water quality standards.[166]

Third, the CWA appreciates that the most sensitive receptors in a water body will sometimes be aquatic life and sometimes be human life, and that different "uses" will require differing degrees of protection if they are to be assured. So, EPA requires that water quality standards be set to "support the most sensitive use" where a water body is designated for more than one use.[167]

Fourth, the CWA envisions frequent updates to state and tribal water quality standards, directing them at least every three years to review and, as appropriate, revise their water quality standards.[168] Congress' distaste for delay was made known during debate surrounding the 1987

Spokane Tribal People." *Id.* at § 2. The Spokane Tribe, like other fishing tribes, also lists "fish and shellfish" among its uses, making explicit that this includes "migration, rearing, spawning, and harvesting" for salmonid and other fish and shellfish species. *Id.* at § 9(b)(v).

[164] 40 C.F.R. § 131.10(b).

[165] 33 U.S.C. § 1342(b) and (d) (2012).

[166] 33 U.S.C. § 1341(a); *see* Arkansas v. Oklahoma, 503 U.S. 91 (1992) (upholding EPA's interpretation that CWA § 401(a)(2) prohibits the issuance of a permit unless compliance with the relevant state water quality standards can be assured, but stating that whether state standards would be complied with is a matter for EPA interpretation, not the state's interpretation of its own standards).

[167] 40 C.F.R. § 131.11(a).

[168] 33 U.S.C. § 1313(c)(1). The Act describes the touchstone for state and tribal efforts to this end in sweeping terms: "[s]uch standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter." 33 U.S.C. § 1313(c)(2).

amendments;[169] the CWA therefore now includes a host of mechanisms such as benchmarks and hammers to ensure timely progress. Thus, states and tribes are to submit any revised or new water quality standard to the EPA, which is given a short timeline for action: EPA must approve it within 60 days or disapprove it within 90 days.[170] If the latter, EPA must indicate to the state or tribe the changes to be made in order to meet the requirements of the CWA. If the state does not make these changes within 90 days, the EPA must promulgate water quality standards for that state's or tribe's waters.[171]

Fifth, the CWA charges the EPA – a federal trustee – with the overarching responsibility to ensure that the purposes of the CWA are met. Among other things, it stipulates that the EPA itself "shall promptly" promulgate water quality standards "in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of [the CWA]."[172]

In practice, however, the CWA's potential is often not realized. As elsewhere in environmental law, the whole gets fractured into parts, with ecosystems and watersheds addressed in pieces, delineated by program, source, and chemical. Thus the following discussion – like current debates in Washington and elsewhere in the Pacific Northwest – focuses on efforts to protect the waters and all those that depend on a well-functioning aquatic ecosystem by means of water quality standards and, more specifically, human health criteria. The next section provides background for considering how the human health criteria function to permit degradation to the point that fish are unfit for human consumption and so to permit impairment of tribes' rights to take fish.

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[169] *See, e.g.,* EPA, National Toxics Rule, *supra* note 18, 57 Fed. Reg. at 60,849 ("The critical importance of controlling toxic pollutants has been recognized by Congress and is reflected, in part, by the addition of section 303(c)(2)(B) to the Act. Congressional impatience with the pace of State toxics control programs is well documented in the legislative history of the 1987 amendments.").
[170] 33 U.S.C. § 1313(c)(2) and (3).
[171] 33 U.S.C. § 1313(c)(3) and (4).
[172] 33 U.S.C. § 1313(c)(4).

B. Water Quality Standards and Human Health Criteria

As noted above, the CWA assigns to states and tribes the primary responsibility for establishing water quality standards. The Act nonetheless envisions a prominent role for EPA in its scheme of ambient water quality-based regulation. Thus, while states and tribes are meant to determine their respective beneficial uses and adopt criteria to support those uses, the EPA is involved in and influences this process in several ways. Among other things, EPA is tasked with providing the latest scientific information about the nature and extent of toxic contaminants and their impact on human and aquatic ecosystem health.[173] EPA is also charged with overseeing states' and tribes' promulgation of WQS, with the responsibility to approve or disapprove WQS and, potentially, to step in and promulgate WQS for a state or tribe that fails to rectify deficiencies identified by the EPA, as outlined above. And EPA always has the authority and the obligation, under the "hammer" provision of CWA § 303(c)(4), to promulgate water quality standards "in any case" that this turns out to be "necessary to meet the requirements of [the CWA]."[174]

EPA has issued guidance that is to inform efforts, whether by states and tribes or by the EPA itself, to set or approve human health criteria for use in WQS.[175] EPA's most recent version of this guidance, its *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*, was published in 2000.[176] This guidance presumes a risk-based approach; thus contaminant levels to be permitted by environmental standards are set according to the "risk" or "hazard" posed to exposed humans. Water quality criteria are derived chemical by chemical: a substance's toxicity is multiplied by an individual's exposure

[173] 33 U.S.C. § 1314. Such scientific information issued by EPA is, confusingly, also called "criteria."
[174] 33 U.S.C. § 1313(c)(4).
[175] The EPA notes that this guidance document is intended solely to describe EPA methods and to provide guidance to states and tribes; it is not legally binding. EPA, AWQC METHODOLOGY, *supra* note 141, at ii (stating that "[t]his guidance does not substitute for the Clean Water Act or EPA's regulations; nor is it a regulation itself. Thus, it does not impose legally-binding requirements on EPA, States, Tribes or the regulated community, and may not apply to a particular situation based upon the circumstances.").
[176] EPA, AWQC METHODOLOGY, *supra* note 141.

to that substance via the aquatic environment. Recall that fish intake is the primary means by which humans are exposed to a host of toxicants. An assessment of an individual's exposure, therefore, turns importantly on an estimate of the rate of fish consumption. As the sample risk assessment equation[177] below illustrates, other parameters, such as how long a particular rate of intake is sustained (i.e., exposure duration), also factor into an assessment of exposure.

$$\text{Risk} = \text{Toxicity} \times \frac{(\text{Contaminant Concentration})(\text{Bioconcentration Factor})(\text{FCR})(\text{Exposure Duration})}{(\text{Bodyweight})}$$

In its updated 2000 guidance, EPA replaced its former recommended default FCR – which had been 6.5 g/day – with a new four-part hierarchy of preferences.[178] EPA now recommends that states and tribes base their criteria, first, on local data regarding fish consumption practices; second, on data reflecting similar geography or population groups; third, on states' or tribes' own analysis of national data; and, last, on the EPA's national default values.[179] The EPA's guidance includes updated national default FCRs: 17.5 g/day for the general population, and 142.4 g/day for "subsistence" fishers. These national defaults reflect, respectively, the 90th and 99th percentile values for freshwater and estuarine species only (i.e., not marine species), for fish consumers and non-consumers alike from a national survey of fish consumption conducted by the U.S. Department of Agriculture in 1994-96.[180] The EPA

[177] This is a simplified version of the equation used to calculate risk-based water quality standards and surface water cleanup standards for carcinogens. To determine the level of each contaminant that may permissibly be discharged to or remain in the environment, agencies assume a certain level of "risk" (e.g., 1 in 1,000,000) and solve for "contaminant concentration." Agencies enlist contaminant-specific values for "toxicity" (describing how potent a carcinogen each is) and for "bioconcentration factor" (describing the degree to which each contaminant bioconcentrates in fish tissue). This simplified equation omits the conversion factors, which ensure a result in the appropriate units. This simplified equation also omits any "diet fraction," or "site use factor," two controversial concepts sometimes applied by agencies that are discussed further in Part VI. It should be noted here, however, that both of these concepts are fractional values applied to the numerator of this equation, with the consequence that estimates of exposure, and therefore risk, are decreased.

[178] EPA, AWQC METHODOLOGY, *supra* note 141, at 4-24 to 4-28.

[179] *Id.*

[180] *Id.* at 4-24 (referencing the Department of Agriculture's 1994-1996 Continuing Survey of Food Intake by Individuals (CSFII)). Note that these are "per capita" values; i.e., they

"strongly emphasizes," moreover, that states and tribes "should consider developing criteria to protect highly exposed population groups and use local or regional data over the default values as more representative of their target population group[s]."[181]

The EPA guidance also addresses the matter of "acceptable" levels of risk. EPA states that it views an excess cancer risk level of 1 in 1,000,000 to be an appropriate basis for regulating water quality (that is, standards are to be set to ensure that the risk from toxic contaminants does not exceed this level for the general population).[182] EPA further notes that it will use this risk level itself in promulgating any state or tribal standards.[183] EPA suggests, however, that it will approve states' or tribes' water quality standards that are either more protective or less protective of human health, and allow risks as high as (but not to exceed) 1 in 10,000 for "highly-exposed populations."[184] EPA adds a number of caveats to this suggestion, notably the point that it is not "advocating" that states and tribes permit risks this great to affected highly-exposed populations.[185]

Water quality standards are a linchpin for numerous regulatory efforts. Within the CWA, they provide the basis for setting limits on discharges to waters from individual sources under the National Pollutant Discharge Elimination System (NPDES);[186] and they serve as a touchstone for identifying "impaired waters," which identification in turn supports the development of "total maximum daily loads" (TMDLs).[187] Their reach extends beyond the CWA as well: among other things, federally licensed projects must be "certified" as having met their

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are taken from a dataset that reflects fish consumers and non-consumers alike. These figures reflect only freshwater and estuarine species; they exclude marine species, and define salmon as a marine species. If marine species were to be included, the (per capita) 90th percentile value would be 74.8 g/day and the 99th percentile value would be 215.7 g/day.

[181] *Id.* at 4-24 to 4-25.

[182] *Id.* at 2-6.

[183] *Id.*

[184] *Id.* at 2-6 to 2-7.

[185] *Id.* at 2-6.

[186] 33 U.S.C. § 1342 (2012).

[187] 33 U.S.C. § 1313(d).

requirements;[188] and they constitute "Applicable or Relevant and Appropriate Requirements (ARARs)" for federal "Superfund" cleanups.[189]

The next Part considers how Washington (and, to a lesser extent, other states in the Pacific Northwest) has performed its role in the Clean Water Act's statutory scheme. Specifically, it reflects upon efforts to ensure that water quality standards, and the FCR upon which they are premised, are appropriate to circumstances in the Pacific Northwest.

VI. WATER QUALITY STANDARDS: EXPERIENCE IN THE PACIFIC NORTHWEST

Efforts by Washington and other states in the Pacific Northwest have worked to undermine tribes' treaty-secured rights and have fallen woefully short of the CWA's aspirations. Although regulated industries tend to be the engines of underperformance here,[190] the states and EPA have often been complicit – contrary to their responsibilities. Several strategies and arguments have emerged as features of states' recent efforts to update their water quality standards and the FCR upon which these are based. Revisions that would include an updated and more protective FCR have been delayed; the scientific studies that support an increased FCR have been denigrated; the impact of an increased FCR has sought to be diluted by introducing various regulatory devices such as "diet fractions," and "site use factors;" the scientific facts about species' behaviors and sources of contamination have sometimes been distorted; and the identifiability of those affected – the fact that we know precisely who it is that would be impacted by tolerating a greater amount of risk – has been denied. These strategies and arguments are in many respects

[188] 33 U.S.C. § 1341(a)(1) ("Any applicant for a Federal license or permit to conduct any activity … which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate … that any such discharge will comply with the applicable provisions of [*inter alia*] section 1313 … of this title.").

[189] Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9621(d) (2012).

[190] *See, e.g.,* Robert McClure, *Business Interests Trump Health Concerns in Fish Consumption Fight*, INVESTIGATE WEST (Mar. 30, 2013), *available at* http://www.invw.org/article/business-interests-trump-1344 (last visited Apr. 20, 2013) (documenting industry's "intense lobbying campaign" to delay and dilute Washington's standards through e-mails obtained under the Washington Public Records Law).

familiar; they have been enlisted toward anti-regulatory ends in other contexts.

In fact, what is remarkable is that things have not been more different here, given the tribal context that permeates environmental decision making in the Pacific Northwest. That is to say, the tribal context for state and federal agency decisions here has often not been visible. Tribes' unique political and legal status has frequently gone unnoticed or been misunderstood by the various participants in the debate. And tribal treaty-secured and other rights have been given short shrift.

Yet tribes, for their part, have been active and vocal throughout the various states' processes. Tribes, importantly, have conducted many of the relevant scientific studies – the primary research vital to states' water quality standards under EPA guidance directing that states prefer data of local fish consumption practices. In addition, tribal staff have offered their technical expertise through informal and formal agency channels.[191] And tribal leaders have worked with leaders in state and federal governments.[192]

This Part describes experience with the WQS process in the states of the Pacific Northwest, with a focus on Washington.[193] It highlights the features of the process that have contributed to its failure to produce more protective WQS, despite the passage of nearly two decades since the requisite data were published. It is not an exhaustive chronology, but

[191] *See, e.g.,* Washington State Department of Ecology, Toxics Cleanup Program, "MTCA Rule Revision and MTCA/SMS Integration: List of Participants," *available at* http://www.ecy.wa.gov/programs/tcp/regs/2009MTCA/Contacts.html (last visited Apr. 20, 2013) (listing tribal staff among relevant advisory group and workgroup participants). *See also* various tribes' public comments on Ecology's Fish Consumption Rate Technical Support Document and on Ecology's various sediments and water quality standards rulemaking efforts, which can be accessed via the docket cited *infra* note 193.
[192] *See, e.g.,* WASHINGTON GOVERNOR'S OFFICE OF INDIAN AFFAIRS, *supra* note 88.
[193] All public comments entered into the docket for the various facets of the process in Washington, including Ecology's two versions of its Fish Consumption Rates Technical Support Document and its proposed and final Sediment Management Standards rule, are *available at* http://www.ecy.wa.gov/toxics/fish.html (last visited Apr. 20, 2013).

rather a selective account of the arguments and developments that have shaped a disappointing effort with, to date, inadequate results.

A. Delay

Nearly two decades have passed since the CRTIFC study was published, while state water quality standards in the Pacific Northwest have remained largely unchanged. Oregon is the recent exception, having increased its FCR to 175 g/day in 2011.[194] Washington, Idaho, and Alaska all continue to be governed by water quality standards premised on an estimate of fish intake at 6.5 g/day.

Once Oregon embarked on the task, it took twelve years and two attempts to get to its current standard, which embraces a 175 g/day FCR. Oregon set out in 1999 to revise its WQS, which at that point were based on the former national default of 6.5 g/day.[195] In its first attempt, the Oregon Department of Environmental Quality (ODEQ) constituted a Technical Advisory Committee, which endorsed the use of values from the CRITFC survey and formally recommended that ODEQ adopt standards that included three FCRs, to be applied based on the intensity of fishing activity in the relevant waters: 17.5 g/day, 142.4 g/day, and 389 g/day. The highest of these numbers corresponds to the 99th percentile value from the CRITFC survey. ODEQ, however, rejected this recommendation, opting instead to promulgate a standard with a statewide FCR of 17.5 g/day. Oregon finalized its revised WQS based on this number in May of 2004. The EPA, however, declined to approve or disapprove Oregon's WQS within the statutorily mandated deadlines. Both Oregon's decision and EPA's inaction were sharply criticized by the affected tribes.[196]

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[194] Oregon Department of Environmental Quality, Water Quality Standards for Toxic Pollutants, *available at* http://www.deq.state.or.us/wq/standards/toxics.htm (last visited Apr. 20, 2013).

[195] Martin S. Fitzpatrick, *Changes in Oregon's Water Quality Standards for Toxics*, 20 J. ENVTL. L. & LITIG. 71, 75, 79 (2005).

[196] *See* Memorandum from Stephanie Hallock, DEQ, Ron Kreizenbeck, EPA, and Antone C. Minthorn, Confederated Tribes of the Umatilla Indian Reservation, to Oregon Environmental Quality Council (Oct. 2, 2006), *available at* http://www.deq.state.or.us/about/eqc/agendas/attachments/2006oct/B-

Environmental groups, too, registered their concern, and sued EPA for its failure to act as required by the CWA.[197] EPA ultimately disapproved these WQS on June 1, 2010.[198]

In the meantime, Oregon was persuaded to go back to the drawing board, this time with a tri-governmental process led by the Umatilla tribe, the EPA, and Oregon. This process involved over a year of public meetings and enlisted a cadre of independent experts, the Human Health Focus Group, convened to assess the scientific defensibility and applicability of the available fish consumption studies, including the CRITFC, Squaxin Island and Tulalip, and Suquamish surveys.[199] Finally, WQS based on a 175 g/day FCR were adopted in Oregon on June 16, 2010, and approved by EPA on October 17, 2011.[200]

Idaho is taking a similarly tortuous path to what one hopes will be more protective standards. Idaho didn't begin the process of revising its WQS until April of 2005.[201] Idaho Department of Environmental Quality (IDEQ) adopted revised WQS based on a 17.5 g/day default fish consumption rate in November of 2005; the Idaho legislature approved these standards in March of 2006.[202] The WQS were submitted to EPA on

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FishConsumptionRate.pdf (last visited Apr. 20, 2013) (describing criticism from tribes and setting forth a "path forward").

[197] *See* Letter from Michael A. Bussell, Director, Office of Water and Watersheds, EPA Region X, to Neil Mullane, Administrator, Water Quality Division, Oregon Department of Environmental Quality (June 1, 2010), *available at* http://www.epa.gov/region10/pdf/water/oregon-hhwqc-tsd-letter_june2010.pdf (last visited Apr. 20, 2013) (issuing disapproval and noting that this met the deadline for EPA action set forth by the district court in its consent decree resolving Northwest Environmental Advocates v. EPA, N. 06-479-HA (D. Or. 2006)).

[198] Oregon Department of Environmental Quality, Water Quality Standards for Toxic Pollutants, *available at* http://www.deq.state.or.us/wq/standards/toxics.htm (last visited Apr. 20, 2013).

[199] Oregon Department of Environmental Quality, Fish Consumption Rate Project (2006-2008), *available at* http://www.deq.state.or.us/wq/standards/humanhealthrule.htm#fish (last visited Apr. 20, 2013).

[200] Oregon Department of Environmental Quality, Water Quality Standards for Toxic Pollutants, *supra* note 198.

[201] *See* Letter from Mike Bussell, Director, Office of Water, EPA Region X, to Barry Burnell, Water Quality Division Administrator, Idaho Department of Environmental Quality (May 10, 2012), *available at* http://www.deq.idaho.gov/media/854335-epa-disapproval-letter-human-health-criteria-051012.pdf (last visited Apr. 20, 2013).

[202] *Id.* at 1-2.

July 7, 2006.[203] Here again, EPA had to be threatened with a suit under the CWA.[204] Finally, in May of 2012, EPA disapproved Idaho's WQS, noting the availability of relevant local and regional fish consumption surveys documenting greater consumption rates and stating that "EPA cannot ensure that the criteria derived based on a fish consumption rate of 17.5 g/day are based on a sound scientific rationale consistent with [EPA's water quality standards regulation] and protect Idaho's designated uses."[205] Once disapproved, IDEQ began anew, this time with EPA's assistance.[206] Among other things, it appears that Idaho's second round of process will include conducting a new fish consumption survey.[207]

Washington, throughout this time, opted to wait and "observe[]" and learn from the Oregon process.[208] Yet, the Washington State Department of Ecology (Ecology) had years ago recognized the need to update its FCRs based on more recent consumption data and had published an

[203] *Id.* at 2.
[204] *See* Environmental Protection Agency, Facilitation Support for Water Quality Standards Fish Consumption Joint Fact Finding Stakeholder Consultation Process 1 (Sept. 4, 2012) (noting that the Idaho Conservation League had filed a notice of intent to sue the EPA for failing to exercise its mandatory duty under the CWA to act on Idaho's 2006 water quality submittal).
[205] Letter from Mike Bussell, Director, Office of Water, EPA Region X, to Barry Burnell, Water Quality Division Administrator, Idaho Department of Environmental Quality, *supra* note 201, at 3.
[206] *See* Letter from Barry Burnell, Water Quality Division Administrator, Idaho Department of Environmental Quality, to Mike Bussell, Director, Office of Water, EPA Region X (Aug. 6, 2012), *available at* http://www.deq.idaho.gov/media/878428-deq-response-letter-human-health-criteria-080612.pdf (last visited Apr. 20, 2013); *see generally*, Idaho Department of Environmental Quality, Water Quality: Docket No. 58-0102-12101-Negotiated Rulemaking, *available at* http://www.deq.idaho.gov/58-0102-1201 (last visited Apr. 20, 2013).
[207] Letter from Barry Burnell, Water Quality Division Administrator, Idaho Department of Environmental Quality, to Mike Bussell, Director, Office of Water, EPA Region X, *supra* note 206; *see also,* Idaho Department of Environmental Quality, PowerPoint Slides "Fish Consumption Rates in Human Health Criteria," Slide 12 (Nov. 28, 2012), *available at* http://www.deq.idaho.gov/media/926157-fish-consumption-rates-human-health-criteria-meeting-presentation-112812.pdf (last visited Apr. 20, 2013) ("DEQ has decided to pursue a fish consumption survey to collect new, Idaho-specific data").
[208] *See, e.g.,* Oregon Fish Consumption Rate Project Workgroup One, Mar. 13, 2007, Facilitator's Meeting Summary at 10, 14 (noting presence of Washington State Department of Ecology representative Cheryl Neimi and quoting her remarks).

analysis of the available tribal studies as early as 1999.[209] Various commitments had been made by Ecology leadership that revisions to Washington's FCR and WQS were necessary and would be expeditiously undertaken.[210] But Washington only formally embarked on revisions after its triennial review in 2010.[211] Since that time, its process has been fraught with reversals of course and more delay.

Washington's effort has proceeded along several fronts.[212] First, Ecology developed a *Fish Consumption Rates Technical Support Document* (FCR TSD) intended initially to assess the relevant fish consumption survey data and recommend a range within which a scientifically defensible FCR would fall.[213] Second, Ecology undertook rulemaking on Sediment Management Standards (SMS), addressing cleanup of toxic contaminants that affect this component of the aquatic environment. As originally envisioned, the SMS would be the first place in which a more protective FCR would be established in agency regulation. Third, Ecology announced that it would commence rulemaking on WQS, but that it would do so in two steps. It would first craft the "off ramps" to the more protective standards it anticipated, that is, it would develop "implementation tools" in the form of more lenient compliance schedules

[209] In 1999 Ecology published a draft document, which it never finalized, that analyzed the CRITFC and Tulalip/Squaxin Island data as part of its review of the then-current science for use in its risk-based water quality and cleanup standards. LESLIE KEILL & LON KISSINGER, WASHINGTON STATE DEPARTMENT OF ECOLOGY, ANALYSIS AND SELECTION OF FISH CONSUMPTION RATES FOR WASHINGTON STATE RISK ASSESSMENTS AND RISK-BASED STANDARDS (Draft, 1999).

[210] *See, e.g.,* Letter from Michael Grayum, Executive Director, Northwest Indian Fisheries Commission, to Dennis McLerran, Regional Administrator, EPA Region X (Aug. 24, 2012) (noting commitments by current and previous Ecology Directors to tribes that revisions to WQS including a more protective FCR would be completed by the end of the Gregoire administration).

[211] Washington State Department of Ecology, "Triennial Review Process for Surface Water Quality Standards," *available at* http://www.ecy.wa.gov/programs/wq/swqs/triennial_review.html (last visited Apr. 20, 2013).

[212] Letter from Michael Grayum, Executive Director, Northwest Indian Fisheries Commission, to Dennis McLerran, Regional Administrator, EPA Region X, *supra* note 210; *see also,* Washington State Department of Ecology, "Reducing Toxics in Fish, Sediments, and Water," *available at* http://www.ecy.wa.gov/toxics/fish.html (last visited Apr. 20, 2013).

[213] ECOLOGY, FCR TSD, *supra* note 149, at 103.

and the like. Ecology would then turn to the substantive standards, the human health criteria for toxic contaminants, which would set forth a FCR and other parameters in the equation for assessing risk to humans. The FCR TSD, initially published in September, 2011, "concluded that available scientific studies support the use of a default fish consumption rate in the range of 157 to 267 grams per day (g/day);"[214] this document was slated for publication in early 2012, after a round of public meetings and comments. The SMS rulemaking was expected to result in a final rule incorporating a more protective default FCR by the end of then-Governor Gregoire's term, in early 2013.

In July of 2012, however, Ecology abruptly announced a change of course, back-pedaling on both the timing and the substance of its efforts.[215] First, Ecology announced that it would expunge any statements about a recommended FCR from its TSD.[216] Second, Ecology stated that it would exclude a statewide default FCR from its SMS rule.[217] Third, Ecology set forth a revised schedule, under which both the TSD and SMS rule would be delayed.[218] While Ecology attempted to cast this schedule as "accelerating" its work on the substantive WQS, these standards – now the first place that an updated FCR is to be promulgated in agency rulemaking – still occupy fourth (i.e., last) position in the queue, and are not expected to be completed until spring of 2014.[219]

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[214] *Id.* at 7.
[215] Letter from Ted Sturdevant, Director, Department of Ecology, to Interested Persons (July 16, 2012) [hereinafter "Sturdevant, Change of Course Announcement"].
[216] *Id.*
[217] *Id.* Rather, the fish consumption rate to be used is to be determined anew at each site.
[218] *Id.*
[219] *Id.* Letter from Ted Sturdevant, Director, Washington State Department of Ecology, to Dennis McLerran, Regional Administrator, U.S. Environmental Protection Agency Region X (Sept. 25, 2012) (speaking of "Ecology's work to revise our water quality standards," stating "[a]s you know, we have accelerated our timeline for this important work"). Ecology's change of course can be viewed as having accelerated the *start* date for agency work on the substantive water quality standards, which are now to be developed alongside the implementation tools, rather than being developed entirely after the implementation tools. But Ecology still anticipates that the *completion* date for the substantive WQS will come after all of the other three components of its effort have been completed. *See* Sturdevant, Change of Course Announcement, *supra* note 215 (providing new timeline for Ecology's various processes).

It is perhaps predictable that industry throughout this period sought not only to secure more lenient standards but also to postpone their applicability. Industry has enlisted several strategies to these ends;[220] those canvassed in this section focus on those strategies designed to delay. First, Ecology's curious cart-before-the-horse approach for its WQS is a creature of industry advocacy. Having approached the regulatory task in the opposite order in Oregon – that is, create the substantive standards first, then consider mechanisms such as compliance schedules to smooth implementation of the substantive standards – many of the same industries sought to better their lot in the Washington process.[221] Second, industry has called in several instances for "more study," including data that were redundant or irrelevant. Thus, industry has continued to seek additional fish consumption data, calling for new surveys of the state's general population[222] or for re-analysis of existing national data or other states' data.[223] Surveys are incredibly time-consuming, not to mention expensive, to conduct. Third, industry has

[220] *See, e.g.,* Association of Washington Business, Letter to Ted Sturdevant, Director, Washington State Department of Ecology 2, 4 (Apr. 19, 2012) [hereinafter AWB, April 2012 Letter] (questioning that Washington has an obligation under the CWA to update its current 6.5 g/day standards at all and "request[ing] that a default FCR not be incorporated in the SMS rule"); *accord* Northwest Pulp & Paper Association, Proposed Meeting Agenda for Ecology 2 (Feb. 12, 2012) (on file with author) (arguing against including a default FCR in the SMS rule, and urging site-by-site determinations instead).

[221] *See, e.g.,* Northwest Pulp & Paper Association, Letter to Becka Conklin, Washington State Department of Ecology (Dec. 17, 2010) (responding to Ecology's initiation of triennial review process under the CWA, and urging Washington to expand its "implementation tools" as a pre-condition to updating its FCR and its WQS); *accord* Letter from Michael Grayum, Executive Director, Northwest Indian Fisheries Commission, to Dennis McLerran, Regional Administrator, EPA Region X, *supra* note 210 (describing Ecology's sequencing of the various components of the SMS and WQS rulemakings).

[222] *See, e.g.,* Northwest Pulp & Paper Association, Proposed Meeting Agenda for Ecology, *supra* note 220, at 2 (arguing that "studies should be made available for the general FCR rates for the State of Washington," and reiterating that a "[g]eneral population survey is needed"); The Boeing Company, Comments on FCR TSD 2.0 2, 3-4 (Oct. 26, 2012) [hereinafter Boeing, FCR TSD 2.0 Comments] ("Critically, a fish consumption survey of Washington's general population has not been conducted. Ecology should conduct a state-wide fish consumption survey before finalizing the Technical Support Document and before undertaking the process of revising water quality standards, which will significantly impact the regulated community and the state economy.").

[223] Boeing, FCR TSD 2.0 Comments, *supra* note 222, at 16-17 (taking Ecology to task for frequently mentioning Oregon's analysis; suggesting that Ecology consider other states' FCRs; and commending Florida's probabilistic approach).

asked for information that is irrelevant to the particular regulatory tasks before Ecology, sometimes statutorily so. Under the CWA, for example, WQS are based solely on an assessment of the risks posed by toxic contaminants to be regulated and don't permit the statutory concern for human health to be "balanced" against costs or countervailing risks. Yet industry has argued that data on risk-risk tradeoffs or a cost-benefit analysis ought to be included in the FCR TSD.[224] Finally, and without a hint of irony, one industry commenter has buttressed its call for further study with the argument that the CRITFC and other tribal data *are now outdated*.[225]

Ecology has capitulated to many of these industry requests.[226] For example, Ecology circulated a "Version 2.0" of its TSD for another round of public comments,[227] in which it expanded its reanalysis of national fish

[224] *See, e.g.,* Northwest Pulp & Paper Association, Proposed Meeting Agenda for Ecology, *supra* note 220, at 2, 3 (stating that Ecology should expand its FCR TSD to include a discussion of "the relative benefits of consuming fish and shellfish" and arguing that "[i]f Ecology were to adopt the FCR rates proposed in the TSD, the state would be trying to regulate the contaminant concentrations in fish to much lower levels that are allowable in other foodstuffs, such as beef, chicken, pork and dairy products."); National Council for Air and Stream Improvement, Comments on FCR TSD (Jan. 11, 2012) (stating that "[a]ny decision to change the current default FCRs should be justified in terms of overall benefit to public health" and arguing that "[t]his assessment is imperative as there is currently no viable comparator for the costs that would be borne by both Ecology and the regulated community in responding to lowered sediment and water quality criteria as a result of increased FCRs. Without knowledge of what the benefit might be, it is impossible to determine if these costs would be justified.").

[225] J.R. Simplot Co., Comments on Ecology's FCR TSD 2.0 at 8, 12 (Oct. 26, 2012) (stating that "[t]he age of the CRITFC survey (1994) calls into question the applicability of these data with regards to current conditions.").

[226] Ecology's actions in this respect may themselves be a somewhat predictable response to incentives created by current models of agency accountability. According to Professor Wendy Wagner, the current administrative law system permits stakeholders with the requisite technical and legal resources to "inadvertently or deliberately exert substantial control over the agency's agenda in the number, diversity, detail, and even the framing of the multiple comments they lodge, as well as with the information they share earlier in the process," with the result that "[a]n enormous record of highly technical and sometimes extraneous comments … will tend to be reflected in the agency's own rule in order to avoid accusations of insufficient attention to detail." Wendy E. Wagner, *Administrative Law, Filter Failure, and Information Capture*, 59 DUKE L.J. 1321 (2010).

[227] *See* AWB, April 2012 Letter, *supra* note 220, at 2 (asking Ecology to circulate its revised TSD for an additional, second "60-day public comment period"); and Washington State Department of Ecology, "Fish Consumption Rates Technical Support Document," *available at* http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/FCR-doc.html (last

consumption data and added an appendix undertaking the requested risk-risk discussion. And while Washington has (so far) declined to wait while a study of the general statewide population is conducted – citing the commonsense point that the general population data would likely produce little new information of value, inasmuch as Ecology would still need to set standards protective of those most exposed[228] – Idaho has gone precisely this route.

EPA, for its part, has declined to hold states' feet to the fire in fulfilling their § 303(c)(1) and (2) obligations. In Oregon, EPA had to be sued before it discharged its statutory duty and disapproved Oregon's first round of standards. Rather than the 90-day period stipulated by the statute, EPA's disapproval took a little over six years. Notably, by declining to disapprove Oregon's lackluster standards, EPA avoided starting the second 90-day clock under § 303(c)(3) for it to step in and issue its own standards to be applied to Oregon waters.[229] In Idaho, EPA waited for just under six years before delivering its disapproval. Rather than issue its own standards for Idaho once ninety days had passed as required by the statute, however, EPA gave its blessing to a process in which it would "assist" Idaho in giving things another try. In Washington, EPA issued a fairly tepid response to Ecology's July 2012 announcement of its reversal of course.[230] While EPA called attention to its recent disapproval of Idaho's inadequate standards as "strong precedent for the current process in Washington," it offered its support for Ecology's

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visited Apr. 20, 2013) (chronicling the sequence of drafts and public comment periods on the first and second versions of Ecology's FCR TSD).

[228] Ted Sturdevant, Director, Washington Department of Ecology, Testimony Before the Washington House Environment Committee, Work Session: Update on fish consumption rates and water quality standards (Nov. 30, 2012) *available at* http://tvw.org/index.php?option=com_tvwplayer&eventID=2012111039 (last visited Apr. 20, 2013) [hereinafter Sturdevant, House Testimony].

[229] 33 U.S.C. 1313(c)(3) (2012) ("If the Administrator determines that any such revised or new [water quality] standard is not consistent with the applicable requirements of this chapter, he shall not later than the ninetieth day after the date of submission of such standard notify the State and specify the changes necessary to meet such requirements. If such changes are not adopted by the State within ninety days after notification, the Administrator shall promulgate such standard pursuant to paragraph (4) of this subsection").

[230] Letter from Dennis J. McLerran, Regional Administrator, EPA Region X, to Ted Sturdevant, Director, Washington Department of Ecology (Sept. 6, 2012).

"commitment to commencing" revisions to its WQS.[231] EPA also noted that "[i]f and when there is regional or local data showing higher fish consumption rates, it needs to be utilized for derivation of the State's human health criteria" – but made no mention of the years that had already elapsed while such data had indeed been available, nor suggested any repercussions for Ecology's failure to respond to this data.[232] Nor has EPA much mentioned (let alone exercised) the hammer of its own § 303(c)(4) authority.

Across the Pacific Northwest, EPA has signaled to the states that it is willing to stand to the side and wait. Rather than take an assertive posture in the face of state recalcitrance, EPA has favored a more passive role. Speaking to tribal leaders in September, 2012, EPA Regional Administrator Dennis McLerran noted the years it had taken for Oregon to complete its standard, cited the heavy "political lift" ahead in Washington, Idaho and Alaska, and then stated: "it's a bit of a dance."[233]

B. Disparage

Throughout the process of updating the FCR in Washington, there have been broadsides on the science that supports increased rates. In the Pacific Northwest, the bulk of this scientific data has been produced by tribes and tribal consortia. As noted above, the CWA anticipates that scientific advances will trigger updates to states' and tribes' WQS and EPA's WQS regulation makes clear that the latest scientific knowledge is the touchstone for EPA review of state and tribal standards' compliance with the Act. Although the relevant surveys of tribal fish consumption were carefully conducted to ensure their scientific defensibility,[234] and have consistently been found to meet EPA's (and sister states') standards

[231] *Id.*
[232] *Id.*
[233] Columbia Basin Fish & Wildlife News Bulletin, "Fish Consumption Rate, Water Quality Standards: Should Idaho, Washington Follow Oregon's Lead?" (Sept. 27, 2012), *available at* http://www.cbbulletin.com/423011.aspx (last visited Apr. 20, 2013).
[234] *See, e.g.,* Letter from Babtist Paul Lumley, Executive Director, CRITFC, to Ted Sturdevant, Director, Washington State Department of Ecology (Mar. 19, 2012) (documenting at length the measures and protocols undertaken to ensure that the CRITFC fish consumption survey met the highest standards in the field).

in this regard, their validity has nonetheless continued to be challenged by industry and individuals.

Ecology's initial FCR TSD considered three studies of tribal fish consumption and one study of Asian and Pacific Islanders in King County, finding each of these four studies to be scientifically defensible. In its FCR TSD, Ecology developed a set of criteria to determine the technical defensibility of fish consumption survey data, to be used in assessing the data's relevance and appropriateness to the regulatory context in Washington, i.e., for use in standards for water quality, surface water cleanup, and sediment cleanup.[235] Ecology's "measures of technical defensibility" considered survey design and testing; survey execution, including QA/QC; publication and review of results; applicability to the regulatory context; and overall technical suitability.[236] As documented at length in the FCR TSD, each of the tribal studies considered – that is, the CRITFC survey, the Tulalip and Squaxin Island survey, and the Suquamish survey – was found to have "satisfied" Ecology's measures of technical defensibility.[237]

Moreover, the scientific defensibility of each of the tribal studies had previously been considered and affirmed in various assessments by EPA and by sister states.[238] After an evaluation of the surveys according to five criteria, including the study's "soundness," "applicability and utility," "clarity

[235] ECOLOGY, FCR TSD, *supra* note 149, at 31-71.
[236] *Id.* at 39-45 (noting that Ecology's "measures of technical defensibility" were developed based on EPA guidance and in consultation with experts from the University of Washington School of Public Health).
[237] *Id.* at 47-71.
[238] By contrast, recall the surmise and guesswork by non-tribal government scientists that was revealed to support the 6.5 g/day FCR relied upon by EPA and the states. *See* O'Neill, Variable Justice, *supra* note 10, at n.150. Note that Idaho recently conducted its own assessment of the quality and scientific defensibility of 19 fish consumption surveys from around the Pacific Northwest; of these, only six, including the three tribal studies relied upon by Ecology in its FCR TSD and the more recent Lummi Nation study, received "a score of 10 or better." Idaho Department of Environmental Quality, Quality of Survey Criteria Rating Matrix (Nov. 26, 2012), *available at* http://www.deq.idaho.gov/media/924655-58-0102-1201-quality-of-survey-criteria-rating-matrix.pdf (last visited Apr. 20, 2013). Interestingly, the Pierce, et al., study, which provides the current default FCR for Washington's MTCA, received a score of 3. *Id.*

and completeness," its handling of "uncertainty and variability," and whether the study's methods and information were "independently verified, validated, and peer reviewed," EPA selected each of the tribal studies for inclusion in its general guidance document for conducting exposure assessments, the *Exposure Factors Handbook*.[239] EPA Region X, moreover, recommends the Tulalip/Squaxin Island and Suquamish studies in its guidance for cleanups in Puget Sound, giving "highest preference" to these "well-designed consumption surveys."[240] Oregon's independent Human Health Focus Group conducted an extensive year-long review and found each of these studies to be scientifically defensible, deeming them both "reliable" and "relevant."[241] ODEQ went on to base its WQS, which EPA approved, on a FCR derived from these surveys.

Still, the scientific defensibility of the tribal studies has been questioned, repeatedly, by individuals and industry as part of the Washington process. Some commenters asked that the tribal survey data be "verified" or sought additional "peer-reviewed studies generated through traditional means."[242] Some commenters called for the raw data (as opposed to the studies summarizing the survey results) to be "turned over" for "independent review"[243] – a highly unusual request in general,

[239] U.S. ENVIRONMENTAL PROTECTION AGENCY, EXPOSURE FACTORS HANDBOOK: 2011 EDITION 1-4 to 1-7, 10-47 to 10-48; 10-51 to 10-53 (2011) [hereinafter EPA, EXPOSURE FACTORS HANDBOOK].

[240] U.S. ENVIRONMENTAL PROTECTION AGENCY REGION X, FRAMEWORK FOR SELECTING AND USING TRIBAL FISH AND SHELLFISH CONSUMPTION RATES FOR RISK-BASED DECISION MAKING AT CERCLA AND RCRA CLEANUP SITES FOR PUGET SOUND AND THE STRAIT OF GEORGIA 1, 6-7 (Aug., 2007) [hereinafter EPA REGION X, FRAMEWORK] (concluding that "[b]ecause of the quality of the survey methodology used in the available Puget Sound Tribal studies, EPA believes that these studies are appropriate to use to develop Puget-Sound harvested fish and shellfish consumption rates. Further, EPA believes that the rates developed from the aforementioned studies should be used in preference to an estimate of an average subsistence consumption rate, as recommended in the EPA AWQC methodology.").

[241] ODEQ, HHFG REPORT, *supra* note 149 at 39-40.

[242] *See, e.g.,* Bruce Howard, Comments on FCR TSD (Jan. 18, 2012) (respecting the tribal surveys, "it is incumbent on Ecology to seek additional verification of this information, as well as peer-reviewed studies generated through traditional means.").

[243] *See, e.g.,* Northwest Pulp & Paper Association, Proposed Meeting Agenda for Ecology, *supra* note 220, at 2 (questioning why the tribal and other studies on which Ecology relied in its TSD "have not been made available for review by the general public;"

given the ethical protocols that govern studies with human subjects,[244] and a request in this context that is at the very least insensitive, given tribal populations' understandable mistrust of handing over their raw "data" to outsiders.[245] Some commenters questioned the plausibility of the survey results or the veracity of tribal respondents. One individual, for example, questioned the "validity" of the rates documented by the Suquamish study:

> For bivalves (i.e., crabs, mussels, oysters), the maximum reported portion sizes range from 1,349 g (2.5 pounds) for mussels to an incredible 2,720 g (6 pounds) for geoduck. I have a hard time envisioning anyone eating 6 pounds of geoduck clams in one meal….[t]hese extreme portion sizes certainly raise the question of whether the responses given by the individual(s) reporting such portion sizes are believable.[246]

Although the Suquamish study explicitly considered the appropriate treatment of high-end responses (so-called "outliers"), and its analysis and conclusions underwent external technical review, this commenter claimed that, "[a]pparently, the study authors never questioned whether these respondents were truthful and whether their responses should be

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asking "[w]hy has that data not been peer reviewed?;" and stating that "[a]ll survey data (not just summary statistics) must be available for independent analysis").

[244] *See* Letter from William Daniell, Associate Professor, University of Washington Department of Environmental and Occupational Health Sciences, to Craig McCormack, Toxics Cleanup Program, Washington State Department of Ecology (Mar, 20, 2012) (confirming that standard practice does not involve releasing raw data and that study participants' privacy rights might be violated if so).

[245] *See, e.g.,* Letter from Babtist Paul Lumley, Executive Director, CRITFC, to Ted Sturdevant, Director, Washington State Department of Ecology, *supra* note 234 (noting the "disturbing" and inappropriate nature of this request and observing that, among other things, compliance would require CRITFC to violate confidentiality agreements with the survey respondents); *see generally,* Anna Harding, et al., *Conducting Research with Tribal Communities: Sovereignty, Ethics and Data-Sharing Issues*, 120 ENVIRONMENTAL HEALTH PERSPECTIVES 6 (Jan., 2012) (describing misuse of tribal tissue samples, identifying information, and other raw "data" by researchers and discussing ways for tribes to avoid such harms).

[246] Lawrence McCrone, Comments on FCR TSD 5 (Jan. 18, 2012). Mr. McCrone noted that he was offering comments in his capacity as a private citizen, and that his comments ought not be construed as representing his employer or his clients. *Id.* at 1.

included."[247] This commenter criticized the study authors' self-conscious determination that these were values that were not in fact recorded in error, and so ought not be excluded from the dataset, as one that "presses the limits of credibility"[248] – despite the fact that this determination comports with best practices and operates here to *reduce* bias in reporting survey results.[249]

Ecology staff, to their credit, were from the outset consistently open to the tribal surveys, and Ecology recognized these studies as the best available science in its initial FCR TSD. Ecology also called upon experts at the University of Washington School of Public Health to explain the standard practice in the field with respect to custody of survey data – an explanation that confirmed the inappropriateness of requests that the raw data be turned over to the public.[250] Ecology leadership, too, stood up for the scientific defensibility and relevance of the tribal studies in explaining to the legislature that additional studies were not warranted.[251] And Ecology obviously cannot be responsible for the content of comments it received from the public. However, Ecology also structured what was arguably a largely redundant inquiry into the scientific defensibility of the tribal studies in the first place, given the extensive technical review that these studies had already undergone in Oregon and by the EPA.[252]

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[247] *Id.* at 5-6.

[248] *Id.* at 6. Boeing, too, took issue with the Suquamish survey's treatment of high-end responses, pointing out that "none of the data were excluded and no corrections to the highest recorded consumption rates were made," and urging Ecology to note this point. Boeing, FCR TSD 2.0 Comments, *supra* note 222, at 13.

[249] *See* Donatuto & Harper, *supra* note 14; EPA, EXPOSURE ASSESSMENT GUIDELINES, *supra* note 143, at 65 (stating that "[o]utliers should not be eliminated from data analysis procedures unless it can be shown that an error has occurred in the sample collection or analysis phases of the study. Very often outliers provide much information to the study evaluators.").

[250] *See* Letter from William Daniell, Associate Professor, University of Washington Department of Environmental and Occupational Health Sciences, to Craig McCormack, Toxics Cleanup Program, Washington State Department of Ecology, *supra* note 244 (indicating that this assessment of standard practice was given in response to an Ecology request for the opinion of an expert in the field).

[251] Sturdevant, House Testimony, *supra* note 228 (stating "I'm confident that the studies that we're relying on were done with all appropriate scientific rigor").

[252] *See* Wagner, *supra* note 226, at 1341, 1352 (discussing model of agency accountability that invites redundant or peripheral information, and agencies' tendency to

Ecology then prolonged this inquiry through multiple comment periods on two versions of its FCR TSD.[253]

C. Dilute

The participants in the process may have come to recognize that, at some point, the FCR is likely to increase; so those opposing more protective standards have also turned their attention to diluting a more protective FCR by application of fractional multipliers. The arguments for these devices can be boiled down to claims that take the following forms: although contemporary fish consumption has been documented at X grams/day, (1) only a fraction of the fish captured by this rate is obtained from regulated waters, and (2) only a fraction of even this locally-obtained fish is comprised by species whose contaminants are attributable to regulated waters or sites. These devices go by different names; usage is not consistent. For purposes of this article, it will suffice to discuss the first concept in terms of a "diet fraction," and the second concept in terms of a "site use factor."[254]

The argument advanced in favor of applying a diet fraction is that, although fish consumption surveys document an individual's total fish intake, this total generally includes an amount of fish that is "locally caught" (i.e., obtained in waters within the regulatory jurisdiction of the relevant state or tribe) and an amount of fish that is caught "elsewhere" (i.e., obtained in waters outside the regulatory jurisdiction of the relevant state or tribe – caught, for example, in the Atlantic Ocean or the Great

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reflect detailed and even extraneous comments in their own process and documents, "in order to avoid accusations of insufficient attention to detail").

[253] Washington State Department of Ecology, "Fish Consumption Rates (FCR) Technical Support Document (TSD), Version 2: Technical Review Meetings," *available at* http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/Tech-Review-Meetings/Tech-Mtgs.html (last visited Apr. 20, 2013) (announcing availability of two additional technical review meetings after the close of the public comment period on Ecology's FCR TSD 2.0). *See generally, id.*

[254] This usage matches the terms that are employed by Ecology in proposed guidance accompanying its recently promulgated SMS rule, although the arguments included within each concept are different than, for example, under the concepts used by EPA Region X in its Framework.

Lakes).[255] Because the latter will not be affected, the argument goes, by more stringent environmental regulation in the relevant state or tribe, this quantity ought to be excluded from the estimate of fish intake used to calculate health-based standards. This is the argument in its most straightforward form. A variation on this argument, raised particularly in the sediments context, is that where an individual "site" – for example, a small lake or a narrowly delineated portion of an urban bay – cannot support fish production and harvest sufficient to supply the total daily intake represented by the FCR, a fractional multiplier should be applied to arrive at the estimated actual production and harvest at the site.[256] The term "support" in this argument is construed broadly. It can refer to limitations on productivity and harvest that are natural or human-made (for example, limitations due to shoreline armoring or other built infrastructure that currently displaces quality intertidal habitat at the site; or to the presence of debris that would impede access to harvest at the site; or to evidence of predation and disease due to non-site related contaminants such as fecal coliform).[257] As such, it takes as a given many sources of current habitat degradation or alteration, and the resulting losses to the

[255] *See, e.g.,* Boeing, FCR TSD 2.0 Comments, *supra* note 222, at 6 (requesting more precise information for sources of fish currently consumed by tribes and arguing that only that fraction of current fish intake derived from locally caught fish ought to be included in FCR); Pope Resources, Comments on Ecology's FCR TSD (Jan. 17, 2012) (opining that "we all" obtain fish and shellfish from a "wide range of sources (including our neighborhood markets)" and stating that, therefore, "[t]here is no rational reason to assume that an individual would obtain 100 percent of their diet of these species from a single, small geographic area. The diet fraction used in the cleanup (MTCA) regulation of 50 percent [i.e. 0.5] for risk assessment calculations is already highly conservative"); *see generally* WASHINGTON STATE DEPARTMENT OF ECOLOGY, DRAFT SEDIMENT CLEANUP USERS MANUAL II: GUIDANCE FOR IMPLEMENTING SEDIMENT MANAGEMENT STANDARDS, CHAPTER 173-204 WAC 9-5 (Aug., 2012), *available at* https://fortress.wa.gov/ecy/publications/publications/1209057.pdf (last visited Apr. 20, 2013) [hereinafter ECOLOGY, DRAFT SCUM II]. *See also* Washington State Department of Ecology, *SMS Rulemaking* (Aug. 15, 2012), *available at* http://www.ecy.wa.gov/programs/tcp/regs/2011-SMS/2011-SMS-hp.html (last visited Apr. 20, 2013) (stating that the draft guidance "is not part of the public comment process" i.e., Ecology is not requesting comments on the methods set forth in the guidance as part of the SMS comment process).

[256] *See* ECOLOGY, DRAFT SCUM II, *supra* note 255. *Id.* at 9-5.

[257] *See, e.g.,* Boeing, FCR TSD 2.0 Comments, *supra* note 222, at 12 (arguing that Ecology should consider the current availability of high quality habitat to support fish and shellfish).

productivity or health of the fish resource at a site; it in effect renders permanent these adverse impacts, assuming away current and potential restoration efforts. In any case, a diet fraction operates to reduce a survey-derived fish consumption rate by excluding a portion of fish intake that is determined not to "count." So, for example, if a FCR in Washington were based on a survey documenting fish intake at 100 g/day, 75% of which was obtained from Washington waters and 25% of which was obtained from the Atlantic Ocean, a diet fraction of ¾ (or 0.75) could be applied as a multiplier in the risk assessment equation. The effect is that a 75 g/day intake rate would now serve as the basis for calculating tolerable contaminant levels for Washington's environmental standards.

However, tribal members currently *do* obtain most or all of their fish from local waters. As documented by contemporary surveys of tribal consumption practices, tribal members are fishers who bring home their catch; tribal members are harvesters who obtain shellfish from local beaches – and the fruits of these efforts are shared with others in the tribe, including elders and children.[258] Moreover, tribal members are entitled, under the treaties and other legal agreements securing their fishing rights, to do so in perpetuity. So even if tribal members in contemporary times have not been able to supply 100% of their fish needs from local sources – perhaps because of depletion of the resource or human-made impediments to access – this contemporary snapshot does not reflect the practices to which tribes are entitled. Yet, if environmental standards are determined by applying a diet fraction based on such constrained contemporary practices, they *will* result in waters that support only this reduced ability to supply tribal families' tables with locally harvested fish. Water quality standards, including sediment cleanup standards, determine the future conditions of our waters; application of a diet fraction limits this future by reference to a contaminated and depleted present. As elaborated in the next Part, this is not a result that is permitted under the treaties and other legal guarantees of tribes' rights.

[258] *See, e.g.,* LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 15 at 3-7, 10, 54-55; SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY, *supra* note at 13, at 4, 51-62.

The argument advanced in favor of applying a site use factor is that, although locally caught fish may be contaminated, depending on the life histories of the various species that are locally caught, some portion of their contaminant body burdens may be attributable to sources and sites outside of the relevant state's or tribe's jurisdiction. Because these species' contaminant body burdens will not be (much) affected, the argument goes, by more stringent environmental regulation in the relevant state or tribe, the quantity of intake accounted for by these species ought to be reduced or excluded from the estimate of fish intake used to calculate health-based standards. For example, as Ecology stated in proposed guidance to accompany its new SMS rule: where a FCR is based on consumption of a high proportion of salmon, "in this case, the [site use factor] may be reduced to reflect the fact that the concentrations of contaminants in the salmon's tissue are primarily related to sources other than the site."[259] According to this same guidance, a site use factor might be calculated by "divid[ing] the time that the fish spends at the site by the lifetime of the fish (migrating species)" or by "divid[ing] the area of the site by the size (area) of the home range of the fish/shellfish being consumed (non-migrating species)."[260] So, if 2/3 of the locally-caught fish reflected in the 75 g/day figure above were recorded in the survey as salmon, and salmon were deemed to obtain their contaminant body burden primarily outside of regulated waters – a contestable determination, taken up below –, a site use factor of 2/3 (or 0.67) could be applied as a multiplier in the risk assessment equation. The effect is that a 25 g/day intake rate would now serve as the basis for calculating tolerable contaminant levels.

Here too, tribes' rights mean that an analysis of the argument for a site use factor must be different. First, the argument depends on a static conception of the particular mix of species that will comprise a person's fish intake, namely, the mix reflected in contemporary surveys of consumption. But tribal members are free – as they have always been free – to determine how they will exercise their rights to take the various species of fish that are present in their usual and accustomed fishing

[259] *See* ECOLOGY, DRAFT SCUM II, *supra* note 255, at 9-6.
[260] *Id.*

places.[261] They may, for example, consume more of a particular resident species in the future than in the past, and this species might have relatively high affinity for a given site. Yet if environmental standards are determined based on an assumption that this resident species comprises only a small portion of total fish intake and site use factors are applied to the portions of fish intake comprised by other species, the larger concentrations of contaminants that are thereby permitted to remain in place will sully the fish in fact affected by the site. Additionally, the argument for a site use factor simply ignores the fact that contaminants themselves cannot be confined to a given site: they get re-suspended, transported, and dispersed. While those responsible for contaminating sites may be able to persuade regulators to assume away this fact in other contexts, where such assumptions operate to undermine treaty-secured rights, they are not appropriate.

It bears emphasizing that application of both of these devices for diluting the FCR – the diet fraction and the site use factor – has a *multiplicative* effect on the risk assessment equation. Thus, even a comparatively protective FCR can be gutted, for example, if it is halved by application of a diet fraction of 0.5 and then halved again by application of a site use factor of 0.5. An FCR of 200 g/day, by application of these devices, would effectively become just 50 g/day.

Ecology has indicated its willingness at least to entertain both of these devices for diluting a more protective FCR.[262] Thus, in its new SMS and the proposed guidance, Ecology anticipates that a diet fraction or a site use factor or both may be applied as part of its site-specific calculation of risk.[263] Ecology is still in the process of refining its SMS guidance, but

[261] This point is discussed further in Part VII, *infra*.
[262] Note, too, that Washington's current cleanup regulation for surface waters, MTCA, employs a default diet fraction of 0.5, thereby routinely halving the default FCR of 54 g/day. I have criticized the application of a diet fraction in this regulation, given that the 54 g/day FCR comes from a creel survey, which is a method that records only locally harvested fish. The diet fraction here is arguably a gratuitous device to reduce the effective FCR. See O'Neill, *Variable Justice*, *supra* note 10, at n.152.
[263] WASHINGTON STATE DEPARTMENT OF ECOLOGY, SEDIMENT MANAGEMENT STANDARDS, CHAPTER 73-204 WAC, FINAL RULE (Feb. 22, 2013). The final SMS rule, adopted by Ecology on February 22, 2013, will become effective September 1, 2013. Washington

its current draft proposes methods for applying these concepts and accepts that intake reflecting salmon may thus be excluded from a FCR used to calculate cleanup standards.[264] Although, as noted above, Ecology's initial FCR TSD set forth a recommended range of scientifically defensible FCRs and declined to exclude salmon from this range, this recommendation has been stripped from later versions of the FCR TSD. Ecology is still considering whether it will apply these concepts to its WQS.

D. Distort

All participants in the process have recognized that a FCR that excludes salmon would be greatly reduced. As noted above, data show that salmon are contaminated at levels that pose a threat to human health and several fish consumption advisories include salmon among the species for which intake should be curtailed or avoided altogether. However, given salmon's anadromous habit, and given that a portion of many salmon life histories is spent outside of the waters over which Washington asserts regulatory jurisdiction, (i.e., in the Pacific ocean beyond the three-mile coastal zone), it has been argued that salmon ought to be excluded from the tally of fish intake, because their contaminant body burden comes from "elsewhere." The stakes are not small: estimates of fish consumption in the local surveys considered by Ecology would be reduced by from 25% to over 50% if salmon were excluded.[265]

Current scientific evidence doesn't permit one to determine the precise source of the contaminants harbored by salmon. As sketched above, the data for Puget Sound reveal a south-north gradient such that South Sound salmon, which must run a greater gauntlet of contaminated environments in its outward and homeward migrations than its Georgia

State Department of Ecology, "SMS Rulemaking," available at http://www.ecy.wa.gov/programs/tcp/regs/SMS/2013/Adopted-Rule.html (last visited Apr. 20, 2013).

[264] *See* ECOLOGY, DRAFT SCUM II, *supra* note 255, at 9-5 to 9-7.

[265] ECOLOGY, FCR TSD 2.0, *supra* note 149, at App C at C-4 through C-5 (stating that if salmon were excluded from total fish intake rates, the Suquamish fish consumption rate would be reduced by 25%, from 766.8 g/day to 583 g/day; the Tulalip and Squaxin Island rate would be reduced by about 50%, from 194 g/day to 97.6 g/day (using EPA's adjusted numbers for this dataset); and the CRITFC rate would be reduced by more than 50%, from a weighted mean of 63 g/day to 40 g/day).

Strait and Pacific coastal counterparts, have significantly greater concentrations of bioaccumulative toxicants in their tissue. Other data from around the region show the presence of contaminants in the salmon at various life stages, including in outmigrating juveniles still in freshwater environments.[266] Moreover, there is considerable variability, even within species, in salmon's behavior. As noted above, Chinook salmon originating in the rivers of the Puget Sound watershed, for example, typically migrate out to the Pacific and forage along the coastal continental shelf; however, a substantial portion of these salmon display "resident" behavior, remaining in the Puget Sound during the marine phase of their lives. Further, "the waters of Washington" include the Puget Sound, portions of the Straits of Juan de Fuca and the Columbia River, and Pacific coastal waters to a distance of three miles, and contaminants released or re-suspended at one location may be transported to another. It is likely, therefore, that some salmon get all of their contaminants from sources for which Washington has regulatory responsibility, and some salmon get only some of their contaminants from sources for which Washington has regulatory responsibility.

Faced with a similar (albeit not geographically identical) regulatory question, Oregon retained salmon in its FCR. While EPA approved Oregon's determination in this respect, EPA Region X's own guidance for Puget Sound cleanups permits salmon to be excluded and provides factors to be considered in determining whether salmon's contaminant body burden is likely to be due to "site-related contaminants."[267] Industry

[266] *See, e.g.,* Lyndal L. Johnson, et al, *Contaminant Exposure in Outmigrant Juvenile Salmon from Pacific Northwest Estuaries of the United States*, 124 ENVIRONMENTAL MONITORING & ASSESSMENT 124 (2007); Catherine A. Sloan, et al., *Polybrominated Diphenyl Ethers In Outmigrant Juvenile Chinook Salmon From The Lower Columbia River And Estuary And Puget Sound, WA*, 58 ARCHIVES OF ENVIRONMENTAL CONTAMINATION & TOXICOLOGY 403 (2010); Gladys K. Yanagida, et al., *Polycyclic Aromatic Hyrdocarbons and Risk to Threatened and Endangered Chinook Salmon in the Lower Columbia River Estuary*, 62 ARCHIVES OF ENVIRONMENTAL CONTAMINATION & TOXICOLOGY 282 (2012).

[267] EPA REGION X, FRAMEWORK, *supra* note 240, at 10.

has been pushing to have salmon excluded from FCRs in Washington, including from the WQS.[268]

In this heated discussion, distortions of the science have sometimes taken place.[269] The National Council for Air and Stream Improvement, Inc. (NCASI) describes itself as "an independent, non-profit membership organization that provides technical support to the forest products industry on environmental issues. An important part of our mission is to ensure that regulatory decision making is based on sound science."[270] NCASI states that "the science clearly shows that >95% of the contaminant body burden found in adult salmon is accumulated in the open ocean."[271] The studies upon which NCASI relies, however, make no such finding. Rather, they find that contaminant body burdens on this order are accumulated by salmon "*in marine waters*" – including the waters of the Puget Sound. To appreciate the difference in these two formulations, one needs to recall the relevant geography.

The Puget Sound comprises a vast inland marine environment, with numerous interconnected channels, inlets and bays. It is connected to the Pacific Ocean by the Strait of Juan de Fuca. The Puget Sound watershed is over 13,700 square miles, draining rivers on the west side of the Cascade Mountains and on the east and north sides of Olympic Mountains. If one were to swim from Budd Inlet in the south, near the city of Olympia, north through Admiralty Inlet and ultimately west, out through the Strait of Juan de Fuca, one would traverse roughly 200 miles before

[268] *See, e.g.,* Boeing, FCR TSD 2.0 Comments, *supra* note 222, at Attachment 1 "Exclusion of Salmon Consumption from Fish Consumption Rate."

[269] The next six paragraphs draw on material from a blog previously posted to the Center for Progressive Reform website. Catherine O'Neill, "(Puget) Sound Science" (Nov. 8, 2012), *available at* http://www.progressivereform.org/CPRBlog.cfm?idBlog=E072AEC3-A728-A0BD-32965A41D8C66EBB (last visited Apr. 20, 2013).

[270] National Council for Air and Stream Improvement, Inc., Comments on Ecology's FCR TSD 2.0 (Oct. 24, 2012) [hereinafter, NCASI, FCR TSD 2.0 Comments]. NCASI's Comments on the FCR TSD 2.0 are cited and incorporated by reference by other industry commenters. *See, e.g.,* Northwest Pulp & Paper Association, Comments on Ecology's FCR TSD 2.0 (Oct. 25, 2012): Boise White Paper, LLC, Comments on Ecology's FCR TSD 2.0 (Oct. 26, 2012); Georgia-Pacific, Comments on Ecology's FCR TSD 2.0 (undated document); Weyerheuser, Comments on Ecology's FCR TSD 2.0 (Oct. 26, 2012).

[271] NCASI, FCR TSD 2.0 Comments, *supra* note 270, at 1.

reaching the Pacific Ocean. And, of course, as pointed out above, salmon don't necessarily take the most direct route; their migration patterns on both outward and homeward migration are more elaborate and complex.

The principle studies cited by NCASI are by Sandra O'Neill and Jim West,[272] and by Donna Cullon, et al..[273] Both studies recognized that anthropogenic influences had contributed to contamination of the Puget Sound watershed and set out to determine the source of contaminants in Pacific salmon, as between their freshwater and saltwater environments. The O'Neill & West study looked at PCBs in Chinook salmon; the Cullon, et al., study looked at a host of persistent organic pollutants (POPs), including PCBs, dioxins and furans, and DDT. Both studies sampled out-migrating juveniles and returning adult salmon at several locations. The O'Neill & West study sampled five "in-river" (i.e., freshwater or estuarine) locations ranging from the Deschutes River in the south to the Nooksack River in the north, as well as two marine locations in the south and central Puget Sound. The Cullon, et al., study sampled two in-river locations, the Deschutes and the Duwamish.

O'Neill & West found, first, that the average PCB concentration in returning adult Puget Sound Chinook was 3 to 5 times greater than average concentrations reported in adult Chinook at six other West Coast locations outside Puget Sound. O'Neill & West concluded that "the elevated PCB levels observed for Puget Sound Chinook salmon relative to coastal populations were probably associated with differences in PCB contamination in the environments they inhabit or with differences in diet." O'Neill & West also concluded that, although salmon uptake some PCBs from freshwater environments, the elevated concentrations of PCBs found in adult Chinook "were accumulated during residence in marine habitats rather than riverine habitats in the region." They reported that "adult Chinook salmon that had migrated as subyearlings from the Duwamish River, the most highly PCB-contaminated river draining into Puget Sound, accumulated the vast majority (>96%) of PCBs during their marine life

[272] O'Neill & West, *supra* note 27.
[273] Donna L. Cullon, et al., *Persistent Organic Pollutants in Chinook Salmon (Oncorhynchus tshawytscha): Implications for Resident Killer Whales of British Columbia and Adjacent Waters*, 28 ENVIRONMENTAL TOXICOLOGY & CHEMISTRY 148 (2009).

history phase, whereas there was little PCB contribution from freshwater." Although Cullon, et al., sampled a small number of fish at fewer locations, their conclusions were similar.[274]

We can now see the mischief in NCASI's characterization of these studies' findings. NCASI's statement that "the science clearly shows that >95% of the contaminant body burden found in adult salmon is accumulated *in the open ocean*"[275] treats the marine waters of the inland Puget Sound and Strait of Juan de Fuca as if they were the open Pacific Ocean. NCASI's characterization implies that the contaminants found in salmon don't come from sources and waters for which the state of Washington has regulatory responsibility, because "the open ocean" is beyond its jurisdiction.[276] Both O'Neill & West's discussion and their study design make clear that their findings distinguish between contaminants taken up during the salmon's freshwater phase, on the one hand, and their saltwater phase, on the other. With in-river sampling locations, returning adults will have spent considerable time in the marine waters of Puget Sound and the Strait of Juan de Fuca, both on their outward and homeward migrations.

NCASI and other industry commenters have urged that salmon be excluded from the tally of people's fish intake for purposes of environmental standard-setting, on the theory that these industries are not responsible for the contaminants that are showing up in the salmon. Although they purport to invoke "the science" in support of this stance, the studies don't say what NCASI says they say.

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[274] *Id.* at 154 ("By comparing body burdens of POPs in returning adult Chinook to out-migrating smolts and juveniles, we estimate that 97 to 99% of the body burden of PCBs, PCDDs, PCDFs, DDT, and HCH in all stocks originated during their time at sea … Our estimation that the majority of POPs in Chinook salmon can be ascribed to their growth stage in coastal and marine waters is consistent with other studies. A study of Chinook from Washington ascribed 99% of PCBs in returning Duwamish River adults to the waters of Puget Sound and the Pacific Ocean.").

[275] NCASI, FCR TSD 2.0 Comments, *supra* note 270, at 1 (emphasis added).

[276] Admittedly, the Cullon, et al., study does not aid understanding by using the phrase "at sea" to describe the marine waters, both inland and coastal, in which salmon spend the saltwater phase of their lifecycles. However, both the subsequent text and, more notably, the study design itself, clarify the authors' usage. *See* Cullon, et al., *supra* note 273, at 154.

E. Deny

Industry has advanced two arguments that would require us to deny what we know about the facts on the ground in Washington. These arguments require us to deny that we know there are actual people who consume fish at the greatest rates, from the same local places, for their entire lives, and to deny that we know precisely *who* these people are – namely, tribal people. These arguments are offered to offset an increased FCR or to counteract the use of tribal survey data. The first argument suggests that if Ecology increases its FCR, it should increase the amount of risk it deems "acceptable." The second argument urges Ecology to adopt less protective values for other parameters in the risk assessment equation or to employ probabilistic risk assessment techniques if it is to use tribal consumption data to derive the FCR.

Under the first argument, Ecology is urged to alter its acceptable risk level, which, under its current WQS is set at 1 in 1,000,000.[277] Industry and others have argued that Ecology should deem acceptable risks as great as 1 in 10,000. The claim is sometimes for a bald offset: a more protective FCR would mean more stringent standards if the acceptable risk level remains the same, *so* Ecology should decide to tolerate more risk.[278] In other instances, the argument is supported by the point that other agencies have found greater risk levels tolerable in a variety of contexts.[279] The EPA, for example, in its AWQC Methodology, has indicated that it would entertain standards set to achieve risk levels as great as 1 in 10,000 for highly-exposed subpopulations. The argument is also sometimes supported by the claim that only a relatively small number of people out of a larger population will end up facing this increased risk

[277] WASH. ADMIN. CODE § 173-201A-240 (2011) (standards for carcinogens shall be set so that excess risk is "less than or equal to" one in 1,000,000).
[278] *See, e.g.,* Stoel Rives, LLP, Comments on Ecology's Triennial Review (Dec. 17, 2010), *available at* http://www.ecy.wa.gov/programs/wq/swqs/TriennialRevComm/Stoel_Rives_Loehr.pdf (last visited Apr. 20, 2013).
[279] *See, e.g.,* NATIONAL COUNCIL FOR AIR AND STREAM IMPROVEMENT, INC., A REVIEW OF METHODS FOR DERIVING HUMAN HEALTH-BASED WATER QUALITY CRITERIA WITH CONSIDERATION OF PROTECTIVENESS 3 (Aug. 2012) [hereinafter NCASI, RISK ASSESSMENT WHITE PAPER] (observing that "[t]arget cancer risk levels between 10-6 and 10-4 have become widely accepted among the different EPA programs.")

level.[280] Finally, the argument has been supported by an understanding of the issue in terms of hypothetical or statistical lives. Thus, in considering agencies' responses to variability in the risk assessment context, some members of the National Research Council have offered the following perspective:

> [S]ome argue that people should be indifferent between a situation wherein their risk is determined to be precisely 10^{-5} or one wherein they have a 1% chance of being highly susceptible (with risk = 10^{-3}) and a 99% chance of being immune, with no way to know which applies to whom. In both cases, the expected value of the individual risk is 10^{-5}, and it can be argued that the distribution of risks is the same, in that without the prospect of identifiability, no one actually faces a risk of 10^{-3}, just an equal chance of facing such a risk.[281]

As I have pointed out elsewhere, however, the necessary condition for such indifference doesn't exist in the context of environmental exposure analysis, where there is not only the prospect but the fact of identifiability: we *already know* the identities of those most exposed; we already know that it is tribal people who face the greatest risk from contaminated fish.[282] Thus, in order to maintain that we all have "an equal chance of facing [an elevated] risk," we would have to deny what we know about fish consumption practices in Washington. Similarly, while the *number* of people who will be exposed to elevated risk is small relative to the entire Washington population, we can point to who these people are in the crowd – as such, we cannot, without denying this knowledge, pretend to be debating the fate of abstract numbers. Finally, whether EPA may permit states to countenance greater risks for other higher-consuming populations, it cannot license states to so burden the exercise of treaty-

[280] *Id.* at 3-4, 18. (arguing that if only a small population faces the greatest risk, i.e., $1(10^{-4})$, then the number of excess cancers would be "[essentially] zero").
[281] NATIONAL RESEARCH COUNCIL, SCIENCE AND JUDGMENT IN RISK ASSESSMENT 213-216 (1994). Note that this view that risk is either one or zero is controversial and does not command consensus of the National Research Council. *Id.*
[282] O'Neill, *Variable Justice*, *supra* note 10, at 73-75.

secured rights by failing to acknowledge precisely who is affected and what is at stake were risk levels to be altered as industry has advocated.

Under the second argument, Ecology is urged to adopt less protective (e.g., mean or median) values for other parameters in the risk assessment equation or to enlist probabilistic risk assessment techniques if it is to use tribal consumption data to derive the FCR. Industry has argued that the use of high-end exposure values (e.g., 90th or 95th percentile values) for most or all of the exposure parameters (i.e., fish intake, exposure duration)[283] will result in an estimate of risk that is overly "conservative." For example, a white paper produced by NCASI and submitted to the record by the Northwest Pulp & Paper Association asserts that "[i]t is well-known, and mathematically intuitive, that the practice of selecting "upper end of range" values for multiple parameters in a risk equation will lead to over-conservative estimates of risk or, in the case of [human health ambient water quality criteria], overly restrictive criteria."[284] The mathematical aspect of this claim is illustrated by this example: "the use of just three conservative default variables (i.e., 95th percentile values) yields [an estimate of] exposure in the 99.78th percentile. Adding a fourth default variable increases the estimate to the 99.95th percentile value."[285] The impact of such "compounded conservatism," NCASI argues, is a "highly unlikely and highly protective

[283] Note that bodyweight is an exposure parameter that functions in the opposite direction; that is, while fish intake and exposure duration are parameters in the numerator of an exposure assessment equation, bodyweight is a parameter in the denominator of this equation. As a consequence, a selection of a relatively lower value (e.g., mean or median) for bodyweight will have the effect of increasing the estimate of exposure and risk, and so requiring more protective environmental standards. Industry tends, therefore, to advocate the use of relatively higher values for this parameter, but relatively lower values for the other parameters. *See, e.g.,* NCASI, RISK ASSESSMENT WHITE PAPER, *supra* note 279, at 20. Debate about exposure parameters nonetheless generally refers to "high-end" values as being the most protective. This discussion in this article is in keeping with this general practice, but is caveated by this note about bodyweight and by the fact that different considerations, beyond the scope of this article, may come into play when considering the appropriate assumptions for bodyweight in a risk assessment equation. Thus, this article assumes that the standard assumption (generally, 70kg for adults) is appropriate for this context.

[284] *Id.* at 1.

[285] *Id.* at 27.

scenario."[286] Boeing similarly cites this problem with "compounding levels of conservatism inherent in the deterministic approach" and suggests that it might be avoided by enlisting probabilistic techniques.[287] NCASI points to the impact of selecting high-end exposure assumptions rather than mean or median values on the resulting water quality standards: "the assumption that a person lives in the same place and is exposed to the same level of contamination for a 70 year lifetime results in criteria that are up to 8 times more stringent than if a median exposure period were assumed."[288]

The aspect of this claim that states or implies that the high-end values for the various exposure parameters are inaccurate – and, specifically, *over*-estimates of actual exposure – requires scrutiny. First, as I have observed elsewhere, it is useful to clarify terminology.[289] The various parameters in a risk assessment equation may be characterized by uncertainty or variability. In cases of uncertainty, we lack knowledge about the true value of the parameter in question. Any choice of a value will be in error. A conservative assumption reflects a choice between errors: specifically, that it is better to overestimate risk than to underestimate risk. In cases of variability, by contrast, we *know* the true value for the parameter in question and it is in fact described by a range. The "value" for fish intake in the general U.S. population, for example, is actually a range of values, which can be represented as a distribution. A protective assumption reflects a choice within the range of true values: one that determines that everyone, even those who consume relatively high amounts of fish, merits protection. The choice of a median or 90th or 99th percentile value for an exposure parameter that is characterized by variability, then, is not a matter of being more or less conservative. *It is a matter of deciding, with full knowledge, whom to protect.* For clarity, I have suggested speaking of degrees of "conservatism" only in connection

[286] *Id.*
[287] Boeing, FCR TSD 2.0 Comments, *supra* note 222, at 16-17 (urging Ecology to follow Florida's lead and adopt a probabilistic approach, arguing that it results in more realistic and accurate estimates of risk).
[288] NCASI, RISK ASSESSMENT WHITE PAPER, *supra* note 279, at 3. NCASI's comparison is to a median residence time of 8 years. *Id.* at 24-25.
[289] *See generally* O'Neill, *Variable Justice*, *supra* note 10, at 64-75.

with responses to uncertainty, and referring to levels of "protectiveness" when discussing responses to variability.[290] With terminology thus clarified, the remainder of this second argument can be parsed. While Ecology's use of a 90th percentile value from tribal studies for exposure parameters such as fish intake and exposure duration might be relatively protective, this does not necessarily mean that it is unrealistic or "unlikely."

Yet this is precisely the claim NCASI makes. In support, it cites assumptions and practices from the general population, for example with respect to fishing and residency:

> Default assumptions that the general population consumes fish taken from contaminated water bodies every day and year of their entire life represent additional conservative assumptions…. While it is possible individuals could obtain 100 percent of their fish from a single waterbody, this is not typical unless the waterbody is very large or represents a highly desirable fishery. In addition, individuals are likely to move many times during their lifetimes and, as a result of those moves, may change their fishing locations and the sources of the fish they consume. Finally, it is likely that most anglers will not fish every year of their lives. Health issues and other demands, like work and family obligations, will likely result in no fishing activities or reduced fishing activities during certain periods of time that they live in a given area.[291]

NCASI concludes that agencies' standard practice of selecting conservative and protective values for the various parameters in the risk assessment equation (characterized, respectively, by uncertainty and variability), result in an estimate of risk that is inaccurate. "It is unlikely that this combination of assumptions is representative of the exposures and risks experienced by many, if any, individuals within the exposed population."[292] The case for probabilistic techniques such as "Monte

[290] *Id.* at 65-66.
[291] NCASI, RISK ASSESSMENT WHITE PAPER, *supra* note 279, at 22-23.
[292] *Id.* at 29.

Carlo" analysis similarly stems from an assumption that no one's actual circumstances of exposure are likely to be represented by a composite of high-end values; rather, we are all equally likely to be among the winners or the losers, as in a crap shoot at Monte Carlo. Thus, the argument goes, we should input distributions (rather than point estimates) for each parameter and then consider risk in terms of the probabilities – noticing, in particular, the low probability in the abstract that any individual will experience the high levels of risk associated with the upper end of a distribution for each parameter.[293]

However, this argument again would require us to deny what we know about fish consumption practices in Washington. We know that the fishing tribes here, as elsewhere in the Pacific Northwest, are comprised of actual people whose exposure *is* described by a composite of maxima: actual individuals do live in the same place, and harvest from the same locations, and consume relatively large quantities of fish per day, for an entire lifetime.[294] We have the identifying information that permits us to consider risk in terms of actualities, not probabilities.

Although not an exhaustive recitation, this account nonetheless affords a sense of recent experience in Washington and in the Pacific Northwest more generally with revising state water quality standards.[295] As the description above suggests, the arguments and strategies are several: delay issuance of a more protective FCR; denigrate the science

[293] *But cf.* EPA, EXPOSURE FACTORS HANDBOOK, *supra* note 239, at 1-17 to 1-18 (cautioning against the use of Monte Carlo techniques where the variables are not independent but dependent).

[294] Moreover, they are legally entitled to do so – a point taken up in the next Part, *infra* Part VII. And, indeed, many Indian people feel that they could not do otherwise. *See, e.g.,* Columbia River Inter-Tribal Fish Commission, Tribal Salmon Culture, *available at* http://www.critfc.org/salmon-culture/tribal-salmon-culture/ (last visited Apr. 20, 2013) ("Salmon and the rivers they use are a part of our sense of place. The Creator put us here where the salmon return. We are obliged to remain and to protect this place."); *see also* O'Neill, *Variable Justice*, *supra* note 10, at n.265 (quoting Margaret Palmer, Yakama tribal fisher).

[295] Indeed, many other issues and arguments have emerged during the process in Washington and elsewhere, some of which may have important implications for tribal rights and interests, e.g., arguments that sediments standards ought not be considered water quality standards within the meaning of the CWA. These are not considered here in the interest of managing the scope of this article.

that supports an updated FCR; dilute the impact of an increased FCR; distort the scientific data regarding species' behavior and sources of contamination; and deny that we know precisely who it is that is among the most highly-exposed – it is Indian people – and so who it is that will be burdened by calls for tolerating greater risk. In fact, while delay is considered here as a separate feature of the states' standard-setting efforts, it is worth remarking that each of the other tactics can have the advantage, from the perspective of those with anti-regulatory designs, of at least forestalling whatever protective revisions are ultimately secured.[296] Thus, even irrelevant arguments and poorly supported assertions can have the desired effect if agencies and members of the public feel they must take the time to respond on the merits.

The arguments canvassed in this Part are often familiar and many come from the standard anti-regulatory playbook.[297] Indeed, many of the examples offered by industry and other commenters are inapt precisely because they are taken from this general stock of arguments. Arguments that reference where and when "most anglers" harvest fish[298] or how frequently "individuals" move[299] or what quantities of geoduck one can "envision" consuming [300] are explicitly or implicitly grounded in assumptions that don't match practices in Washington, most notably, tribal members' practices.

However, the arguments have sometimes been crafted in a manner particular to the tribal context and disturbingly so. Thus, for example, while it is a standard anti-regulatory move to call for "sound science," and under this umbrella urge agencies to wait for further study (when delay would be advantageous), or to rely exclusively on one's favored studies,[301] the language in which criticisms of the tribally conducted surveys were

[296] *See generally* CATHERINE A. O'NEILL, ET AL., THE HUMAN AND ENVIRONMENTAL COSTS OF REGULATORY DELAY, CENTER FOR PROGRESSIVE REFORM WHITE PAPER #907 (Oct. 2009).
[297] *See, e.g.,* THOMAS O. MCGARITY, ET AL. SOPHISTICATED SABOTAGE: THE INTELLECTUAL GAMES USED TO SUBVERT RESPONSIBLE REGULATION (2004).
[298] *See* Pope Resources, *supra* note 255.
[299] *See* NCASI, RISK ASSESSMENT WHITE PAPER, *supra* note 279.
[300] *See* McCrone, *supra* note 246.
[301] *See, e.g.,* MCGARITY, ET AL., *supra* note 297, at chapter 2 "The Myth of 'Junk Science'" 31-65.

leveled sometimes echoed too closely the discriminatory standards that have been applied to tribal science and knowledge in the past.[302] To question the believability or veracity of tribal respondents and so critique the professionalism of tribal study authors and the credibility of their results, one ought proffer more evidence than a mere assertion that portrays tribal members' practices as different from those of the dominant society.[303] Recorded quantities of Indian people's fish intake aren't inaccurate simply because they don't square with the quantities non-Indians consume or could imagine people consuming.

Still, what is perhaps most remarkable about the way that the "fish consumption issue" has transpired in Washington, especially, is that the process and arguments have not been *more* different here, given the tribal context, than had this issue been debated elsewhere. That is to say, in Washington, despite an engaged and technically sophisticated tribal presence throughout (and, indeed, prior to) the state's efforts to revise its FCR and related environmental standards, the tribal context for the relevant state and federal agency decisions has often not been visible. Indeed, tribal leaders made this point in the strongest of terms in reaction to Ecology's announcement of its "revised" process in July of 2012.[304]

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[302] *See, e.g.,* Rebecca Tsosie, *Indigenous Peoples and Epistemic Injustice: Science, Ethics, and Human Rights*, 87 WASH. L. REV. 1133, 1152-58 (2012) (discussing history of various forms of epistemic injustice and how these have impaired Native peoples' rights, considering among these "testimonial injustice," which "arises when someone is wronged in his or her capacity as a knowledge giver" and may involve, for example, qualifying some speakers as capable or credible givers of testimony whereas others are excluded from such qualification based on their identity).

[303] *See generally* Robert A. Williams, Jr., *Columbus's Legacy: Law as an Institution of Racial Discrimination*, 8 ARIZ. J. INT'L & COMP. L. 51 (1991) (discussing history of colonization in United States and describing systemic discrimination based on cultural differences between European colonizers and Indigenous peoples in which real or perceived cultural differences are highlighted, and the colonizers' practices privileged whereas the Indigenous practices are portrayed as deficient).

[304] Letter from Babtist Paul Lumley, Executive Director, Columbia Inter-Tribal Fish Commission, to Dennis McLerran, Regional Administrator, Environmental Protection Agency, Region X (Sept. 14, 2012); Letter from Frances G. Charles, Chairperson, Lower Elwha Klallam Tribe, to Dennis McLerran, Regional Administrator, Environmental Protection Agency, Region X (Sept. 7, 2012); Letter from Merle Jefferson, Executive Director, Lummi Nation Natural Resources Department, to Ted Sturdevant, Director, Department of Ecology (Oct. 18, 2012); Letter from Billy Frank, Jr., Chairman, Northwest Indian Fisheries Commission, to Dennis McLerran, Regional Administrator,

Tribal leaders underscored their disappointment with the substantive results of Washington's process to date by declining the invitation to sit at the table with other invited "stakeholders" as part of Washington's new round of process. Instead, tribes insisted that any future exchange be conducted on a government-to-government basis.

Although the fish consumption issue profoundly affects tribes' rights and interests, the implications of tribes' unique status and rights are often not engaged. In the next Part, I turn attention to this last point, and explore how the debate ought to have been (and ought, in the future, to be) different, were the agencies and other participants to take more seriously their obligations as successors to the treaties and apply more thoroughly the reasoning of the culverts and other decisions by which the U.S. courts have affirmed these obligations.

VII. ENVIRONMENTAL DECISIONS IN THE TRIBAL CONTEXT

Given the tribal context that permeates environmental regulatory decisions by Washington and other states in the Pacific Northwest, one would expect a different process and a different result than that witnessed to date. In view of the legal constraints imposed by the treaties and other sources of law, state and federal agencies may not in fact be free to entertain arguments or permit tactics that might be plausible were only non-tribal populations affected – were the entire landscape not imprinted with a prior suite of rights reserved by its first peoples. Thus, whether the

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Environmental Protection Agency, Region X (Aug. 24, 2012); Letter from Jeromy Sullivan, Chairman, Port Gamble S'Klallam Tribe, to Ted Sturdevant, Director, Department of Ecology (Oct. 12, 2012); Letter from Rudy Peone, Chairman, Spokane Tribal Business Council, to Ted Sturdevant, Director, Department of Ecology (Oct. 15, 2012); Letter from David Lopeman, Chairman, Squaxin Island Tribe, to Dennis McLerran, Regional Administrator, Environmental Protection Agency, Region X (Sept. 13, 2012); Letter from Leonard Forsman, Chairman, Suquamish Tribe, to Ted Sturdevant, Director, Department of Ecology (Oct. 19, 2012); Letter from M. Brian Cladoosby, Chairman, Swinomish Indian Tribal Community, to Dennis McLerran, Regional Administrator, Environmental Protection Agency, Region X (Aug. 24, 2012); Letter from Terry Williams, Commissioner, Fisheries and Resources, The Tulalip Tribes, to Dennis McLerran, Regional Administrator, Environmental Protection Agency, Region X (Sept. 18, 2012); Letter from Harry Smiskin, Chair, Yakama Nation Tribal Council, to Ted Sturdevant, Director, Department of Ecology (Oct. 3, 2012).

benchmarks and hammers built into the CWA can appropriately be ignored elsewhere, whether aspirations for the future of aquatic environments ought generally be measured by fish intake and resource use in a degraded present, these questions must be differently engaged where the answers affect tribes' rights and interests. Given that tribes' rights to fish were reserved throughout the Pacific Northwest, and given the interpretation that these rights have been given by U.S. courts, agencies' work here should be different. This Part examines more closely how the particulars of courts' interpretations in the relevant cases speak to the environmental decisions at hand.

A. Tribes' Fishing Rights and Their Implications for Environmental Standard Setting

First, the treaties guaranteed a source of food, forever; as such they promise fish fit for human consumption. As Judge Martinez emphasized in the culverts case, a central concern for the Indians during the treaty negotiations was the survival, health, and well-being of their generations to come. Their expressed worry about their ability to fish once they ceded so much territory was an apprehension about a constrained future – a future in which they might be thwarted in their lifeways by an influx of settlers. "The question," as Judge Martinez noted, "was not whether they could now feed themselves, but rather whether in the future after the huge cessions that the treaties proposed the Indians would still be able to feed themselves."[305] But these apprehensions were met with promises by the U.S. that the Indians could continue to take fish at all of their places, including those off-reservation, and that their people would retain this source of subsistence and the means of earning a livelihood in perpetuity. It was this guarantee of a right with future force and vitality that persuaded the Indians to sign. In framing his holding, Judge Martinez emphasized the reliability, abundance, and practical function of the fish resource, citing the "significance" of "the right to *take* fish, not just the right to fish," to the tribes, the "[t]ribes' reliance on the unchanging nature of that right," and the assumption by all parties that the

[305] Culverts Order, 2007 WL 2437166 at *9 (W.D. Wash.).

Indians' "cherished fisheries would remain robust forever" as a source of food and commerce.[306]

This concern for what might be termed a functional aspect of the treaty guarantees – the point that one of the ends of harvesting fish is, ultimately, consuming fish – has been recognized by other courts as well. For example, in interpreting a similar fishing clause in treaties between the Great Lakes tribes and the U.S., a district court in Wisconsin observed that the treaties guaranteed to the tribes the right to make a living "off the land and from the waters … by engaging in hunting, fishing, and gathering as they had in the past and by consuming the fruits of that hunting, fishing, and gathering, or by trading the fruits of that activity."[307] The Indians were not and are not "catch-and-release" fishers. This is not to downplay the importance of the other facets of fish and fishing and all of the lifeways that are bound up with the fish. It is simply to recognize that the point of securing a "robust" fishery, from the tribes' perspectives, is not to have salmon runs to marvel at from a distance. Thus, while the culverts case dealt with facts presenting impairment of the tribes' rights via depletion of the fish resource, its rationale applies equally to impairment of the tribes' rights via contamination that renders the fish resource unfit as a source of food for tribal fishers, their families, and others to whom they might sell their catch. Moreover, as noted in Part III, many of the same toxicants that lead to contamination of the fish tissue *also* cause depletion of fish numbers, given their adverse effects on reproductive success and other essential behaviors for many species.

Second, the treaty promises create obligations that exist in perpetuity. In finding the duty on the part of the State of Washington in the culverts case, Judge Martinez stated that he was guided by earlier

[306] *Id.* at *7-*9.

[307] Thus, for example, in interpreting 1837 and 1842 treaties with the Chippewas, the district court explained that, by dint of the treaties, the tribes were "guaranteed the right to make a moderate living off the land and from the waters in and abutting the ceded territory and throughout that territory by engaging in hunting, fishing, and gathering as they had in the past and by consuming the fruits of that hunting, fishing, and gathering, or by trading the fruits of that activity for goods they could use and consume in realizing that moderate living." Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. Wisconsin, 653 F. Supp. 1420, 1426 (W.D. Wis. 1987).

decisions in which courts had recognized that the promises that the treaties would protect the fish as a "source of food and commerce" could be undermined in practice by "future settlers." Judge Martinez, like judges before him, understood that the Indians' rights could be rendered a nullity were settlement permitted literally or figuratively to "crowd the Indians out" of the meaningful exercise of their rights – that fish-blocking culverts could undermine the right by impairing the resource on which the right depends. In his March 2013 decision, Judge Martinez emphasized that the treaties "were negotiated and signed by the parties on the understanding and expectation" that "the salmon would remain abundant forever" to support tribal harvest for the generations to come, but observed that, instead, the salmon stocks "have declined alarmingly since treaty times."[308] He found that "[a] primary cause of this decline is habitat degradation" and "one cause of the degradation of salmon habitat is blocked culverts."[309] While Judge Martinez' ruling pertained only to this artifact of settlement, its logic was of a piece with other cases in which courts have recognized that the settlers' dams, development, and industry could effectively undercut the perpetual nature of the treaty guarantees.[310]

Moreover, the fact that tribes have been prevented from fully exercising their right to take fish in the intervening period since the treaties were signed doesn't limit their right to do so in the future. In granting the permanent injunction requested by the tribes in the culverts case, Judge Martinez catalogued "the human caused factors that have greatly reduced the salmon available for tribal harvest" and noted that "[m]any members of

[308] Culverts Decision, No. 9213RSM, Subproceeding 01-1, slip op. at 32 (W.D. Wash. 2013).
[309] *Id.*
[310] *See* Kittitas Reclamation District v. Sunnyside Valley Irrigation District, 763 F.2d 1032 (9th Cir. 1985) (upholding district court's order, in response to Yakama Nation challenge, of measures to protect eggs in salmon nests in Yakima River from adverse effects of dewatering occasioned by management of Cle Elum dam); Confederated Tribes of the Umatilla Indian Reservation v. Alexander, 440 F. Supp. 553 (D. Or. 1977) (finding that a proposed dam on Catherine Creek would infringe rights guaranteed to the Umatilla tribe); No Oilport! v. Carter, 520 F. Supp. 334, 372-73 (W.D. Wash. 1980) (finding that sedimentation from proposed pipeline crossing Puget Sound and two rivers subject to treaty rights could adversely affect salmon and ordering evidentiary hearing to determine whether habitat would be "degraded such that rearing or production potential of the fish will be impaired or the size or quality of the run diminished");

the Tribes would engage in more commercial and subsistence salmon fisheries if more fish were available." [311] Relatedly, courts have consistently rejected attempts to construe alterations to the land and resulting changed circumstances to the disadvantage of tribal rights. Rather, they have found that the rights secured to the tribes by treaty are permanent, such that "[t]he passage of time and the changed conditions affecting the water courses and the fishery resources in the case area have not eroded and cannot erode the right secured by the treaties . . ."[312]

Third, the treaties reserved a means for ensuring tribes' survival and well-being in a changing world; they presumed resilience, not stasis. To this end, courts have held that tribal members are not restricted in their harvest to a particular mix of species, whether a mix taken in the past or in contemporary times. Rather, the right to take fish secured by the treaties is a right "without any species limitation."[313] As the court in the Rafeedie decision explained, "[at treaty] time,... the Tribes had the absolute right to harvest any species they desired, consistent with their aboriginal title.... The fact that some species were not taken before treaty time - either because they were inaccessible or the Indians chose not to take them - does not mean that their *right* to take such fish was limited." [314] Subsequent courts have continued to reject attempts to cabin tribes' fishing rights by excluding certain species argued not to have been harvested historically.[315] Tribes' rights cannot be thus pinned down.

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[311] Culverts Decision, slip op. at 4-5.
[312] United States v. Washington, 384 F. Supp. 312, 401 (W.D. Wash. 1974); *see also,* United States v. Oregon, 2008 WL 3834169 (D. Or. 2008) (holding that the "Wenatchi and Yakama have joint fishing rights to fish at the Wenatshapam Fishery, which is located at the confluence of the Wenatchee River and Icicle Creek. Due to the alteration of this site by white settlement, and the fact that the evidence demonstrates fishing on Icicle Creek, in addition to fishing on the Wenatchee River, the nearest location for the Wenatshapam Fishery is the Leavenworth National Fish Hatchery on Icicle Creek").
[313] United States v. Washington, 873 F. Supp. 1422, 1430 (W.D. Wash. 1994) (emphasis in original).
[314] *Id.* (emphasis in original).
[315] *See, e.g.,* Midwater Trawlers Co-operative v. Department of Commerce, 282 F.3d 710 (9th Cir. 2002) (rejecting challenge to allocation of Pacific whiting fish to coastal tribes on grounds that they had not fished for whiting at the time of the treaties, stating "the term "fish" as used in the Stevens Treaties encompassed all species of fish, without exclusion and without requiring specific proof").

Fourth, the treaty guarantees exist in theory and in practice; as such, courts interpreting the treaties have been sensitive to the potential for evisceration of the right by governmental inaction or delay. In the culverts case, the court addressed facts showing that the State of Washington had neglected properly to build and maintain culverts, with the result that spawning habitat would be blocked and salmon numbers decreased. The State of Washington responded to the tribes' request for a determination as to a treaty-based duty by arguing that it was in fact in the process of addressing its stream-blocking culverts. Evidence before the court showed that the state's progress, however, was agonizingly slow: according to the state's projections, it could take "about 100 years" for the culverts to be fixed.[316] The fact that Judge Martinez was not persuaded by this tack and ultimately saw fit to require "[s]tate action in the form of acceleration of barrier correction"[317] suggests a sensitivity on the part of the courts to the very real possibility that the treaty right to take fish could be rendered a nullity if the habitat on which the fish depend is permitted to be degraded while a state delays. In other cases, too, courts have appreciated that governmental inaction could undermine tribal exercise of their rights as a practical matter, for example, recognizing that a state that declined to regulate harvest by non-tribal fishers in the oceans and bays would have the effect of leaving no salmon to complete their journey to tribal fishers in the rivers.[318]

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[316] United States v. Washington, subproceeding 01-01, State of Washington's First Amended Answer and Counter Requests for Determination (Revised 2004) 2004 WL 4005685 (W.D. Wash.) (admitting this figure and suggesting that shorter timelines would also be possible, depending on funding from the legislature).

[317] Culverts Decision, No. 9213RSM, Subproceeding 01-1, slip op. at 34 (W.D. Wash. 2013). The court found that "[a]n injunction is necessary to ensure that the State will act expeditiously in correcting the barrier culverts which violate the Treaty promises. The reduced effort by the State over the past three years, resulting in a net increase in the number of barrier culverts in the Case Area, demonstrates that injunctive relief is required at this time to remedy Treaty violations." *Id.* at 35.

[318] United States v. Washington, 384 F. Supp. 312, 344-47 (W.D. Wash.) (recognizing the factual evidence that "substantial numbers of fish, many of which might otherwise reach the usual and accustomed fishing places of the treaty tribes, are caught in marine areas closely adjacent to and within the state of Washington, primarily by non-treaty right fishermen. These catches reduce to a significant but not specifically determinable extent the number of fish available for harvest by treaty right fishermen…. while it must be recognized that these large harvests by non-treaty fishermen cannot be regulated with

Taken together, these features of tribes' rights have implications for the various arguments and tactics encountered in Washington and elsewhere in the Pacific Northwest, outlined in the previous Part. Specifically, they mean that many arguments that might at least be considered as a more general matter, i.e., were the fishing tribes' rights and interests not at stake, become untenable here.

As noted at the outset of this article, every day that federal and state agencies permit a 6.5 g/day-driven standard to remain in force, they leave in place a *de facto* ceiling on safe fish consumption. These agencies thereby condition tribal members' exercise of their right to take fish – to harvest and consume the fruits of that harvest – in excess of this amount on their "willingness" to also take in toxicants at levels that have been deemed hazardous and unacceptable by these agencies.[319] That is, once tribal members eat more than twelve fish meals a year, they do so at their peril. I have argued elsewhere that risk avoidance is a misconceived regulatory response as a general matter; fish consumption advisories are not the answer. But in the tribal context, it is not merely a matter of being good or bad policy. Tribes reserved a right to take fish – fish fit for human consumption – not a right to be faced with a false "choice" of consuming fish with a stiff dose of carcinogens or curtailing their fish consumption and all that this would mean.

The fish consumption rate is an input to a method – quantitative risk assessment – used to determine the future state of the aquatic environment and all its components. The output of the method is a determination of the level of contaminants we will permit to be released to or remain in our waters and sediments. We could assess (and some commenters would have us assess) exposure on a bite-by-bite basis –

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any certainty or precision by the state defendants, it is incumbent upon such defendants to take all appropriate steps within their actual abilities to assure as nearly as possible an equal sharing of the opportunity for treaty and non-treaty fishermen to harvest every species of fish," and setting forth method for determining each group's "harvestable portions" accordingly).

[319] Recall that a woman consuming walleye from the Umatilla River at contemporary levels documented by the CRITFC survey (i.e., at 389 g/day) is exposed to methylmercury at a level nearly ten times EPA's "reference dose," that is, the level it has deemed safe for humans. *See* discussion, *supra* note 117 and accompanying text.

ascertaining precisely how much of which species, containing which contaminants with which bioaccumulation factors people currently consume – but the FCR, like other exposure parameters, is merely an input. It allows us to reach the end of setting an environmental standard, but it is not an end in itself. Thus, the FCR and other exposure parameters can be used to measure (ever more precisely) present practice, but there is a separate question whether present practice is representative of future practice. Given that risk-based standards determine future conditions for our waters, standards founded on present practice *in fact will be* predictive of future practice. That is, they will set the ceiling for safe consumption for the future. If the FCR is too low, if it is diluted by applying a diet fraction, if it is reduced by excluding certain species (including salmon) – if any or all of these devices are enlisted – the future health of our aquatic ecosystems will be limited accordingly. Again, whether this is an appropriate approach for some place where tribal fishing rights are not affected, it is not appropriate here. For the fishing tribes, the rights to use the fishery resource that they reserved constitutes the appropriate "baseline,"[320] and suggests the environmental conditions necessary to support that baseline. An unsuppressed tribal FCR is a way to accomplish this, the input that, along with other appropriate assumptions, allows one to derive environmental standards that ensure future conditions equivalent to those reserved. Assumptions in the other direction, conversely, guarantee that future conditions will be degraded relative to this baseline, and allow future settlers, with their PCBs and PAHs, to crowd the Indians out of the meaningful exercise of their fishing rights.

The implications of tribes' treaty-secured rights for some of the approaches and arguments encountered in the Pacific Northwest are explored in greater detail in the following three subsections.

[320] The term "baseline" is used here as Harper, et al. use the term to refer to how resources were used before degradation and contamination and how they "will be used again in fully traditional ways after cleanup and restoration." *See* Harper, et al., *Subsistence Exposure Scenarios*, *supra* note 152 and accompanying text.

1. Asking the Wrong Question

As the tribes have argued, it is tribes' unsuppressed, historical or "heritage" practices and fish consumption rates that they reserved in the treaties and other agreements. Yet state and federal agencies' focus on contemporary, suppressed consumption rates tethers tribal members to practices that reflect a legacy of non-tribal governments' actions in contravention of the treaties. As noted above, consumption rates derived from studies of present consumption capture a snapshot of practices that have been shaped by intimidation, denial of access to fishing places, depletion and contamination of fishery resource. Environmental standards set by reference to suppressed rates will ensure aquatic environments that in the future will support no better than suppressed rates.

Thus industry commenters miss the mark when they suggest that tribal members' current consumption and other practices necessarily impose a limit on their future practices. Boeing, for example, takes Ecology to task for failing to indicate the portion of tribal populations that "live on or near reservations" or that "live lifestyles comparable to the subsistence lifestyles described in some of the published surveys."[321] Boeing argues that this information is relevant because "[i]t seems likely that American Indians and Alaskan natives who live away from reservations may eat a larger proportion of fish that is not locally raised or harvested, particularly if they live in urban areas."[322] Having argued that non-locally raised or harvested fish should be excluded from Ecology's FCR, the implications of this information are clear.[323] But the point is not to zoom in ever more tightly on individual tribal members' practices as revealed by a contemporary snapshot. The point, in view of the treaties, is to ask: to what practices are tribes entitled in the future – the future provided for by tribal negotiators at treaty time?

We ask the wrong question when we gauge environmental standards that determine the future health of our waters to practices constrained by the present, contaminated state of our waters. The future

[321] Boeing, FCR TSD 2.0 Comments, *supra* note 222, at 13.
[322] *Id.*
[323] *Id.* at 4-6.

condition of Washington waters, indeed, is now determined by reference to the amount of fish people across the nation ate in 1973-74 – when the lakes were dead, the rivers were on fire, the fish depleted and contaminated, and tribal harvest still under open attack. Because we set risk-based standards based on assumptions about exposure measured in this bleak period, we aim for a future that is not improved. That is, we impose a limit on the health of our waters – and a ceiling on the safe consumption of fish from those waters – that reflects not a level of fish intake that is healthful or to which tribes are entitled, but a level that is simply equal to present, constrained practice.

Ecology has, to its credit, acknowledged the problem of suppression in the tribal context, but it has not discussed how it might account for suppression effects in practice.[324] The relevant EPA guidance, it should be noted, does not preclude a future-oriented exposure assessment.[325] Rather, it observes that such assessments may be past-, present-, or future-oriented. Given the CWA's restorative aspirations, it makes sense that exposure analysis is oriented toward a future in which aquatic ecosystems are healthy and whole. And, given the tribal context, it is arguable that exposure analysis not only may but must be oriented toward a future in which the fish resource is robust and tribal members may exercise fully their right to take fish.

Tribes and tribal researchers are leading the way in operationalizing these insights and reframing the question to reflect more closely the future secured by the treaties. Tribes have conducted fish consumption surveys that seek to identify and address suppression effects. For example, studies by the Suquamish, Swinomish, and Lummi

[324] Ecology, FCR TSD, *supra* note 149, at 96, 107-08.
[325] EPA, EXPOSURE ASSESSMENT GUIDELINES, *supra* note 143, at 72, 74-75 (describing among the uses of exposure scenarios in risk-based environmental standard setting, "exposure scenarios can often help risk managers make estimates of the potential impact of possible control actions. This is usually done by changing the assumptions in the exposure scenario to the conditions as they would exist after the contemplated action is implemented, and reassessing the exposure and risk" and pointing out that "if the [exposure] scenario being evaluated is a possible future use or post-control scenario, an assessor must make assumptions in order to estimate what the [exposure] distribution would look like … if the possible future use becomes a reality.").

tribes have all sought to document the forces of suppression.[326] The Lummi Nation, further, in a survey published in 2012, measured consumption as of 1985, which was "the peak fish harvest year for the Lummi Nation in recent history."[327] Thus, "[w]hile not at Treaty-time levels, seafood abundance and availability was less of a limiting factor for seafood consumption during 1985 than in 2012. Consequently, the seafood consumption rate would be less suppressed due to environmental degradation or the lack of available fish."[328] The study documented an average consumption rate at 383 g/day, a 90th percentile consumption rate at 800 g/day, and a 95th percentile consumption rate at 918 g/day.[329] The study notes that it expects the results of this survey to inform an update of the Lummi Nation's water quality standards, as well as Washington's water quality and sediment management standards, which affect the waters of the Lummi Nation's usual and accustomed fishing areas and thus the health of tribal members.[330]

Tribes and tribal researchers have also developed methods that have reframed exposure assessments to focus on practices that are healthful, that are in accordance with historical or heritage practices, and to which tribes are entitled under the treaties, and have adopted environmental standards founded upon these methods. For example, as noted above, Barbara Harper, Stuart Harris, Darren Ranco, Anna Harding, and their colleagues have outlined a method for developing tribal exposure scenarios that consider exposure in view of a healthful future, rather than a degraded present.[331] Exposure assumptions to be used in

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[326] *See, e.g.,* SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY, *supra* note 13, at 53-54; Donatuto & Harper, *supra* note 14; LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 15, at 1-2, 11-14.

[327] LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 15, at 1.

[328] *Id.* This baseline year was chosen for study as well because it would permit reliable estimates of fish consumption, given the availability of data on seafood abundance, as fishery data for 1985 are "well documented," and given that meaningful data "could be elicited in recall studies that reach back 25 years." *Id.* at 1, 11-14.

[329] *Id.* at 2.

[330] *Id.* at 7.

[331] Harper, et al., *Subsistence Exposure Scenarios*, *supra* note 152; *see also* BARBARA HARPER & DARREN RANCO, WABANAKI TRADITIONAL CULTURAL LIFEWAYS EXPOSURE SCENARIO (2009), BARBARA L. HARPER, ET AL., TRADITIONAL TRIBAL SUBSISTENCE EXPOSURE SCENARIO AND RISK ASSESSMENT GUIDANCE MANUAL (2007).

risk-based standards follow from practices in accord with this scenario. The Spokane Tribe has adopted WQS that use a FCR of 865 g/day, supported by a tribal exposure scenario developed according to such methods.[332]

Tribes have also worked to develop alternatives to risk-based approaches to environmental standard-setting. The Swinomish tribe, for example, is leading an effort to elaborate a "health and well-being"-based approach.[333]

2. Cabining Treaty-Secured Rights

Relatedly, arguments that attempt to pin tribal practice to currently available species or currently accessible or suitable habitat are a move in the opposite direction to the treaty promises. Arguments for a diet fraction and arguments for a site use factor take as a baseline currently constrained practice and operate to ensure a future in which present constraints will serve as the measure of our waters' future ability to support the fish. Thus, a host of the arguments canvassed in the preceding Part have no place in Ecology's deliberations.

First, while tribes at present obtain most or all of their fish from local sources, it is crucial to note that at treaty time, Indian people obtained *all* of their fish from local waters. And tribes' reserved rights under the treaties and other legal agreements entitle them to do so in perpetuity. So even if tribal members at the time of a contemporary survey obtained 25% of their fish intake from non-local sources, it would not be appropriate to apply a diet fraction of 0.75 to the FCR and thereby place a limit on future consumption of locally harvested fish at more robust levels. As the Suquamish, Swinomish, and Lummi surveys document, many tribal members *would like to consume more fish and shellfish*, were these resources not depleted or contaminated, were they better able to access

[332] Spokane Tribe of Indians, Surface Water Quality Standards, RESOLUTION 2010-173 at § 6(6) (2010) ("aquatic organism consumption rate" of 865 g/day).
[333] Swinomish Indian Tribal Community, "Key Indicators of Tribal Human Health in Relation to the Salish Sea," Prepared in fulfillment to Swinomish Action Agenda Goal 4, Objective 1 for EPA grant #981-90-03-00 in coordination with the Puget Sound Partnership (2010).

and harvest the resources, were they not still recovering from the legacy of illegal restrictions on their fishing and confiscations of their boats and gear. This point was echoed by Judge Martinez in the March 2013 culverts decision. Tribes envision and have worked toward a future in which the ecosystems that support fish are restored to health, and the fish resource is returned to abundance. Thus, even if tribal members currently obtain less than 100% of their diet from regulated waters, they have not only the potential, but also the expressed desire, intention, and right to do so in the future. To apply a diet fraction is to assume and ensure that future generations will not be able to look to local waters for their fish. This is not the future that tribal negotiators understood themselves to be securing.

Second, tribes' rights are not limited to certain mixes of species consumed historically or at present: these rights encompass all species of fish. So, while a survey of contemporary tribal fish consumption practices may document a particular proportion of species consumed (e.g., in the hypothetical example above, of the 75 g/day of locally-harvested fish, 50 g/day salmon and 25 g/day other finfish and shellfish), tribal members are not in any sense bound to consume this mix of species in the future. Rather, to use the terminology of EPA Region X, tribal members are free to undertake "resource switching."[334] Yet industry has called for – and Ecology's draft SMS guidance appears to anticipate -- slicing and dicing, even down to the level of species-specific fish consumption rates, based on contemporary consumption patterns. This approach is at odds with tribes' rights to determine the mix of species that will comprise their dietary intake in the future. A dearth of a particular species today ought not be used to compromise an aquatic environment's ability to support that species or other species tomorrow.

Third, even in cases where an individual's fish intake can only partially be supported by productivity (current and future) of resources affected by a contaminated water body or site, the application of a diet fraction is problematic. Again, consider a hypothetical tribal member whose total FCR is 100 g/day. Assume that he obtains (or would obtain)

[334] EPA REGION X, FRAMEWORK, *supra* note 240, at 9.

all of his fish from local sources, within his tribe's adjudicated U&A area. Assume further that Site A is a small lake that, even if pristine, is only likely to support productivity of fish sufficient to supply 50 g/day. Application of the diet fraction concept would result in environmental standards (e.g., a sediment cleanup level) that permitted fish at Site A to harbor twice the level of toxic contaminants, on the theory that this individual would only ever obtain half of his fish diet from the lake at Site A. But this calculus does not consider the remaining 50 g/day of fish comprising this man's diet. Suppose he obtains it from a nearby bay, Site B, which is also within his tribe's U&A area. The calculus for Site A means either that Site B must be cleaned up to a level twice as protective as would otherwise be required (presumably, simply because Site B is batting second) or, if the same logic is applied to Site B, that our hypothetical individual would be left exposed to *twice* the level of contaminants that would otherwise be healthful. It is telling that Ecology's proposed SMS guidance mentions only that the diet fraction may be "reduced" (as to Site A), but does not mention that it may be increased (as to Site B). And, it nowhere provides for consideration of aggregate risk. Moreover, the aggregate effect of applying a diet fraction and/or a site use factor at multiple sites that provide habitat for fish and shellfish at their various lifestages may lead to depletion and contamination of resources to which tribes have treaty-secured and other rights. Thus, for example, while Dungeness crab or pacific herring or salmon may be present at or affected by contaminants from Site A at one point in their respective lifecycles, they may be present at or affected by Site B at another point in their development. If the calculation of risk at each site excludes or steeply discounts its contribution to the contaminants harbored by the various species, the resulting standards will be overly permissive of toxic contamination.

3. Delaying Standards, Undermining Rights

If the watersheds are degraded, so that the fish are too few or too contaminated for tribal people to harvest and consume, tribes' treaty-secured rights to take fish are eviscerated as surely as if tribal fishers were hauled from their boats or tribal harvesters barricaded from the beaches. Under the CWA and other laws, state and federal environmental

agencies set the terms for permissible degradation. To delay enacting standards that limit permissible toxicants in our waters to healthful amounts is, of course, to allow harmful levels to remain. The contaminant levels, for example, in the Columbia River Basin currently burden tribal consumption (at even contemporary rates) with several orders of magnitude greater cancer risk than is generally deemed acceptable or several times the levels of methylmercury thought to be "safe" from neurodevelopmental damage. Such inaction and delay by the agencies charged with addressing these habitat- and resource-degrading conditions is analogous to the inaction and delay that the culverts court found problematic under the treaties.

Yet, the presence of treaty-secured and other tribal rights seems not to have lit a fire under the EPA or the states in the Pacific Northwest. Instead, the states and EPA have failed to invoke their authorities, have reneged on executive and other commitments, and have even ignored mandatory statutory and other obligations, as canvassed in the preceding Part. The states and EPA have "danced" their way around the CWA.[335] Whether by issuing final WQS that cannot be approved (and then going back to the drawing board), or by rehashing the supporting science, or by repeatedly "kicking the can down the road,"[336] states have created – and EPA has sanctioned – a blueprint for evading the CWA's benchmarks and deadlines for water quality standards. The EPA's unwillingness to exercise the hammer of its own 303(c)(4) authority similarly deserves reproach, not only for its substantive effect on the ground but also for the message that this cavalier treatment of its obligation to uphold the purpose of the CWA sends to the states. This provision is no dead letter: EPA has acted under this obligation in the past in the face of states' (including

[335] The reference is to EPA Regional Administrator Dennis McLerran's description of the process for updating states' WQS in the Pacific Northwest, quoted in Columbia Basin Fish & Wildlife News Bulletin, *supra* note 233, and discussed in the accompanying text.
[336] Letter from M. Brian Cladoosby, Chairman, Swinomish Indian Tribal Community, *supra* note 304 (expressing "deep disappointment" with Ecology's "abrupt change of course [as announced in July, 2012] which effectively stalls all progress," including years of research and discussion, and chiding Ecology for "kick[ing] the can down the road by adding yet another lengthy planning process" before the FCR is updated in the state's water quality and sediments rules).

Washington's) recalcitrance, by adopting the National Toxics Rule.[337] And EPA has options at hand. As the Kalispel tribe recently pointed out in the context of Idaho's ongoing efforts to revise its WQS, as of 2000 the EPA could easily have enacted WQS using its national subsistence default FCR of 142.4 g/day to serve as a placeholder in the interim while states here dithered.[338] EPA's posture in the Pacific Northwest is particularly troubling given its obligations as federal trustee.

In short, it is difficult to imagine a clearer confluence of statutory directive, scientific support, and treaty-based duty. Yet the months and years go by, while state agencies and EPA stand by, and the fish resource is allowed to be rendered an unfit source of food.

Given proper consideration, tribes' treaty-secured and other rights have implications for the various arguments and approaches that have emerged in the Pacific Northwest. If these rights are to be honored and healthy fisheries restored, the regulatory question ultimately needs to be reframed. If these rights are not to be cabined, arguments for diet fractions and species exclusions ought to be eliminated from the table as non-starters. If these rights are not to be eviscerated through inaction, state and federal agencies at least cannot ignore the CWA's deadlines and authorities. While there are science and policy questions to be grappled with, the answers cannot be permitted to eviscerate tribes' treaty rights through the back door. Here, it will be important to recognize the

[337] *See, e.g.,* EPA, National Toxics Rule, *supra* note 18, 57 Fed. Reg. at 60,852 ("The CWA allows some flexibility and differences among States in their adopted and approved water quality standards, but it was not designed to reward inaction …The CWA authorizes EPA to promulgate standards where necessary to meet the requirements of the Act. Where States have not satisfied the CWA requirement to adopt water quality standards for toxic pollutants, which was re-emphasized by Congress in 1987, it is imperative that EPA act.").

[338] Letter from Deane Osterman, Executive Director, Kalispel Natural Resources Department, to Mary Lou Soscia, Columbia River Coordinator, U.S. Environmental Protection Agency (Jan. 9, 2013) (setting forth concerns with further delay that will result from Idaho's process, which includes conducting a new fish consumption survey, and suggesting that EPA has had a ready solution in the form of a placeholder at the subsistence default of 142.4 g/day since 2000). This is an approach, note, that some tribes have taken. The Lummi Nation, for example, has employed the 142.4 g/day default FCR while working on the fish consumption survey that will support more protective standards. See *supra* note 15 and accompanying text.

legal status of the various instructions that inform agencies' work. Guidance, for example, is merely guidance. As the EPA states at the outset of its *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*, this guidance "does not impose legally-binding requirements … and may not apply to a particular situation based upon the circumstances."[339] The treaties, by contrast, are the supreme law of the land.

B. Taking Seriously Our Obligations as Successors to the Treaties

We are all successors to the treaties. As Billy Frank, Jr., has pointed out, we have had no trouble in honoring some facets of the treaty promises – namely, the United States and successors on its side have retained the vast ceded territory as a home for white settlement.[340] But we should also ask how we can live up to *all* of our duties under the treaties, given our respective roles and authorities. The answers to this question should be crafted together, with tribal governments and non-tribal governments engaged side by side. Rob Williams has explained that the treaties, from the perspectives of Native peoples, are revered as sovereign compacts of alliance, as charters for respectful co-existence on this continent.[341] This understanding might usefully inform environmental decision making in the tribal context, where tribal and non-tribal agencies' work affects our shared aquatic ecosystems. Given that so many of the decisions impacting the vitality of the treaty resource are today in the

[339] EPA, AWQC METHODOLOGY, *supra* note 141, at ii.
[340] NWIFC, TREATY RIGHTS AT RISK, *supra* note 85, at 6 (quoting Billy Frank, Jr., Chairman, Northwest Indian Fisheries Commission: "We kept our word when we ceded all of western Washington to the United States, and we expect the United States to keep its word"); *see also* Billy Frank, Jr., Northwest Indian Fisheries Commission, "Being Frank: Time Moves On, But Treaties Remain," (Mar. 22, 2007), *available at* http://nwifc.org/2007/03/being-frank-time-moves-on-but-treaties-remain/ (last visited Apr. 20, 2013) ("People forget that non-Indians in western Washington have treaty rights, too. Treaties opened the door to statehood. Without them, non-Indians would have no legal right to buy property, build homes or even operate businesses on the millions of acres tribes ceded to the federal government").
[341] ROBERT A. WILLIAMS, JR., LINKING ARMS TOGETHER: AMERICAN INDIAN TREATY VISIONS OF LAW AND PEACE, 1600-1800 (1997).

hands of non-tribal governments, there is a particular onus on them to take more seriously their obligations as successors to the treaty promises.

While the states and EPA should thus work together with their tribal partners to chart a path that honors the treaties and other agreements, some lessons might be gleaned from experience to date in the Pacific Northwest.

First, deliberations should be structured in a manner that recognizes tribes' unique political and legal status and rights. This is a matter of both form (i.e., process) and substance. Tribes' governmental status is now frequently acknowledged by state and federal agencies, and this has been true for the states and EPA in the Pacific Northwest. Yet in many ways, tribes' rights and the particular obligations that flow from these rights often do not *structure* the dialogue; rather, when tribal fishing rights are mentioned by the agencies, it may be as an afterword or a subsidiary consideration. Thus, for example, Ecology recently commenced a "WQS Policy Forum," which is the series of public meetings at which science, policy, and legal issues surrounding its revisions to its WQS and the FCR will be debated.[342] This process, recall, is now the first place in which an updated FCR will be considered for official adoption by rule in Washington. According to its draft agenda, the issue of "tribal treaty rights" is not slated for discussion until the seventh (and final) meeting, where it is one among several topics.[343] Yet important questions on which the existence of tribal treaty rights bear will have been discussed in the six prior meetings.[344] The tribes, as noted above, opted to decline participation in this Forum and to engage further discussions with Ecology on a government-to-government basis. But Ecology is not thereby relieved of a need to structure appropriately the dialogue among

[342] Washington Department of Ecology, "Water Quality Policy Forum and Delegate's [sic] Table," *available at* http://www.ecy.wa.gov/programs/wq/swqs/hhcpolicyforum.html (last visited Apr. 20, 2013).
[343] Washington Department of Ecology, *Surface Water Quality Standards Delegate's [sic] Table and Policy Forum: Draft Agendas for Future Policy Forums* (undated document), *available at* http://www.ecy.wa.gov/programs/wq/swqs/PolicyForumOverview.pdf (last visited Apr. 20, 2013).
[344] *Id.* (listing, for example, risk levels; exposure assumptions including exposure duration; and sources of fish and contaminants (i.e., considerations relevant to application of a diet fraction and/or site use factor)).

stakeholders and the public. By contrast, the second attempt at revising Oregon's FCR, which produced WQS that were not only approvable by EPA but that rest on the most protective FCR (175 g/day) of any state, was framed by a process with a tri-governmental lead, namely, the Confederated Tribes of the Umatilla Indian Reservation, the EPA, and ODEQ. Tribes' governmental status and tribes' rights and interests are more likely to be properly understood and considered when deliberations are structured appropriately.

Second, the delay that has been permitted on the states' and EPA's watch is unconscionable and unnecessary. Both the states and EPA have tools at their disposal to avoid such delay. It is, plain and simple, a matter of commitment. Were the states and EPA to scrutinize their respective authorities from a posture of a successor seeking to uphold their obligations under the treaties, they would find ample muscle to flex. EPA, as a federal trustee and congressionally appointed custodian of the CWA, has a particular obligation to be active rather than passive, to be creative rather than flat-footed.

Third, non-starters might usefully be identified and removed from the table. Arguments that may be plausible elsewhere but are untenable given the tribal context could be identified as such early on, and placed to the side. Arguments, for example, for applying a diet fraction to consumption rates derived from contemporary surveys or other devices that are inappropriate when tribes' treaty-secured rights to take fish are at stake, could be removed from serious contention. The states and EPA might work with their tribal partners to engage the treaties and courts' interpretations of the treaties, and determine their implications for the various technical arguments likely to be encountered in crafting water quality standards. This would require legal and technical expertise; it could then involve broader educative efforts, so that all participants in the process understood the implications of tribal rights for arguments that might otherwise be entertained. This effort might include placing a figurative asterisk by those agency determinations that derived from a pre-culverts era in which the contours of tribal rights may not have been adequately appreciated, for example, Washington MTCA's default

application of a diet fraction of 0.5, so that these determinations' precedential reach is properly limited. Such an approach would not only prevent inappropriate arguments from nonetheless carrying the day, but also make the process more efficient, by alleviating delay and avoiding the expenditure of unnecessary resources to counter on the merits what are, after all, non-starters.

Fourth, agencies might do more to ensure "clean science." This point is in many respects a matter of good governance, and so not unique to the tribal context. However, to the extent that corrosive broadsides are directed at tribally conducted science, EPA, as federal trustee, should be particularly vigilant. Moreover, to the extent that a failure to correct distortions and mischaracterizations permits analyses that undermine tribal rights, each of the agencies involved ought to be more active in setting the record straight. EPA in particular, can assume a leadership role envisioned for it by Congress in ensuring science-based decision making under the CWA. EPA might, for example, have been more active in issuing explicit statements regarding the scientific defensibility of the various consumption surveys, thereby allowing states and tribes to direct their energies to the remaining questions.[345] EPA and the states might also more actively correct inaccuracies and distortions submitted as part of public debate, rather than simply passively repeating all arguments that they "hear" in an effort to appear "responsive." And all agencies might do more to clarify and model appropriate usage of key terms (e.g., "conservative" versus "protective" responses to various features of the data; "marine" versus "open ocean" waters).[346] Again, such steps would

[345] Recall that EPA had already embraced the tribal studies involved, for example, in its Exposure Factors Handbook. *See* discussion *supra* note 239 and accompanying text. But more could be done to reiterate earlier findings of scientific defensibility. States' and tribes' inquiries would thus be appropriately limited to the narrower question of whether these (scientifically defensible) studies were appropriate for the populations affected by their standards.

[346] *See, e.g.,* Ted Sturdevant, Director, Washington State Department of Ecology, Open Letter to Interested Parties (Jan. 15, 2013) ("Much concern has been expressed that using higher fish consumption rates in combination with other conservative public policy choices about exposure and risk could create an impossible burden for regulated dischargers. While these public policy choices have not been made, this is a valid concern.").

also avoid unnecessary delay, occasioned by demands for additional, "sound" science premised on spurious characterizations of the existing science.

Fifth, agencies, particularly EPA, might enlarge their support for efforts to ask the right question, i.e., to take a step back and recognize the potential for water quality standards to impair the future exercise of tribal rights to take fish. Tribes have often been leaders here, and EPA has frequently been among those providing funding and technical review. Efforts might nonetheless be enlarged to reconsider the orientation of exposure assessment, so that standards are set based not on consumption practices in our current, contaminated world, but in a future, resilient world – one in which healthy aquatic ecosystems support robust fisheries fit for humans to eat.

In all of this, non-tribal governments should work with tribal governments to imagine how the CWA and other legal tools can be used as a means to effectuate the treaty promises rather than to undermine them.

CONCLUSION

As state and federal agencies have sought to pursue fishable waters in the Pacific Northwest, they have enlisted risk-based methods to set water quality standards. The genius, from the perspective of those seeking to avoid or forestall regulation, of filtering our restorative efforts through a risk-based approach is illustrated by experience here. The method's demand for quantified inputs affords ample opportunity to call for increasingly fine-grained data in the name of "sound science" – to the point where the ideal of tracing each forkful of contaminated fish from source to mouth is achieved. All of this data, of course, takes time to gather. And all of this data may permit agencies to measure ever more precisely humans' current practices and exposures – but distract them from the more germane question of envisioning future practices in a less contaminated and more resilient world. Risk-based methods also manage the neat trick of removing from view exactly *who* is affected by agencies' decisions. By speaking in abstractions – setting standards to protect the

90th percentile of a particular population to a level of 1 in 1,000,000 risk – agencies and other participants in the process can more easily ignore the import of the choices they make. The language of risk can obscure the fact that, in the Pacific Northwest, these choices impact tribal people and treaty-secured rights.

Agencies' risk-based methods, of course, are just means to an end; they need not eclipse the larger goal nor downplay the responsibilities that ought to frame our efforts. Instead, in the words of Doug Kysar, a "deciding agent would always remain cognizant of the unavoidable burden of discretion and responsibility that lends a tragic cast to capital punishment, environmental law, and other areas of regulated violence."[347]

In the tribal context that permeates environmental decisions in the Pacific Northwest, we all have a responsibility as successors to the treaties. Our choices – cast as they may be in the language of fish consumption rates and exposure duration – determine whether aquatic environments will support or undermine the obligations we undertook to secure tribes' "right to take fish." If we come up short, we indeed permit regulated violence.

The treaties and other agreements between the tribes and the United States are a source of responsibility – they bind us and they will bind our children in the years to come. We should do more to ask how the treaties can serve as a charter for the future – a future in which our waters support a fish resource that is again abundant and healthful, a future in which we keep the solemn promises that shaped this place.

[347] DOUGLAS A. KYSAR, REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY 58 (2010).