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No. 100112-6

SUPREME COURT OF THE STATE OF WASHINGTON

PROTECT ZANGLE COVE; COALITION TO PROTECT
PUGET SOUND HABITAT; AND WILD FISH
CONSERVANCY,
Petitioners,

v.

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE;
JOE STOHR; and PACIFIC NORTHWEST AQUACULTURE,
LLC,
Respondents, and

TAYLOR SHELLFISH COMPANY, INC.,
Respondent-Intervenor.

PACIFIC NORTHWEST AQUACULTURE, LLC AND
TAYLOR SHELLFISH COMPANY, INC.'S ANSWER TO
AMICUS CURIAE MEMORANDUM OF CENTER FOR
FOOD SAFETY, CENTER FOR BIOLOGICAL DIVERSITY,
AND FRIENDS OF THE EARTH IN SUPPORT OF
PETITION FOR REVIEW

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I. INTRODUCTION

The amicus curiae memorandum submitted by Center for Food Safety, Center for Biological Diversity, and Friends of the Earth (collectively, “CFS”) does not provide any support for this Court to accept review under the criteria set forth in RAP 13.4(b).

CFS’s memorandum consists of highly contested factual assertions that are either wholly unsupported or based on extra-record evidence. As such, the memorandum should be disregarded in its entirety. But even if the Court considers the memorandum, CFS’ arguments actually reinforce that aquaculture is already subject to numerous environmental laws and regulatory requirements apart from the Hydraulic Code, chapter 77.55 RCW, and that CFS and other entities frequently challenge shellfish aquaculture permitting decisions when they believe the operations are inconsistent with environmental protections. These other laws and regulations provide extensive protections for fish life, which is the exclusive focus for the Hydraulic Code.

Ultimately, CFS provides no information or analysis demonstrating that shellfish aquaculture is expanding or that operations as currently regulated do not provide full protection for fish life.

II. ARGUMENT

A. CFS's Memorandum Should Be Stricken Because It Relies on Unsupported or Extra-Record Factual Assertions.

Amicus curiae briefs must contain references to the record for factual assertions. RAP 10.3(a)(5), (e). CFS's memorandum violates this requirement. It does not contain a single reference to the record, and many of the factual assertions in the memorandum are left entirely unsupported.

To the extent CFS attempts to identify support for factual assertions, the memorandum cites extra-record documents, including papers that discuss aquaculture or fishery activities in the Atlantic and Gulf coasts that are not practiced in Washington State. *E.g.*, CFS Memo. at 12 n.24. CFS could have attempted to properly rely on these documents by requesting the Court to take

judicial notice of them. ER 201. But CFS failed to do so, instead attempting to cast the documents as “other authorities.” CFS Memo. at iii-vii.

Even if judicial notice was properly requested, it would not be appropriate. The “factual” assertions that CFS relies most heavily on contend that shellfish aquaculture has adverse environmental impacts. Judicial notice is only appropriate for facts that are not subject to reasonable dispute, in that they are either (1) generally known within the territorial jurisdiction of the trial court or (2) capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned. ER 201. Pacific Northwest Aquaculture, LLC (“PNA”) and Taylor Shellfish Company, Inc. strongly dispute these assertions and contend that shellfish aquaculture, as regulated, does not have inappropriate environmental impacts, a position that is fully supported by the facts that are actually contained in the record before this Court. PNA and Taylor Answer at 22-26.

CFS's memorandum violates the court's rules, as it consists of factual assertions that are completely unsupported or supported only by extra-record evidence. RAP 10.3(a)(5), (e). Accordingly, the Court should disregard the memorandum. *Nelson v. McGoldrick*, 127 Wn.2d 124, 141, 896 P.2d 1258 (1995) (striking factual assertions that are unsupported or based on extra-record documents).

B. CFS's Specific Claims of Environmental Harm from Shellfish Aquaculture Lack Merit.

Even if the Court considers CFS's memorandum, CFS fails to demonstrate that the petition for review should be accepted under the criteria set forth in RAP 13.4(b). While CFS does not cite or discuss RAP 13.4(b), they appear to offer the same argument as Petitioners that the Court should accept review because this case involves an issue of substantial importance regarding the environmental impacts of shellfish aquaculture. Pet. at 4-15, 18; CFS Memo. None of CFS' claims of environmental impacts are supported by the information before this Court.

1. Plastics

CFS offers repetitious argument, contravening RAP 10.3(e), that plastics associated with shellfish aquaculture have harmful effects. Pet. at 6-7; CFS Memo. at 2-4. With one exception, none of the documents that CFS relies upon address the environmental interactions of shellfish farming as it is practiced and regulated in Washington. CFS Memo. at 2-4. As such, CFS's use of these documents to characterize shellfish farming in Washington is misleading. For example, CFS cites a National Oceanic and Atmospheric Administration ("NOAA") document that associates whale entanglements with hanging lines or detached gear, but this document is related to fishing activities, not aquaculture. CFS Memo. at 4 n.5. In contrast, NOAA has classified Washington shellfish aquaculture as a Category III activity (lowest risk classification) with no documented instances of marine mammal mortality or injury. List of Fisheries for 2021, 86 Fed. Reg. 3028, 3034 (Jan. 14, 2021).

The one relevant document that CFS cites is a biological opinion developed by the National Marine Fisheries Service (“NMFS”) as part of a programmatic Endangered Species Act (“ESA”) and Essential Fish Habitat (“EFH”) consultation on shellfish farming activities in Washington (“Programmatic Consultation”). CFS Memo at 4 n.2; PNA and Taylor Answer at 22-23. The Programmatic Consultation exhaustively analyzed the use of plastics and imposed numerous conditions to ensure farms avoid and minimize potential impacts associated with plastics, including use of appropriate materials that do not degrade, securing gear, monitoring gear, and conducting regular patrols to collect any loose gear. CP 1034-38.

Further, the record demonstrates that Petitioners’ and CFS’s claims of adverse impacts from plastic use were extensively analyzed and rejected in the context of PNA’s farm—the only farm that was challenged by Petitioners. CP 980, 982-83, 987-90, 996, 998-99, 1007. CFS provides no information or analysis demonstrating that, as conditioned through the

Programmatic Consultation and individual project review, the use of plastics negatively impacts fish life, nor does CFS articulate any additional conditions that would be imposed through Hydraulic Code permitting to further protect fish life. CFS Memo. at 2-4.

2. Pesticides

CFS next complains that some shellfish farms have historically used insecticides to help control shrimp that damage crops, but CFS acknowledges no such pesticides are currently used in shellfish farming. CFS Memo. at 5-8. CFS also expresses concern that the Washington State Department of Ecology has issued a permit authorizing the use of an herbicide to control a state-listed noxious weed, contending this herbicide may harm native eelgrass. *Id.* at 7-8. CFS fails to disclose that the Washington State Pollution Control Hearings Board extensively analyzed and rejected this claim in an appeal proceeding after Ecology first issued the permit. *Coal. to Protect Puget Sound Habitat v. Dep't of Ecology*, Pollution Control Hearings Bd. No.

14-047 (Findings of Fact, Conclusions of Law, and Order, Jan. 11, 2016) (Appendix A). Regardless, this issue has no bearing on this proceeding, as Ecology regulates pesticide use through its permitting program; WDFW does not regulate pesticide use through the Hydraulic Code. *Id.*; RCW 77.55.011(11) (definition of hydraulic project); RCW 77.55.021.

3. Intertidal Areas

CFS argues shellfish farming activities “destroy seagrass.” CFS Memo. at 10. The only support that CFS offers for this position is *Coal. to Protect Puget Sound Habitat v. U.S. Army Corps. of Engr’s*, 417 F. Supp. 3d 1354, 1359 (W.D. Wash. 2019). But this case did not hold that shellfish farming, as regulated, destroys seagrass. Rather, that decision notes that the U.S. Army Corps of Engineers recognized farming activities can have “some” impacts to eelgrass; the court held the Corps did not adequately evaluate those impacts when reissuing Nationwide Permit (“NWP”) 48 in 2017. *Id.*

CFS also contends shellfish farming activities disturb the seabed, but with one exception, the documents CFS cites focus on shipping and construction activities or shellfish farming in other regions that use different methods than those used in Washington. CFS Memo. at 12-13 n. 23 (hydraulic dredge harvesting in the Atlantic and Gulf coasts), n. 24 (hydraulic clam harvesting; noise associated with shipping and construction activities), n.26 (hydraulic dredging in Iceland). *Contrast with* CP 323-45 (describing shellfish farming activities in Washington). CFS provides no information or analysis that these documents are relevant to shellfish aquaculture as regulated and practiced in Washington.

The one document cited by CFS that is relevant to shellfish farming in Washington is NMFS's Programmatic Consultation biological opinion. CFS Memo. at 13 n.25. The Programmatic Consultation, which was not challenged or addressed in detail in the *Coal. to Protect Puget Sound Habitat* decision, extensively evaluated shellfish interactions with eelgrass. Programmatic

Consultation documents recognize shellfish farming activities cause some change to the seabed, but these changes are limited in duration and extent, and in some cases they are beneficial. CP 346-49 (areas with mature oysters may have a comparable level of species diversity and abundance to eelgrass habitat, and farming equipment provides structured habitat that benefits certain fish and invertebrate species). The Programmatic Consultation resulted in over 30 conservation measures to ensure farming activities avoid and minimize potential impacts to ESA-listed species and EFH, and CFS fails to demonstrate that shellfish aquaculture will adversely impact fish in light of these measures. CP 1034-38.

C. Numerous Laws and Regulatory Programs Address Potential Impacts to Fish Life from Shellfish Farming Activities.

The Hydraulic Code is exclusively focused on addressing potential impacts to fish life from hydraulic projects. RCW 77.55.021(7)(a). CFS mistakenly claims the Hydraulic Code is Washington's "central tool" for protecting fish life from shellfish

farming, CFS Memo. at 1, when the State has never relied on the Code for addressing the environmental interactions of shellfish farming. PNA and Taylor Answer at 19-22.

CFS admits that shellfish farming is regulated by many federal laws and permitting programs, including the Clean Water Act (“CWA”), the National Environmental Policy Act (“NEPA”), the Rivers and Harbors Act (“RHA”), and the ESA. CFS Memo. at 13-18. CFS’s argument that the CWA and NEPA do not protect aquatic species and habitat is contradicted by the very federal district court decision it cites as support for that claim. CFS Memo. at 14-16. First, the court in *Coal. to Protect Puget Sound Habitat* did not hold that shellfish farms as authorized and conditioned under NWP 48 have adverse impacts on fish life. PNA and Taylor Answer at 24. Perhaps more importantly, as part of its remedy decision, the court required shellfish farmers to submit applications for an individual or other existing Corp permit, reinforcing that shellfish farms will continue to remain closely scrutinized by the Corps and other

interested parties. *Coal. to Protect Puget Sound Habitat v. U.S. Army Corps. of Eng'rs*, 466 F. Supp. 3d 1217, 1227 (W.D. Wash. 2020).¹

CFS's criticism of regulatory reviews and permitting under the ESA and RHA fares no better. CFS notes that the Swinomish Indian Tribal Community has challenged NMFS's biological opinion for the Programmatic Consultation, but that litigation is still pending and no deficiency has been determined. CFS Memo. at 17. Similarly, that CFS intends to sue the Corps for failing to consult under the ESA before reissuing NWP 48 does not mean that the Corps has, in fact, failed to consult. *Id.* More importantly, CFS has failed to demonstrate that the conservation measures from the Programmatic Consultation, which are imposed on shellfish farms in Washington State, fail

¹ CFS complains that the Corps reissued NWP 48 again in 2021 and that this permit is inadequate but provides no specific analysis or information in support of this contention. CFS Memo. at 15.

to protect fish life, which is the sole focus of the Hydraulic Code. *Id.* at 16-17; CP 1034-38; RCW 77.55.021(7)(a).

CFS's contention that "[t]he RHA does not provide any permitting standards" is just wrong. CFS Memo at 18. RHA decisions are processed according to the Corps' permitting regulations, which contain numerous standards and requirements, including a public interest review that considers potential impacts to fish and wildlife. 33 C.F.R Part 320; 33 C.F.R. § 320.4(a)(1).

Finally, CFS ignores that there are extensive state and local laws and regulations that govern shellfish farming and provide protection for fish life, including the Shoreline Management Act, chapter 90.58 RCW, and the State Environmental Policy Act, chapter 43.21C RCW. PNA and Taylor Answer at 8-11. PNA's farm, which is the only farm challenged by Petitioners, underwent several years of review and includes numerous conditions to protect fish life. *Id.* at 12-14. The permitting history and records associated with this farm

demonstrate both the stringent regulatory process required for establishing a new farm as well as lack of impacts from shellfish aquaculture. *Id.* at 25.

III. CONCLUSION

CFS's memorandum fails to provide support for Petitioner's assertion that this case warrants discretionary review pursuant to RAP 13.4(b). For the reasons set forth above and in the answers to Petitioners's petition for review, PNA and Taylor Shellfish respectfully request that the Court deny review.

CERTIFICATE OF COMPLIANCE

Pursuant to RAP 18.17(b), I certify that this document contains 2,070 words, excluding the items exempted by RAP 18.17(b). This certification is made in reliance on the word count calculation of the word processing software used to prepare this document.

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Respectfully submitted this 12th day of November, 2021.

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CERTIFICATE OF SERVICE

I hereby certify that on November 12, 2021, I caused to be served a copy of the forgoing document to be delivered in the manner indicated below to the following persons at the following addresses:

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I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

EXECUTED at Seattle, Washington on November 12, 2021.

/s/ Tammy Weisser
Tammy Weisser, Legal Assistant

Appendix A

**POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON**

COALITION TO PROTECT PUGET
SOUND HABITAT, ROSS P.
BARKHURST, and ROBERT
KAVANAUGH,

Appellants,

v.

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

Respondent,

and

WILLAPA-GRAYS HARBOR OYSTER
GROWERS ASSOCIATION (WGHOGA),

Intervenor Respondent.

PCHB No. 14-047

FINDINGS OF FACT, CONCLUSIONS OF
LAW, AND ORDER

On April 2, 2014, the State of Washington, Department of Ecology (Ecology) issued the *Zostera Japonica* Management on Commercial Clam Beds in Willapa Bay General National Pollutant Discharge Elimination System (General Permit). The General Permit authorizes the discharge of aquatic herbicides containing the active ingredient imazamox and marker dyes to surface waters of the state for the treatment of commercial clam beds (excluding geoduck culture). Ecology prepared and issued a Final Environmental Impact Statement (EIS) evaluating the use of a NPDES permit for management of *Zostera Japonica* (*Z. japonica*) on commercial clam beds in Willapa Bay. The Coalition to Protect Puget Sound Habitat, Ross P. Barkhurst and

1 Robert Kavanaugh (collectively the Coalition) appealed the General Permit and the Final EIS to
2 the Pollution Control Hearings Board (Board). Willapa-Grays Harbor Oyster Growers
3 Association (WGHOGA) was granted intervention and participated in the matter as Intervenor-
4 Respondent.

5 In its appeal, the Coalition challenged the General Permit and Final EIS on several
6 grounds. The Coalition requested a stay of the General Permit, which the Board denied.¹ Prior
7 to the hearing on the merits, the Board issued two orders on summary judgment. In its orders,
8 the Board dismissed several issues and determined that genuine issues of material fact precluded
9 a ruling on summary judgment on the remaining claims.²

10 The Board held a hearing in this matter on October 7 through 9, 2015, at its offices in
11 Tumwater, Washington. Board Chair Joan M. Marchioro presided for the Board, joined by
12 Board Members Thomas C. Morrill and Kay M. Brown. The Coalition was represented by
13 Attorney Thane W. Tienson. Ecology was represented by Assistant Attorney General Gordon
14 Karg. WGHOGA was represented by Attorney Jesse DeNike.

15 The Board received the sworn testimony of witnesses, admitted exhibits, and reviewed
16 the arguments on behalf of the parties. Written closing arguments were filed on October 23,
17 2015. Having fully considered the record, the Board enters the following:

18 ¹ *Coalition to Protect Puget Sound Habitat v. Ecology*, PCHB No. 14-047 (Order Denying Stay, June 23, 2014).

19 ² The Pre-Hearing Order identified 20 issues to be decided in this appeal. In its first order on summary judgment,
20 the Board dismissed Issues 12-17 and 19 on jurisdictional grounds. *Coalition to Protect Puget Sound Habitat v.*
21 *Ecology*, PCHB No. 14-047 (Order on Motion for Partial Summary Judgment on Issues 12-17 and 19, Sept. 30,
2014). The Board granted summary judgment to Ecology on Issues 3, 4, 10 and 18 in its second summary judgment
order. *Coalition to Protect Puget Sound Habitat v. Ecology*, PCHB No. 14-047 (Order on Motion for Partial
Summary Judgment on Issues 1 through 11 and Issue 18, Sept. 29, 2015). The Board dismissed Issues 2, 5, 6 and 8
by agreement of the parties. *Id.*

1 **FINDINGS OF FACT**

2 1.

3 There are two species of eelgrass found in Washington, one a native eelgrass (*Zostera*
4 *marina*) and the other a non-native species (*Zostera japonica*). Ex. R-2 at 12. *Z. japonica* is
5 native to Asia but now grows in tidelands from Vancouver, Canada to Humboldt, California. *Id.*
6 at 14-15. *Z. japonica* usually “occurs higher in the intertidal zone (0.1-1.5 meters mean lower
7 low water (MLLW)) than does native eelgrass (*Z. marina*) (0.6 m MLLW and below), colonizing
8 open tidal mudflats and sandflats within sheltered bays and inlets of the Pacific Northwest
9 (Ruesink et al. 2010).” Ex. R-5 at 2-1. *Z. japonica* is found in many locations within Puget
10 Sound and along the Washington Coast, with Willapa Bay and Grays Harbor experiencing the
11 greatest distribution of the grass. *Id.* at 2-1; Ex. R-2 at 15. “With flat topography, such as occurs
12 in Willapa Bay, (Mach et al. 2010, Shafer et al. 2013) there can be overlapping distribution with
13 *Z. japonica* occurring in the higher tidal zone, a mix of Japanese and native eelgrass in the mid-
14 tidal zone, and native eelgrass in the low tidal zone.” Ex. A-29 at 76.

15 2.

16 Willapa Bay has a total area of approximately 88,000 acres. *Id.* at 15. A survey
17 conducted by the U.S. Department of Agriculture (USDA) during the years 2006-2007 found
18 “approximately 13,762 acres of *Z. marina* (15.6% of Willapa Bay) and 12,183 acres of *Z.*
19 *japonica* (13.8% of Willapa Bay).” *Id.* at 16, Fig.1-1. The Final EIS states that, according to the
20 U.S. Fish and Wildlife Service, in 2009 there were approximately 25,262 acres in Willapa Bay
21 being used for aquaculture. Ex. A-29 at 18. A survey of WGHOGA members conducted in

1 2012 found that the total number of acres of aquaculture tidelands had increased to 26,000. *Id.*
2 Of those acres, an estimated 20,000 acres of tidelands are suitable for oyster production, with the
3 remaining 6,000 acres suitable for clam culture. *Id.* In 2012, oysters were being actively farmed
4 on an estimated 9,000 acres of tidelands, while clam farming was occurring on approximately
5 1,100 acres of tidelands. *Id.*

6 3.

7 Shellfish growers in Washington, predominantly in Willapa Bay, raised concerns about
8 the impact of *Z. japonica* on shellfish production, in particular Manila clam culture. *Id.* at 81. A
9 suitable tidal elevation for the cultivation of Manila clams is + 0.6 meters to + 1.2 meters above
10 MLLW. *Id.* In Willapa Bay, *Z. japonica* has colonized in previously unvegetated intertidal
11 zones used for Manila clam culture, hindering shellfish planting and harvesting and reducing
12 yields. *Id.* According to growers, approximately 3,000 acres of tidelands either previously
13 cultivated or uncultivated are currently not in clam production due to the presence of *Z. japonica*.
14 *Id.* at 19.

15 4.

16 In 2008, the U.S. Environmental Protection Agency (EPA) prepared an ecological risk
17 assessment evaluating the registration of imazamox for the “proposed new use for the control of
18 vegetation in and around aquatic and noncropland sites.” Ex. R-8. The purpose of the risk
19 assessment was to evaluate the overall toxicity of imazamox and the relative risks of its proposed
20 use to humans and its potential non-target impacts. *Id.*; Patten Testimony. Concluding that
21 imazamox was a reduced risk herbicide that was exempt from tolerance due to its low toxicity to

1 mammals and non-target organisms, EPA registered the herbicide for aquatic use. Ex. R-8;
2 Patten Testimony.

3 5.

4 Starting in 2006, Dr. Kim Patten, a Professor with the Washington State University
5 (WSU) Extension in Pacific County, began research into the use of imazamox to control *Z.*
6 *japonica* on clam beds in Willapa Bay. Prior to that time, Dr. Patten spent several years
7 conducting research on aquatic herbicides for use in eradicating *spartina*, an aquatic weed that
8 had flourished in Willapa Bay. Patten Testimony. Imazamox is an acetolactate synthase (ALS)
9 inhibitor. “ALS inhibitors slowly starve plants of [three essential] amino acids and kill the plant
10 by halting protein synthesis which then leads to inhibition of DNA synthesis.” Ex. R-2 at 31.
11 Imazamox is herbicidally active to 50 parts per billion (ppb), below which treated water can be
12 used for irrigation purposes. Ex. R-4 at 3; Patten Testimony.

13 6.

14 In order to evaluate imazamox, Dr. Patten obtained experimental use permits from the
15 Washington State Department of Agriculture allowing him to treat small plots of estuarine
16 tidelands in Willapa Bay containing *Z. japonica*. Patten Testimony. The focus of Dr. Patten’s
17 research was the efficacy of imazamox in controlling *Z. japonica* and its non-target impacts to
18 other species, including *Z. marina*. Dr. Patten evaluated efficacy under different scenarios, such
19 as timing and rate of application, and the fate and transport of imazamox off of the treatment site.
20 The trial applications found that imazamox was most effective in controlling *Z. japonica* on fully
21 dewatered sites where the grass canopy was allowed to dry. Damage to *Z. marina* was minimal

1 when water covered the canopy, with imazamox having no effect if the eelgrass was covered by
2 20 to 30 centimeters of water. Patten Testimony; Ex. R-5 at 4-5.

3 7.

4 Water samples taken after application showed that the concentration of imazamox was
5 significantly reduced with each tidal flush and it exhibited a half-life of six hours. Patten
6 Testimony; Ex. R-7 at 188-89. Post-treatment imazamox concentrations in drainage swales,
7 where *Z. marina* was likely to be present in the intertidal zone, were measured below effect
8 levels: 32ppb, 7.6ppb, and nondetectable at distances 30m, 60m, and 120m from treatment,
9 respectively. Ex. R-5 at 4-2, 4-3. Analysis of the efficacy of imazamox treatment on eelgrass
10 showed that, within 30 days of treatment, on-site *Z. japonica* control was 100 percent; off-site *Z.*
11 *japonica* on the flood side of the treatment plot was zero percent; and there were clean lines
12 delineating treatment on the south and north of the treatment plot. Ex. R-5 at 4-5. The
13 maximum concentration of imazamox detected in sediment samples taken 24 hours after
14 treatment was 13 µg/kg or 13ppb. *Id.* at 4-3.

15 8.

16 From data gathered through the trial applications, Dr. Patten concluded that imazamox is
17 effective in treating *Z. japonica* and, when applied under appropriate conditions, it is not likely to
18 cause impacts to non-target estuarine species of concern, such as *Z. marina*. Best efficacy was
19 achieved when tidal waters are fully drained off the treatment site and the *Z. japonica* canopy
20 was dry. Movement of imazamox off-site in the water column in the receding or flood tide was
21 minimal, as was the accumulation of imazamox in sediment. Patten Testimony; Ex. R-7.

1 9.

2 The WSU Extension contracted with ENVIRON International Corporation (ENVIRON)
3 to prepare a screening-level ecological risk assessment (SLERA) to evaluate the ecological risks
4 posed by the use of imazamox to remove and manage *Z. japonica* on intertidal beds used for
5 clam culture in Willapa Bay. Ex. R-5. The purpose of the SLERA was “to consider the nature,
6 magnitude, and permanence of predicted effects to receptors from exposure to imazamox, based
7 on maximum projected application rates and integrated pest management practices.” *Id.* at 1-2.
8 While ENVIRON was conducting the SLERA, Ecology had released an initial draft of the
9 General Permit describing the proposed treatment regime from which risks were to be
10 characterized. Ex. R-5 at 1-1.

11 10.

12 The SLERA relied on product registration study results and ecological hazard studies
13 conducted over the past several years. This information included the studies performed by Dr.
14 Patten under experimental use permits, as well as additional empirical data on concentrations of
15 imazamox in water, sediment and *Z. japonica* tissue collected in May 2012 at the request of the
16 assessment team. *Id.* at 1-1 – 1-2; Patten Testimony. The assessment, completed in November
17 2012, concluded:

18 This SLERA finds that risks are not significant for non-target
19 fish, invertebrates, wildlife and macroalgae as a result of the
20 use of imazamox to control Japanese eelgrass. Risks to non-
21 target vascular plants, particularly native eelgrass, could be
significant in the absence of measures to minimize impacts to
this species. Use of the proposed buffers to avoid unnecessary
impacts to native eelgrass should provide sufficient margin of

1 safety to minimize impacts to native eelgrass. Further
2 monitoring, as outlined in the Ecology draft permit, will enable
3 adaptive management refinement, if needed.

4 *Id.* at 5-4. Several other independent risk assessments also concluded that imazamox has a very
5 low risk of toxicity. Patten Testimony; Schoof Testimony.

6 11.

7 In proposals submitted in 2010 and 2011, shellfish growers requested that the
8 Washington State Noxious Weed Control Board (WSNWCB) list *Z. japonica* as a noxious weed.

9 *Id.* at 75. In January 2012, the WSNWCB listed *Z. japonica* as a Class C noxious weed on
10 Washington's commercially managed shellfish. Ex. A-29 at 13. In 2013, the WSNWCB
11 expanded its listing, classifying *Z. japonica* as a Class C noxious weed in all areas of
12 Washington. WAC 16-750-015.

13 12.

14 WGHOGA requested that Ecology develop a NPDES general permit for the control of *Z.*
15 *japonica* on commercial clam beds (excluding geoducks) in Willapa Bay. Ex. A-29 at 13. The
16 proposed General Permit authorized activities to control *Z. japonica* that would result in the
17 discharge of the aquatic herbicide imazamox and marker dyes into Willapa Bay. *Id.* Acting as
18 lead agency under the State Environmental Policy Act (SEPA), Ecology determined that the
19 proposed General Permit may have significant environmental impacts, requiring the preparation
20 of an EIS. *Id.*
21

13.

1 The draft General Permit and Draft EIS were concurrently developed. The Draft EIS
2 analyzed three alternatives for the management of *Z. japonica*: (1) no action; (2) use of chemical
3 methods only; and (3) use of an Integrated Pest Management approach with adaptive
4 management principles. *Id.* (Appendix B at 1). Information from the Draft EIS was used to
5 develop mitigation provisions in the draft General Permit. *Id.* The draft General Permit and
6 Draft EIS were made available for public comment, with the comment period for both drafts
7 open from January 2, 2014, through February 15, 2014. Ecology held a workshop and public
8 hearing in South Bend, Washington on February 1, 2014. *Id.* The Final EIS was issued on
9 March 26, 2014. Ex. A-29. The final General Permit was issued on April 2, 2014, with an
10 effective date of May 2, 2014, and an expiration date of May 2, 2019. Ex. A-30.

14.

13 Addressing the toxicity of imazamox in the aquatic environment, the Final EIS stated:

14 Imazamox rapidly dissipates from the ecosystem. The lowest
15 effect level for imazamox is 10 to 40 ppb for 120 hours static
16 test for algae, diatom and aquatic vegetation, and the no effect
17 level (96 hour exposure) for aquatic invertebrates is 94,000 to
18 122,000 ppm (ENVIRON 2012). Imazamox dilutes in the
19 leading edge of the water column 1 order of magnitude every
20 24 hours (60 ppb to 6 ppb) (ENVIRON 2012). Imazamox is
21 highly water soluble, adheres poor to all soil types, and breaks
down rapidly in the presence of light (half-life of 6.8 hours by
photolysis). Imazamox is an acetolactate synthase (ALS)
inhibitor. Herbicides of this type demonstrate low toxicity
toward animals (including humans), likely because the ALS
biochemical pathway does not exist in animals. Imazamox has
a marine/estuarine label from the U.S. Environmental

1 Protection Agency (EPA). EPA considers imazamox to be a
2 reduced-risk herbicide.

3 Ex. A-29 at 34. Based on this information, the Final EIS concluded that “it is anticipated that the
4 exposure risk to invertebrates, birds, fish, reptiles, amphibians, mammals, and humans from the
5 use of imazamox on commercial clam beds would be transient and minimal.” *Id.*

6 15.

7 The General Permit regulates the use of aquatic herbicides containing the active
8 ingredient imazamox and marker dyes applied to manage *Z. japonica* on commercial clam beds
9 (excluding geoduck culture) in Willapa Bay where imazamox may enter waters of the state of
10 Washington. Ex. A-30 at 5. The General Permit authorizes a temporary exceedance of the
11 Water Quality Standards, provided the permittee complies with the requirements of WAC 173-
12 201A-410 governing short term water quality modification. Ex. A-30 at 7. The term of the
13 General Permit is five years. Application of aquatic herbicides and marker dyes is prohibited
14 after year three, at which time Ecology will evaluate the results of the Buffer Validation Study
15 and required monitoring to determine if the General Permit should be modified to allow
16 continued application of aquatic herbicides or whether the Permit should be terminated. *Id.*
17 Completion of the Buffer Validation Study at the end of year three is a requirement before
18 Ecology can modify the General Permit to allow continued discharge of imazamox. Ex. R-2 at
19 57.

1 16.

2 Only licensed aquatic pesticide applicators can apply imazamox under the General
3 Permit. *Id.* The General Permit provides that the licensed applicator is the permittee. A
4 permittee must have a project sponsor for each permit application; the sponsor and permittee can
5 be the same individual. Ex. R-2 at 48. To obtain coverage, the permittee must submit a
6 complete application to Ecology a minimum of 60 days prior to applying imazamox. Ex. A-30 at
7 6. A complete application includes a complete and signed Notice of Intent and Discharge
8 Management Plan, and an Annual Pre-treatment Plan. *Id.* The purpose of the Discharge
9 Management Plan is to assist permittee’s in determining “appropriate pest management methods,
10 set *action thresholds*, incorporate principles of [Integrated Pest Management], and help reduce
11 pesticide use.” Ex. R-2 at 51; Ex. A-30 (Appendix D). The Annual Pre-treatment Plan must
12 include the locations of areas planned for treatment, maps identifying those locations, and the
13 size, in acres, of each area planned for treatment. Ex. A-30 at 14.

14 17.

15 The permittee is required to comply with all requirements of the Federal Insecticide,
16 Fungicide, and Rodenticide Act (FIFRA) product label. *Id.* at 8. In 2008, EPA released an
17 Aquatic Use Label for the imazamox product Clearcast[®] authorizing its use on submerged,
18 emergent and floating vegetation. Ex. R-5 at 3-2. In 2014, prior to the effective date of the
19 General Permit, EPA released an updated label for Clearcast[®] identifying *Z. japonica* on the list
20 of weeds controlled or suppressed by the herbicide. The label also provided that use of an
21 adjuvant was not required when applying Clearcast[®] to *Z. japonica* at low-tide. Ex. R-4 at 5.

1 18.

2 The General Permit limits application of imazamox to the period April 15 through June
3 30 (dates inclusive) and restricts treatment of a commercial clam bed to once per year. *Id.* at 9.
4 Imazamox treatments can only occur when there is at least one hour of dry time before tidal
5 inundation to allow for plant uptake of the herbicide. *Id.*; Ex. A-29 at 24. Imazamox is
6 prohibited from being applied to any drainage that contains *Z. marina* and is moving water off of
7 the treatment site. Ex. A-30 at 9.

8 19.

9 The permittee is required to maintain a ten meter buffer, measured perpendicular to the
10 parcel boundary, inside the sponsor's property line. Ex. A-30 at 9. If a permittee does not treat
11 *Z. japonica* up to the ten meter buffer, monitoring is limited to "recording the date of the
12 treatment, amount of active ingredient applied, and the number of acres and the location(s) of
13 acreage treated." *Id.* at 12. If treatment occurs up to the ten meter property line buffer, the
14 permittee is required to measure the distance into the buffer that *Zostera* species plants are
15 affected by treatment. *Id.*

16 20.

17 Ecology requested that WGHOGA conduct a Buffer Validation Study consistent with the
18 study methodologies set forth in Appendix B to the General Permit's Fact Sheet. Ex. R-2 at 56,
19 Appendix B. The purposes of the Buffer Validation Study were to test the effectiveness of the
20 ten meter buffer in protecting *Z. marina* located on parcels adjacent to the treatment sites and to
21 evaluate the concentration and rate of imazamox degradation in sediments within treated sites.

1 Ex. R-2 at 56. The Buffer Validation Study protocols were developed with input from
2 academics and scientists from state and federal agencies. *Id.*; Lubliner Testimony; Hamel
3 Testimony. For the selected study sites, the monitoring design was determined to be capable of
4 detecting a 20 percent reduction in two metrics (shoot density and percent cover) at an alpha of
5 0.10 and a power of 0.80. Ex. R-9 at 1. Composite sediment samples are to be collected from
6 the middle of the treated area from three of the study plots within 24-48 hours after application
7 of imazamox. Each composite sample shall be made up of the top two centimeters of three
8 sediment cores. If the concentration of imazamox in the sediment is above 50ppb, a second
9 composite sample must be taken approximately 30 days after application. Ex. R-2 at 63.

10 21.

11 Ecology engaged Dr. Chris Grue of the University of Washington School of Aquatic and
12 Fisheries Sciences to analyze the study design to ensure that it would provide statistically
13 significant data. Exs. R-2 at 56; R-9. To test the Buffer Validation Study design, Dr. Grue
14 selected appropriate study sites, conducted specified monitoring with agreed to modifications,
15 and performed a power analysis based on measurements of percent cover and shoot density of *Z.*
16 *marina*. Ex. R-9 at 1. Based on his analysis, Dr. Grue concluded that the study plots selected
17 “will meet the prescribed statistical criteria for documenting reductions in the endpoints of shoot
18 density and cover of native eelgrass on upper and lower tidal elevations of Manila clam beds of
19 commercial acreage following application of imazamox in 2014.” Ex. R-9 at 16.

1 22.

2 Ecology prepared a Tier II antidegradation analysis and antidegradation plan for the
3 General Permit, which are set forth in the Permit's Fact Sheet. Hamel Testimony; Ex. R-2 at 41-
4 43. "Tier II is used to ensure that waters of a higher quality than the criteria assigned [in the
5 water quality standards] are not degraded unless such lowering of water quality is necessary and
6 in the overriding public interest." WAC 173-201A-300(2)(e)(ii). Ex. R-2 at 41. For general
7 NPDES permits, Ecology regulations recognize water quality protection is in a continual state of
8 improvement and development, and may result in incomplete information at the time the permit
9 is issued. WAC 173-201A-320(6)(c). To address this concern, Tier II antidegradation
10 requirements are considered met for a general permit if the general permit contains a formal
11 process to collect information that will be used to refine control practices for protecting water
12 quality. *Id.* The Buffer Validation Study is part of the Tier II adaptive management process for
13 the General Permit. Hamel Testimony. Ecology will use the results of the Buffer Validation
14 Study and any monitoring data collected, along with comments from the public and scientists
15 from state resource agencies, to determine whether to modify or terminate the General Permit.
16 Hamel Testimony; Ex. R-2 at 43.

17 23.

18 On May 1, 2014, the Coalition appealed the General Permit challenging various Permit
19 provisions as well as the adequacy of the Final EIS. In ruling on the Ecology's second motion
20 for summary judgment, the Board identified the specific areas that the parties should provide
21 additional testimony and expert analysis at hearing: (1) the number of acres analyzed in the

1 Final EIS as eligible for spraying under the General Permit; (2) whether the Final EIS accurately
2 evaluated the tidal flow and effect of water movement through all of the areas of Willapa Bay
3 where commercial clam beds are located; (3) what effect the tidal flow in Willapa Bay may have
4 on imazamox sprayed in commercial clam beds to determine if surface water quality standards
5 have been satisfied and whether imazamox will remain in the sediment; and (4) whether the
6 location for the Buffer Validation Study is representative of the rest of Willapa Bay.³

7 **Acres of Commercial Clam Beds In Willapa Bay**

8 24.

9 The Coalition claims that the Final EIS undercounted the number of acres eligible for
10 treatment under the General Permit. Relying on the deposition testimony of Nathan Lubliner, the
11 Ecology employee responsible for the Final EIS and General Permit, the Coalition argues that a
12 minimum of 7,000 acres could be treated. Lubliner Testimony. The Coalition also claims that
13 because many of the existing acres of aquaculture tidelands in Willapa Bay could be converted to
14 commercial clam beds and would then be eligible for treatment with imazamox under the
15 General Permit, the quantity of commercial clam beds in the Final EIS is undefined. Rone
16 Brewer, an Environmental Toxicologist, testified that he estimated that more than 6,000 acres of
17 tidelands could be used for clam culture although he could not recall the actual number of
18 additional acres he identified. Mr. Brewer testified that his estimate was reached by looking at
19 the overall acreage of tidelands and then counting the acres above a certain tidal level. The

20
21 ³ *Coalition to Protect Puget Sound Habitat v. Ecology*, PCHB No. 14-047 (Order on Motion for Partial Summary Judgment on Issues 1 through 11 and Issue 18, Sept. 29, 2015) at 10-13, 18-22.

1 Coalition argues that, because the acreage was undercounted, the Final EIS did not fully analyze
2 the impacts of spraying imazamox on Willapa Bay. Brewer Testimony.

3 25.

4 Ecology responded that the Final EIS clearly states that there are approximately 6,000
5 acres of tidelands in Willapa Bay owned by commercial shellfish growers that are suitable for
6 clam culture. Ex. A-29 at 38. Mr. Lubliner testified that Ecology considered the 6,000 acre
7 estimate the upper limit of the potential acres of commercial clam beds in Willapa Bay. Ecology
8 used the 6,000 acre estimate in developing the Final EIS and General Permit. Lubliner
9 Testimony; Ex. A-29 at 18. Ecology and WGHOGA asserted that the Coalition’s claim that
10 tidelands could readily be converted to commercial clam beds was merely hypothetical and not
11 based on concrete evidence. On cross-examination, Mr. Brewer stated that he had not surveyed
12 the tidelands in Willapa Bay to determine which could be converted to clam culture and that his
13 claim was based on anecdotal evidence. Brewer Testimony. Dr. Patten testified that the 6,000
14 acre estimate represented the “worst case scenario” and was a “very conservative estimate” of
15 the total acres that might be treated with imazamox. Patten Testimony.

16 26.

17 The Board finds that the Coalition did not meet its burden to establish that the Final EIS
18 failed to analyze the correct number of acres of commercial clam beds in Willapa Bay or that the
19 number of acres was underestimated. The Final EIS specifically states that of the approximately
20 26,000 acres of aquaculture tidelands in Willapa Bay, approximately 6,000 are suitable for clam
21 culture. Ex. A-29 at 38. Of those 6,000 acres, approximately 1,100 were actively farmed for

1 clams in 2012 and approximately 3,000 acres were laying fallow due to the presence of *Z.*
2 *japonica*. *Id.* The Coalition did not present any evidence that additional acres of commercial
3 clam beds actually existed or will be created and subject to treatment under the General Permit.
4 Mr. Lubliner’s failure to recall the precise number of commercial clam acres at his deposition is
5 not proof that additional acres exist. The Board finds that the weight of the evidence in the
6 record establishes that the Final EIS and General Permit were properly developed using the
7 estimated 6,000 acres of commercial clam beds in Willapa Bay.

8 **Tidal Flow and Effect on Imazamox**

9 27.

10 The Coalition asserts that the Final EIS did not adequately evaluate the sublethal and
11 indirect effects of application of imazamox on Willapa Bay, specifically those effects on *Z.*
12 *marina*.⁴ According to the Coalition, the statements in the Final EIS regarding tidal flow in
13 Willapa Bay inaccurately characterize water movement in the Bay. In addition, the Coalition
14 contends that the potential for imazamox to accumulate in sediments was not fully analyzed.
15 The Coalition claims that, as a result, the conclusions regarding the fate and transport of
16 imazamox are incorrect. Turner Testimony, Brewer Testimony.

17
18
19 _____
20 ⁴ In its second summary judgment order, the Board concluded that the Final EIS adequately evaluated impacts to
21 baitfish/herring, salmon and other fish. *Coalition to Protect Puget Sound Habitat v. Ecology*, PCHB No. 14-047
(Order on Motion for Partial Summary Judgment on Issues 1 through 11 and Issue 18, Sept. 29, 2015) at 13-14. The
Board also concluded that the Final EIS’s analysis of the waterfowl budget was adequate. *Id.* While the Board
allowed the Coalition some latitude at the hearing to present testimony on its SEPA challenge (Issue 1), that
testimony did not change the Board’s prior conclusion regarding the adequacy of the Final EIS on these topics.

1 28.

2 In support of this assertion, the Coalition relies on water age data and disputes the Final
3 EIS's claims that tidal activity in Willapa Bay will cause imazamox to rapidly dilute and become
4 herbicidally inactive. Exs. A-55, A-87. Stuart Turner, a Consulting Agronomist, testified to his
5 experience with terrestrial application of imazamox. Based on that experience, Mr. Turner
6 offered several opinions regarding the use of imazamox in Willapa Bay. With respect to water
7 age, Mr. Turner stated that he is certain that it has some impact on imazamox but was unable to
8 describe the precise impact because the research had not been conducted. Mr. Turner
9 acknowledged that imazamox is fairly water soluble and that its half-life in fresh water is 6.8
10 hours, but, in his opinion, that did not have any application in a complex marine estuary where
11 there is a tidal cycle. He believes that imazamox will adsorb to sediments and wave action will
12 move those sediments off-site because, with four tidal cycles, Willapa Bay is always draining.
13 On cross examination, Mr. Turner testified that he had never used imazamox in the aquatic
14 environment. Turner Testimony.

15 29.

16 Mr. Brewer testified that imazamox applied to commercial clam beds in Willapa Bay has
17 the potential to move around the Bay through various mechanisms and cause indirect effects.
18 Some of the imazamox may dissolve in water and be transported in water. Imazamox that binds
19 to sediments may settle on the floor of Willapa Bay, be moved to other locations through tidal
20 activity, or move in the water column as suspended sediments. If those sediments move to areas
21

1 of less current, they have the potential to settle out and accumulate in amounts that could become
2 toxic to plants. Brewer Testimony.

3 30.

4 Addressing the probable environmental impacts in the context of the fate and transport of
5 imazamox being sprayed on commercial clam beds, Mr. Turner testified that all we have is
6 “informed speculation” as there is no science on the issue. Based on his experience with
7 terrestrial plant injury cases, Mr. Turner stated that the main concern is sublethal effects of
8 imazamox, which are likely to occur at levels down to 1ppb. He expects those effects are likely
9 to be greater in the southern parts of Willapa Bay due to the greater retention time. Mr. Turner
10 testified that the water aging is a “clue” that tidal activity is lower in the southern reaches of
11 Willapa Bay and it is “common sense” that there is a higher risk for imazamox to be retained in
12 sediments for a longer period of time in that region because there will be less dilution from the
13 tidal influence. Turner Testimony.

14 31.

15 Mr. Turner also testified that imazamox taken up in plant tissue will further contribute to
16 a longer term presence of the herbicide in Willapa Bay. Mr. Turner explained that a plant treated
17 with imazamox will take up to four weeks to die during which time the herbicide is active in the
18 plant’s tissues. He expects that the retained imazamox will be released as the plant tissue
19 degrades and, as the plant breaks apart and floats away with the tide, it will further degrade when
20 it is deposited on the tideland releasing additional imazamox. Mr. Turner estimated that there

1 will be at least a six week period during which there will be a risk of exposure to imazamox at a
2 level that would cause injury to sensitive organisms. Turner Testimony.

3 32.

4 Mr. Brewer testified that he did not know whether the indirect effects will be greater in
5 the southern reaches of Willapa Bay. Because of the slower movement of water in the southern
6 end of Willapa Bay, the water contains more silty material which means more surface area
7 available for imazamox to bind to. While finer sediments have the potential to be mobilized,
8 there is less current in the southern portion of the Bay thus making it difficult to quantify
9 whether imazamox will persist in the sediments in that location. Mr. Brewer testified that he
10 believed that there will be indirect effects caused by the spraying of imazamox and that he
11 disagreed with the Final EIS's conclusion to the contrary. Brewer Testimony.

12 33.

13 Appellant Ross Barkhurst, an owner of tidelands in Willapa Bay, testified that he
14 observed a marked decrease in *Z. japonica* on his oyster bed in 2015. Mr. Barkhurst testified
15 that he created two one foot by one foot benchmark plots on his tidelands located northeast of
16 Long Island in Willapa Bay. The plots were located approximately 100 feet apart and at an
17 elevation where *Z. japonica* was growing well. On five occasions between May 22 and July 22,
18 2015, Mr. Barkhurst counted eelgrass shoots in each benchmark plot and took photographs. Mr.
19 Barkhurst selected May 22 as the starting date because it was approximately one week after
20 spraying of imazamox began in Willapa Bay in 2015. According to Mr. Barkhurst's
21

1 measurements, the number of eelgrass shoots decreased significantly from May 22, 2015, to July
2 22, 2015. Barkhurst Testimony; Ex. A-56 at 4, 6, 9, 17, 18.

3 34.

4 Mr. Barkhurst testified that there was a high probability that the decline in eelgrass shoots
5 was attributable to residue of imazamox in the water column from spraying that occurred south
6 of his property. Mr. Barkhurst stated that the closest area where spraying was approved was
7 3,500 yards from his oyster bed. During his observations, Mr. Barkhurst did not take water
8 samples, sediment samples, plant tissue samples, and did not record the average daily
9 temperature. Barkhurst Testimony.

10 35.

11 Ecology and WGHOGA responded that the Coalition's focus on water age is misplaced.
12 Rather, as detailed in the Final EIS and by Dr. Patten in his testimony, the proper metric to
13 evaluate the fate and transport of imazamox is tidal flux. Willapa Bay generally experiences two
14 high and two low tides within each 24-hour period. Ex. A-29 at 91. The Final EIS states that
15 "tidal flux will provide a constant and reliable rinsing effect that will dilute the herbicide and
16 move it off-site." Ex. A-29 at 61. "Due to the shallow depth and constant, powerful tidal
17 movement of Willapa Bay waters, it is highly unlikely that Imazamox will persist in the water
18 column." *Id.* at 92.

19 36.

20 Dr. Patten described the processes that will degrade imazamox applied on tidelands in
21 Willapa Bay. Imazamox is broken down by sunlight (photolysis) and by the action of the tide

1 (hydrolysis). Because imazamox weakly adsorbs onto sediment, it quickly desorbs back into the
2 water column. Studies show that approximately 46 percent of imazamox taken up by aquatic
3 plants is desorbed out of the plant within 12 hours. Imazamox in the water column will be
4 diluted by the trillions of gallons of water moving in Willapa Bay during each tidal cycle. Dr.
5 Patten testified that the combination of these processes, as well as the short half-life of
6 imazamox, results in the herbicide being quickly reduced to non-detectable levels. Patten
7 Testimony.

8 37.

9 Dr. Patten testified that, contrary to the Coalition's claims, tidal dilution prevents
10 imazamox from reconstituting in other parts of Willapa Bay and causing deleterious effects. The
11 studies performed by Dr. Banas demonstrate that there is excellent vertical mixing and
12 distribution in Willapa Bay, resulting in very good diffusion. Therefore, even if imazamox
13 remained in water in the southern part of Willapa Bay, it is well distributed within the tidal
14 prism. In Dr. Patten's opinion, because imazamox is highly soluble and there are trillions of
15 gallons of water in the tidal prism, the herbicide will be reduced to undetectable levels relatively
16 quickly regardless of the water age. Patten Testimony.

17 38.

18 Through personal observations and review of data collected throughout Willapa Bay, Dr.
19 Patten has not seen any off-site impacts of imazamox on sensitive species. This included his
20 observations of 31 commercial clam beds located throughout Willapa Bay that were sprayed
21 with imazamox in 2014 and 2015. Dr. Patten testified that he has not observed plants breaking

1 off and washing away. In his experience, eelgrass rapidly decays on site and stays intact until it
2 essentially melts away. Patten Testimony. WGHOGA's expert toxicologist, Dr. Rosalind
3 Schoof, concurred with Dr. Patten's conclusions. Schoof Testimony.

4 39.

5 Dr. Patten testified that while it is possible that there may be some effect with imazamox
6 at a concentration of 50ppb, in his experience with imazamox he has not witnessed that
7 occurrence. Dr. Patten disagreed with Mr. Turner's assertion that imazamox could have
8 deleterious effects at a concentration of 1ppb in water. None of the literature he has reviewed
9 contained data supporting such a claim. Patten Testimony. Dr. Schoof testified that she also had
10 not seen any references to support Mr. Turner's statement. Because imazamox is highly water
11 soluble and there is a greater potential for it to be diluted and washed away, Dr. Schoof expected
12 that there would be less potential for imazamox to persist in an aquatic environment. Schoof
13 Testimony.

14 40.

15 Addressing the question of maximum quantity of imazamox that could be applied under
16 the General Permit, Dr. Patten testified that he evaluated what the concentration of imazamox
17 would be in the environment if 3,000 acres were treated all at once and the waterbody was static.
18 Under those conditions, imazamox would measure 0.5ppb one hour after tidal inundation.
19 Extrapolating that analysis to 6,000 acres, imazamox would measure 1ppb. In Dr. Patten's
20 opinion, based on the data presented, that concentration of imazamox was not biologically
21 significant. Patten Testimony. Dr. Schoof agreed with Dr. Patten's worst case calculations and

1 his conclusion that the concentration of imazamox would not be of concern as it was below
2 detection levels. Schoof Testimony.

3 41.

4 Finally, Dr. Patten testified that he disagreed with Mr. Barkhurst's conclusion that
5 imazamox sprayed on commercial clam beds in 2015 killed *Z. japonica* on his tidelands. The
6 closest clam beds sprayed were on the west side of Long Island, approximately five miles from
7 Mr. Barkhurst's tidelands. Patten Testimony; Sheldon Testimony. In order to reach Mr.
8 Barkhurst's tidelands, the imazamox would have had to travel around the tip of Long Island, and
9 move south to his site as opposed to being discharged out of the channel. Dr. Patten did not find
10 it feasible that the dead *Z. japonica* was attributable to imazamox sprayed on commercial clam
11 beds. In Dr. Patten's opinion, the more likely explanation was the hot weather experienced in
12 2015. In support of this conclusion, Dr. Patten looked at temperature data and made
13 observations of *Z. japonica* and *Z. marina* in the higher tidal zones. Both eelgrass species are
14 susceptible to desiccation. The higher they are in the tidal zone, the more time they are exposed
15 to the hot, dry weather. Given those factors, Dr. Patten would attribute the dead eelgrass on Mr.
16 Barkhurst's tidelands to desiccation. Patten Testimony.

17 42.

18 The Board finds that the Coalition did not meet its burden to present evidence that the
19 effects of imazamox on Willapa Bay were not adequately analyzed. The Coalition's witnesses
20 offered only unsupported theories and speculation regarding possible impacts of imazamox. No
21 credible evidence was presented in support of the Coalition's claim that longer water residence

1 time in the southern parts of Willapa Bay will cause additional environmental impacts from
2 imazamox. The Coalition did not present credible evidence that imazamox is herbicidally active
3 at 1ppb or that it will travel in the water column to other locations and cause detrimental impacts.
4 Nor did the Coalition present evidence that Mr. Barkhurst's benchmark study met any standards
5 for scientific rigor or that imazamox caused the death of *Z. japonica* on his clam bed. By
6 contrast, Ecology and WGHOGA presented evidence that the Final EIS and General Permit
7 relied upon empirical data, including the results of experimental trials conducted by Dr. Patten
8 on tidelands in Willapa Bay.

9 43.

10 The Board finds that the record presented contains persuasive evidence that, due to the
11 tidal action in Willapa Bay, imazamox will quickly be reduced to non-herbicidally active
12 concentrations and that the water age will not affect that process. The evidence also established
13 that imazamox weakly adsorbs to sediments and, as a result, it will be adsorbed and desorbed
14 through tidal action. The Coalition has failed to demonstrate that imazamox will accumulate in
15 sediments and remain active.

16 **Buffer Validation Study**

17 44.

18 The Coalition alleged that the site selected for the Buffer Validation Study was not
19 representative of other portions of Willapa Bay, specifically the southern reaches. Mr. Turner
20 testified that the data generated from the study will be insufficient to determine whether the
21 results can be extrapolated to other parts of Willapa Bay. Turner Testimony. Mr. Brewer

1 testified that the selected site is comprised of sand whereas the tidelands in southern Willapa
2 Bay, because of the lower water turnover, have more fine-grained sediments. According to Mr.
3 Brewer, “different grain sizes bind things differently and transport things differently.” As a
4 result, he expects there will be more impact in areas with finer grained sediments than in the
5 sandy areas of Willapa Bay. Brewer Testimony.

6 45.

7 Mr. Brewer also testified that testing sediments at a depth of two centimeters does not
8 provide much information. Because the finer-grained sediments are closer together, they create
9 anaerobic conditions. In shallower portions of Willapa Bay, sediments are closer to the surface.
10 Mr. Brewer testified that this creates a higher potential for anaerobic conditions and for
11 indefinite half-lives of imazamox in that sediment. Brewer Testimony.

12 46.

13 In response, Ecology provided evidence of the site selection process and the parameters
14 used. Ecology convened a field trip to Willapa Bay with eelgrass specialists from the
15 Washington Department of Fish and Wildlife, Department of Natural Resources, USDA, WSU,
16 and the University of Washington in the spring of 2013. The purpose was to discuss the contents
17 of the buffer evaluation and site selection. Ecology’s major concern was *Z. marina* growing at
18 the top and bottom elevations of clam beds and whether those plants would be impacted by
19 imazamox during the first tidal inundation. Therefore, the selected site needed to have sufficient
20 *Z. marina* on its lower slope, as well as its upper slope. Lubliner Testimony.

1 47.

2 With the assistance of WGHOGA, Dr. Patten and Dr. Grue identified study sites that
3 would fulfill the requirements of the sampling design of the Buffer Validation Study. The study
4 site selected is located on clam beds owned by Taylor Shellfish. Lubliner Testimony; Ex. R-9 at

5 3. The criteria used to select the study site included:

6 (1) Commercial clam beds of similar size, tidal elevation, and
7 sediment characteristics in need of removal of *Zostera*
8 *japonica*, (2) operational/commercial size (5-20 ac), (3)
9 significant cover by *Zostera marina* 10 m from the beds on
10 both the lower and upper elevation ends, (4) tidal flow (ebb and
11 inundation) that moved in the direction of the lower and upper
ends of the beds increasing the potential for off-site impacts of
herbicide application on non-target *Z. marina*, and (5)
assignment of treatments (control, treated [herbicide]) that
minimized the potential for cross contamination (i.e.,
movement of herbicide onto control plots).

12 Ex. R-9 at 3. Mr. Lubliner testified that he received no comments from the agency specialists
13 evaluating the Buffer Validation Study that the selected location was not representative of
14 Willapa Bay. Lubliner Testimony.

15 48.

16 Dr. Patten disagreed with the Coalition's assertion that that the study results could not be
17 extrapolated to other parts of Willapa Bay. Dr. Patten testified that the site selected likely
18 represented the worst-case scenario in terms of off-site water movement. This conclusion was
19 based on Dr. Patten's site inspection of commercial clam beds throughout Willapa Bay to
20 evaluate water movement from those sites. The site is of a similar slope to other tidelands in
21 Willapa Bay, with a few exceptions. With respect to sediment, Dr. Patten testified that based on

1 his work in Willapa Bay on clam beds, those beds are nearly all sand with some gravels. The
2 site selected for the Buffer Validation Study was similar, although it had not been graveled. Dr.
3 Patten disagreed that the impacts of the application of imazamox in Willapa Bay are site specific.
4 There are several very similar components throughout the Bay, such as tidal dilutions and
5 species, that can be used to make similar references. Based on his experience in the area, Dr.
6 Patten testified that he had not seen “any evidence that there are major differences in any of the
7 sites being treated in terms of impacts.” Patten Testimony.

8 49.

9 Addressing sediment sample depth, Mr. Lubliner testified that two centimeters was
10 selected after conferring with other scientists involved in preparing the study design. That depth
11 was chosen because it was expected that the highest concentrations of imazamox would be near
12 the surface. Lubliner Testimony. Dr. Patten testified that, because imazamox has low binding
13 capacity, he did not expect it to move too deep into the sediment. Dr. Patten testified that he
14 collected sediments for the ENVIRON risk assessment, as well as from some of the monitoring
15 sites identified in Dr. Grue’s evaluation. The samples, taken at depths of zero to five
16 centimeters, had imazamox concentrations of a few parts per billion 48 hours after treatment.
17 Based on those results, Dr. Patten did not see any evidence that there was a concentration of
18 imazamox in the upper sediment zone. The levels observed were well below the risk thresholds
19 established by Ecology for sediments. Dr. Patten testified that sediment samples could be taken
20 at a depth of five centimeters. However, he cautioned that larger samples will result in dilution
21 and thus a lower concentration rate. Patten Testimony.

1 50.

2 The Board finds that the Coalition did not meet its burden to prove that the site selected
3 for the Buffer Validation Study was not representative of other portions of Willapa Bay. The
4 evidence presented by the Coalition on this issue centered on the nature of the sediments in the
5 southern reaches of Willapa Bay and the possibility that imazamox will bind to those sediments
6 more readily than it will to sandier sediments. As discussed above, the Board finds that the
7 balance of evidence demonstrated that imazamox does not tightly adsorb to sediments and tidal
8 action will cause it to desorb back into the water column.

9 51.

10 The other criticisms advanced by the Coalition were not supported by evidence or were
11 based on a misunderstanding of Dr. Grue's evaluation of the Buffer Validation Study. Mr.
12 Turner provided no evidence to support his assertion that the study results could not be
13 extrapolated to other locations of Willapa Bay and Mr. Brewer's criticisms of the study were
14 based, in part, on his mistaken belief that Dr. Grue's evaluation involved actual treatment with
15 imazamox. Turner Testimony; Brewer Testimony. Mr. Turner testified that the Buffer
16 Validation Study allowed a 40 percent error rate when, in fact, the error rate is ten percent and
17 there is a 90 percent chance of avoiding false positives. McDowell Testimony. The Board finds
18 that the weight of the most credible evidence in the record establishes that the location selected
19 for the Buffer Validation Study was appropriate for its intended purposes.

1 52.

2 Any Conclusion of Law deemed to properly be considered a Finding of Fact is hereby
3 adopted as such.

4 Based on the foregoing Findings of Fact, the Board enters the following:

5 **CONCLUSIONS OF LAW**

6 1.

7 The Board has jurisdiction over the subject matter and the parties pursuant to RCW
8 43.21B.110(1)(d). The burden of proof is on the appealing party as to the issues in the case.
9 WAC 371-08-485(3). The Board considers the matter *de novo*, giving deference to Ecology’s
10 expertise in administering water quality laws and on technical judgments, especially where they
11 involve complex scientific issues. *Port of Seattle v. Pollution Control Hearings Board*, 151
12 Wn.2d 568, 593-94, 90 P.3d 659 (2004). Similarly, Ecology’s interpretations of water quality
13 statutes and its own regulations are entitled to great weight, unless such interpretation conflicts
14 with the statute’s plain language. *Id.* at 593-94. Pursuant to WAC 371-08-540(2), “[i]n those
15 cases where the board determines that the department issued [an NPDES] permit that is invalid
16 in any respect, the board shall order the department to reissue the permit as directed by the board
17 and consistent with all applicable statutes and guidelines of the state and federal governments.”

18 2.

19 The Board’s orders on summary judgment left the following issues identified in the Pre-
20 Hearing Order for resolution at hearing:

1 administer the NPDES permit program (ch. 173-220 WAC) and to establish water quality
2 standards for both surface water and groundwater (ch. 173-201A and ch. 173-200 WAC).

3 4.

4 Consistent with the broad goals of the CWA, the State’s Water Pollution Control Act
5 (WPCA), ch. 90.48 RCW, declares the public policy of the State is “to maintain the highest
6 possible standards to insure the purity of all waters of the state consistent with public health and
7 public enjoyment thereof. . . .” RCW 90.48.010. The WPCA also makes it unlawful for any
8 person to discharge into the waters of the state, or to permit or allow the discharge of any organic
9 or inorganic matter that shall cause or tend to cause pollution of such waters. RCW 90.48.080.
10 Waters of the state include groundwater and surface water. RCW 90.48.020. Any commercial
11 or industrial operation that discharges solid or liquid waste material into waters of the state is
12 required to obtain a State Waste Discharge Permit from Ecology. RCW 90.48.160.

13 5.

14 The Legislature has acknowledged the need to address noxious weeds in the aquatic
15 environment and has directed Ecology to facilitate reasonable control of infestations. RCW
16 90.48.445. To that end, Ecology developed several general NPDES permits authorizing the
17 application of herbicides to control noxious weeds. Dept. of Ecology, General Permits, Aquatic
18 Pesticide Permits, <http://www.ecy.wa.gov/programs/wq/pesticides/index.html> (last visited Dec.
19 31, 2015).

1 6.

2 The Coalition has the burden of proving the invalidity of any challenged condition in the
3 General Permit. WAC 371-08-485(3); WAC 371-08-540(2). The Coalition did not challenge
4 any specific General Permit condition. Nor did the Coalition identify any numeric surface water
5 quality criterion or sediment management standard with which the General Permit is
6 inconsistent. Rather, the Coalition asserted that the use of imazamox in Willapa Bay will violate
7 narrative water quality criterion in WAC 173-201A-260(2)(a), which provides that “deleterious
8 material concentrations must be below those which have the potential, either singularly or
9 cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to
10 the most sensitive biota dependent upon those waters, or adversely affect public health[.]”
11 According to the Coalition, the General Permit violates this standard because imazamox will
12 remain in Willapa Bay (in the water column, sediments, dying eelgrass tissue) for long periods of
13 time and in quantities that will cause impacts that have not been fully analyzed. As discussed in
14 the Findings of Fact above, the Board finds that the evidence presented by the Coalition failed to
15 support those assertions. Rather, the record presented to the Board contains considerable
16 evidence that the General Permit is consistent with state Water Quality Standards, ch. 173-201A
17 WAC, and Sediment Management Standards, ch. 173-204 WAC. The Board concludes that the
18 Coalition failed to carry its burden to establish the invalidity of the General Permit with regard to
19 those regulations.
20
21

1 7.

2 The Coalition further asserted that the General Permit is inconsistent with the
3 requirements of WAC 173-201A-320 governing antidegradation because the use of imazamox in
4 Willapa Bay will harm beneficial uses and degrade sediment. The Coalition disputed Ecology's
5 claim that the Buffer Validation Study constitutes an adaptive process by alleging that the study
6 is limited to an area that is not representative of the rest of Willapa Bay and future modification
7 of the General Permit is left to Ecology's discretion. As discussed in the above Findings of Fact,
8 the evidence presented by the Coalition does not support its claims regarding impacts to water
9 quality and sediment from the use of imazamox. The Board also found that the Coalition failed
10 to present persuasive evidence supporting its challenge to the Buffer Validation Study. The
11 Board concludes that the General Permit complies with applicable requirements of WAC 173-
12 201A-320.

13 8.

14 The adequacy of an EIS is tested under the "rule of reason." *SEAPC v. Cammack II*
15 *Orchards*, 49 Wn. App. 609, 614–15, 744 P.2d 1101 (1987); *Cheney v. Mountlake Terrace*, 87
16 Wn.2d 338, 344–45, 552 P.2d 184 (1976). Under this rule, "the EIS must present
17 decisionmakers with a 'reasonably thorough discussion of the significant aspects of the probable
18 environmental consequences' of the agency's decision." *Klickitat County Citizens Against*
19 *Imported Waste v. Klickitat County*, 122 Wn.2d 619, 633, 860 P.2d 390, 398-99 (1993) (internal
20 citations omitted), amended, 866 P.2d 1256 (Wash. 1994). The governmental agency's
21

1 determination that an EIS is adequate is entitled to substantial weight. *Klickitat County Citizens*,
2 122 Wn.2d at 633; RCW 43.21C.090.

3 9.

4 The Coalition contends that the Final EIS was inadequate as it undercounted the number
5 of acres of commercial clam beds eligible for treatment under the General Permit and did not
6 accurately evaluate the tidal flow and effect of water movement throughout Willapa Bay,
7 specifically in its southern reaches. As detailed in the Findings of Fact, the Board found that the
8 weight of the credible evidence in the record supported the conclusion that the Final EIS
9 adequately analyzed the environmental impacts associated with the potential treatment of 6,000
10 acres of tidelands with imazamox, as well as the fate and transport of imazamox sprayed in
11 Willapa Bay. In light of the ample evidence in the record supporting the Final EIS, and giving
12 substantial weight to Ecology's determination on the Final EIS, the Board concludes that the
13 Coalition did not meet its burden of proof on this issue.

14 10.

15 Any Finding of Fact deemed to be a Conclusion of Law is hereby adopted as such.

16 Having so found and concluded, the Board enters the following

17 **ORDER**

18 The *Zostera Japonica* Management on Commercial Clam Beds in Willapa Bay General
19 National Pollutant Discharge Elimination System and the Final Environmental Impact Statement:
20 Management of *Zostera Japonica* on Commercial Clam Beds in Willapa Bay, Washington
21 issued by the Department of Ecology are AFFIRMED.

1 SO ORDERED this 11th day of January, 2016.

2 **POLLUTION CONTROL HEARINGS BOARD**

3
4 JOAN M. MARCHIORO, Chair, Presiding

5
6
7 KAY M. BROWN, Member

8
9 THOMAS C. MORRILL, Member

PLAUCHE & CARR LLP

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