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Sustainable Habitat Restoration: Fish, Farms, and Ecosystem Services

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ARTICLES

SUSTAINABLE HABITAT RESTORATION: FISH, FARMS, AND ECOSYSTEM SERVICES

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I. INTRODUCTION: SUSTAINABLE LAND USE CHOICES

Sustainability has not provided specific prescriptions for answering our resource, economic, or social quandaries. As Ileana M. Porras notes, this presents a bit of a problem: "sustainable development requires trade-offs between three important values, yet can tell us nothing about the right balance. . . . The principles of sustainable development can guide us by reminding us of these competing needs and values, but ultimately, the trade-offs will depend on a political decision."[3] Of course, sustainability frameworks seldom claim to dictate the outcomes of tradeoffs, and less frequently claim that there will be any single "sustainable" solution to a given problem.

The real advantage accruing from a sustainability approach comes from its intent to soften otherwise intractable interests and establish a

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3. Ileana M. Porras, *The City and International Law: In Pursuit of Sustainable Development*, 36 FORDHAM URB. L. J. 537, 569 (2009).

common basis for comparing competing values.[4] Sustainability has been instrumental in avoiding the controversies left over from the U.S.'s early environmental laws.[5] Specifically, advocates of sustainability have endeavored to show that, by design, a sustainable approach will serve today's needs and those of future generations[6] in multiple dimensions. To this end, the United Nations World Commission on Environment and Development has noted that sustainability alters past practices by incorporating the convergence of three elements to decision making: "economic growth, environmental protection, and social equity."[7] In addition, although sustainability is often framed as a global effort, it is also responsive locally, as "any definition of sustainable design or construction must include considerations of how the development will acknowledge its social impact on both residents and the surrounding community."[8]

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4. *See id.* at 575.

5. Keith H. Hirokawa, *A Challenge to Sustainable Governments?*, 87 WASH. U. L. REV. 203, 204 (2009) ("Sustainability converges economic, environmental, and social concerns into policies and practices that prioritize human long-term needs in our present-day infrastructure, residences, offices, and other consumer-based decision-making processes. Hence, sustainability is not aimed at causing the economic regicide that some may have feared: sustainable practices do not compel the cessation of economic growth, or that we cease constructing buildings or extracting resources.").

6. *See* Simon Dresner, *The Principles of Sustainability* 1 (2d ed. 2008); U.N. Rep. of the World Comm'n on Env't and Dev.: Our Common Future, Aug. 4, 1987, U.N. Doc. A/42/25; GAOR, 42d Sess. No. 25 (1987), *available at* http://www.un-documents.net/wced-ocf.htm.

7. Judith Perhay, *The Natural Step: A Scientific and Pragmatic Framework for a Sustainable Society*, 33 S.U. L. REV. 249, 269 (2006). *See also* Robert Paehlke, *Environmental Sustainability and Urban Life in America*, in *Environmental Policy New Directions for the Twenty-First Century* 57-58 (Morman J. Vig & Michael E. Kraft eds., 5th ed. 2003) (distinguishing 'broad' and 'narrow' sustainability definitions: defining sustainability broadly includes human health, ecosystem health and resource sustainability; the narrow definition is confined to the third prong); U.N. Rep. of the World Comm'n on Env't and Dev.: Our Common Future, Aug. 4, 1987, U.N. Doc. A/42/25; GAOR, 42d Sess. No. 25 (1987), *available at* http://www.un-documents.net/wced-ocf.htm.

8. Stephen Del Percio, *Affordable Housing*, *in* GREEN BUILDING AND SUSTAINABLE DEVELOPMENT: THE PRACTICAL LEGAL GUIDE 205 (2009). *See generally*, James A. Kushner, *Social Sustainability: Planning for Growth in Distressed Places - The German Experience in Berlin, Wittenberg, and The Ruhr*, 3 WASH. U. J.L. & POL'Y 849, 871 (2000) ("Social sustainability should be

This Article concerns salmon habitat restoration and the controversies that ensue between fish and farms. Although it comes at the eleventh hour, the movement to restore dwindling salmon populations has turned to the health of salmon habitats. This means that we must look to the ecosystems that produce (or do not produce) salmon. As the Puget Sound Nearshore Partnership has urged, "Fix the problem, not the symptoms."[9] Designing restoration projects from a perspective of restoring ecosystem processes "has the greatest chance of increasing numbers of valued biota, such as salmon, or improving other functions we value because it addresses the causes of degradation, not just the symptoms . . . ."[10] Controversies arise because the lands identified for salmon habitat improvements, including floodplains, tributaries, and riparian setbacks, are often designated for (and in some cases were specifically converted and adapted to) agricultural uses.[11]

The question raised in this Article is whether sustainability will prove worthy to inform land use decisions that hinge on the land's productivity. As applied to salmon population recovery, sustainability demands that sound decision-making recognize and promote value in the social, environmental, and economic outcomes of land uses that impact sustainable salmon populations. This Article concludes that the multifunctional approach of sustainability can be particularly helpful in resolving conflicts among competing land uses – not because sustainability demands any particular result in this competition, but because a pluralistic approach will provide crucial insights about the costs (public and private) that stem from foregoing

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recognized as a vital non-ecological element to the larger environmental model of sustainability.").

9. F. Brie Van Cleve et al., *Application of the "Best Available Science" in Ecosystem Restoration: Lessons Learned from Large-Scale Restoration Project Efforts in the USA* 11 (2004), *available at* http://www.pugetsoundnearshore.org/technical_papers/lessonslearned.pdf.

10. KURT FRESH ET AL., GUIDANCE FOR PROTECTION AND RESTORATION OF THE NEARSHORE ECOSYSTEMS OF PUGET SOUND 3 (2004), http://www.pugetsoundnearshore.org /technical_papers/guidance.pdf.

11. *See* SNOHOMISH CNTY. DEPT. OF PUB. WORKS, SURFACE WATER MGMT. DIVISION, A HISTORICAL ANALYSIS OF HABITAT ALTERATIONS IN THE SNOHOMISH RIVER VALLEY, WASHINGTON, SINCE THE MID-19TH CENTURY: IMPLICATIONS FOR CHINOOK AND COHO SALMON 1 (2001), http://www.co.snohomish.wa.us /documents/Departments/Public_Works/SurfaceWaterManagement/AquaticHabitat /Salmon/snohomish/Hab_Alertations/finalhablossreport.pdf.

resource protection or transforming landscapes – insights that are particularly helpful compared to their invisibility in the past.[12] Sustainability analyses will aid decision-makers in making more informed decisions about ecosystem health and the activities that may challenge ecosystem functionality.

Part II of this Article explores the dialogue regarding salmon valuation, recognizing that the manner in which salmon are valued largely determines the treatment that we afford to the species.[13] This section contrasts the historical, commodity-based valuation of salmon with insights from the emerging view of ecosystem services.[14] To illustrate the potential role that sustainability insights can play in the land use context, Part III of this Article looks at the ongoing development of the Smith Island Habitat Restoration project in Snohomish County, Washington, where local governments have pooled resources and collaborated with the specific goal of breaching dikes to restore the floodplain and habitat services that were once offered on what are now agricultural lands. The Smith Island project initially embodied the polemic and rhetorical divide that has long-outlasted the pragmatic turn in environmental jurisprudence;[15] the debate concerned fish versus farms, and it seemed as if only one could prevail. However, as the various parties began thinking more sustainably about the project, the Smith Island Habitat Restoration project drifted towards principles of multifunctionality and pluralism that have guided the implementation of sustainability in other

12. THE ECONOMICS OF ECOSYSTEMS AND BIODIVERSITY ("TEEB"): MAINSTREAMING THE ECONOMICS OF NATURE: A SYNTHESIS OF THE APPROACH, CONCLUSIONS AND RECOMMENDATIONS OF TEEB 19 (2010), http://www.teebweb.org/LinkClick.aspx?fileticket=bYhDohL_TuM%3d&tabid=924&mid=1813 ("Demonstrating the value of ecosystem services provided to cities by the surrounding countryside and urban green spaces can help decision makers maximize the efficient use of natural capital.").

13. *See* NAT'L RES. COUNCIL, UPSTREAM: SALMON AND SOCIETY IN THE PACIFIC NORTHWEST 116-17 (National Academy Press, 1996).

14. *See* Gregory A. Thomas, *Conserving Aquatic Biodiversity: A Critical Comparison of Legal Tools for Augmenting Streamflows in California*, 15 STAN. ENVTL. L. J. 3, 10 (1996).

15. *See* Keith Hirokawa, *Some Pragmatic Observations About Radical Critique In Environmental Law*, 21 STAN. ENVTL. L. J. 225, 256 (2002) (discussing the rising presence of pragmatic analysis in environmental jurisprudence).

contexts.[16] Ultimately, the Smith Island project illustrates why sustainable decision-making demands the participation of the local community, which should "be afforded greater participation in the decision-making processes of capitalist industry and the state (at all levels), as well as the environmental movement itself . . . "[17]

II. EFFORTS TO SUSTAIN SALMON POPULATIONS AS VALUABLE

In the Pacific Northwest, salmon have alternated their existential value as a food source, economic asset, symbolic icon, recreational outlet, and the basis for thousands of pages of biological, sociological, political, and legal literature. The steady decline of the Pacific Salmon has sparked an engaged dialogue concerning the value of salmon and the cost of population recovery. This section considers the history of salmon habitat, the incompatible uses to which such habitat has been converted, and the hatchery solution to the inescapable salmon population problem that has resulted. This section then compares the history of salmon valuation to ecosystem services valuation, an approach that blends ecology and economics, to evaluate the benefits of functioning ecosystems. At stake in this discussion are two very different ways of understanding and valuing salmon that have tangible differences in the way that sustainability in salmon populations might be approached.

A. Land Conversion and the Hatchery Response

Although farming is by no means the only cause of salmon decline, agricultural practices are consistently identified as major contributors.[18] The National Research Council, in its review of the

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16. *See* J.B. Ruhl, *Agriculture and Ecosystem Services: Strategies for State and Local Governments* 17 N.Y.U. L. REV. 424, 431-33 (2008) (discussing the rise in farm multifunctionality).

17. THE STRUGGLE FOR ECOLOGICAL DEMOCRACY: ENVIRONMENTAL JUSTICE MOVEMENTS IN THE UNITED STATES 1 (Daniel Faber ed., The Guilford Press, 1998). *See also* J. B. Ruhl, *The Co-Evolution of Sustainable Development and Environmental Justice: Cooperation, then Competition, then Conflict*, 9 DUKE ENVTL. L. & POL'Y F. 161, 179-80 (1999).

18. *See* SNOHOMISH BASIN SALMONID RECOVERY TECHNICAL COMM., INITIAL SNOHOMISH RIVER BASIN CHINOOK SALMON CONSERVATION/RECOVERY TECHNICAL WORK PLAN ix-x (1999) (identifying the impacts from land conversion as among the highest priority challenges for salmon recovery),

persistent challenges to sustaining viable salmon populations, included findings on the transformative effect of conversion for agricultural uses.[19] The report notes:

> Overall wetlands losses in some areas have been great; for example, only about 9% of the wetlands present before Euro-American colonization remain intact in California (Dahl 1999). Beechie at al. (1994) estimated that Washington's Skagit River was lost from the floodplain because of diking, draining, and filling for agriculture and creation of pasture. The total area of lost slough habitat was about twice the combined losses of tributary habitat due to water withdrawals, impassable culverts, and inundation by a major reservoir.[20]

The report concludes that the consequences of decreased rearing habitat have been substantial, estimated at annual losses of between 220,000 and 560,000 juvenile coho salmon.[21] Conversion of waterways and floodplains has been an ecologically costly undertaking.[22]

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http://www.co.snohomish.wa.us/documents/Departments/Public_Works/surfacewatermanagement/aquatichabitat/salmon/snohomish/tech_work_plan/fulldoc.pdf.

19. NAT'L RES. COUNCIL, *supra* note 13, at 184-85 ("Conversion of riverine wetlands to agricultural fields and livestock pasture and navigation improvements along rivers have transformed river valleys from marshy, densely vegetated areas with highly complex river channels to simplified drainage systems most of whose flow is confined to the mainstem Luchessa 1982.").

20. *Id.* at 185-86 (noting the relevance of floodplain environments to the chances of growth and survival of juvenile salmon).

21. *Id.* at 185.

22. *See* EARTH ECONOMICS, A NEW VIEW OF OUR ECONOMY: NATURE'S VALUE IN THE SNOQUALMIE WATERSHED 37 (2010) ("Agricultural and urban development often results in lost forest cover or riparian vegetation. This shift in land cover is among the most important causes of a smaller freshwater flow to coastal wetlands and bays."); KATIE KNIGHT, WASHINGTON DEPARTMENT OF FISH AND WILDLIFE, LAND USE PLANNING FOR SALMON, STEELHEAD, AND TROUT: A LAND USE PLANNER'S GUIDE TO SALMONID HABITAT PROTECTION AND RECOVERY 23-24 (2009), http://wdfw.wa.gov/publications/00033/wdfw00033.pdf (discussing conversion and cultivation of floodplains and coastal estuaries for agricultural use); NAT'L RES. COUNCIL, *supra* note 13, at 184 (noting that "losses of estuarine habitat have exceeded 90% of the historical area of some Puget Sound river systems.").

The systematic and widespread conversion of estuarine habitats into urban, industrial, and agricultural uses has demonstrated a historical commitment to valuing the use of land for some purposes over others from a position of simple but faulty logic. The structure of the logic is well known: The value of land is determined by its usage in providing commodities; unused land provides no commodities and hence is useless land; floodplains and wetlands are not usable and hence are useless *but* can be converted and made highly productive with some improvements; therefore, converting floodplains and wetlands provides value.[23] In short, it is the way we have valued salmon that has made it economically infeasible to leave land for the fish, and in this sense, the market has not been kind to salmon.

The problem, it seems, is that policymakers have been plagued by an inability to engage in an open and honest dialogue about the relative values of farms and fisheries. Indeed, farms have been given special treatment or even immunization from the reach of environmental law,[24] and agricultural regulations are seldom intended to minimize the environmental impacts of farming practices.[25] J.B. Ruhl has identified the "heavy baggage" of the "core principle" behind our regulatory treatment of agriculture: "that agriculture cannot be 'harmed' in the name of protecting the environment."[26]

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23. *See e.g.,* Jan G. Laitos & Rachel B. Gamble, *The Problem with Wilderness*, 32 HARV. ENVTL. L. REV. 503, 504 (2008) (discussing how in the past the wilderness was not valued because of its inability to produce valuable commodities, which has become less of a truth do to the increase of need a appreciation for wilderness areas); David Sunding & David Ziberman, *The Economics of Environmental Regulation by Licensing: An Assessment of Recent Changes to the Wetland Permitting Process,* 42 NAT. RESOURCES J. 59, 84 (2002) ("Wetlands that are profitable to develop or have a high level of agricultural productivity, by contrast, can be quite expensive to conserve.").

24. *See* J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L. Q. 263, 267 (2000) (discussing the "'anti-law' of farms and the environment.").

25. J.B. Ruhl, *Strategies*, *supra* note 16, at 436-37 (explaining that many farmland preservation techniques are used to preserve the status quo, and are not intended to improve farming practices).

26. J.B. Ruhl, *Agriculture and the Environment: Three Myths, Three Themes,Three Directions*, 25 ENVIRONS ENVTL. L & POL'Y J. 101, 102 (2002). *See also* Andrew Long, *Defining the "Nature" Protected by the Endangered Species Act: Lessons from Hatchery Salmon*, 15 N.Y.U. ENV. L.J. 420, 432 n.61 (2007) (discussing rhetorical opposition to salmon protection).

The principle is perpetuated by the "Three Myths" of U.S. agriculture: that farmers are "the best stewards of the land;" that small farms cause no environmental harms; and that environmental regulation of farms will defeat domestic and international food supply goals.[27] Agriculture has benefitted from a strong political position,[28] and has meanwhile contributed to the faulty logic of land value.

A telling feature of our response to salmon population decline has been our reliance on hatcheries. Salmon hatcheries have historically carried the load of managing the stocks of depleted fisheries.[29] Hatcheries offer a direct solution to the salmon challenge: when more fish are needed, more fish can be hatched.[30] Accordingly, hatcheries allow communities to protect fish without risking a serious commitment of resources or curtailing other more valuable uses for

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27. J.B. Ruhl, *Three Myths, Three Themes, Three Directions*, *supra* note 27, at 102-04. *See*, STATE OF WASHINGTON DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT, DESIGNATION OF AGRICULTURAL LANDS IN CHELAN, KING, LEWIS, AND YAKIMA COUNTIES 9 (2004), http://www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&ItemID=5937&MId=944&wversion=Staging ("Fruit trees in bloom, cattle grazing, and golden wheat fields help to comprise the Washington environment.").

28. *See* Jerrold A. Long, *Private Lands, Conflict, and Industrial Evolution in the Pose-Public Lands West*, 28 PACE ENVTL. L. REV. 670, 688 (2011) (discussing how governmental programs and subsidies help to encourage "productivism" in farming and the food industry). *See also* Mary Jane Angelo, et al., *Small, Slow, and Local: Essays on Building a More Sustainable and Local Food System,* 12 VT. J. ENVTL L. 353, 356 (2011) ("The Green Revolution was promoted by a new suite of government policies that encouraged high-yield farming of commodity crops by linking subsidy payments to production levels, more government money for research and development on high yield farming, and a vast network of extension service education and training of farmers in high-yield commodity farming.").

29. MICHAEL C. BLUMM, SACRIFICING THE SALMON: A LEGAL AND POLICY HISTORY OF THE DECLINE OF COLUMBIA BASIN SALMON 110 (2002) (discussing the intent of artificial production of salmon for transplantation into eastern rivers); Phillip S. Levin & John G. Williams, *Interspecific Effects of Artificially Propagated Fish: An Additional Conservation Risk for Salmon*, 16 CONSERV. BIOLOGY 1581, 1582 (2002) (discussing the history of artificial fish production and its current use).

30. RIK SCARCE, FISHY BUSINESS: SALMON, BIOLOGY, AND THE SOCIAL CONSTRUCTION OF NATURE 106 (2000).

the land and water.[31] Hatcheries succeeded in maintaining the logic of land value, in which the idea of restoring habitat (to the exclusion of anthropocentric uses) is expensive.[32]

At least in part, the favor of hatchery salmon over habitat solutions was determined long before the decline of salmon populations became an obvious problem:[33] the logic of land value, accompanied by property rights and privatization, construed salmon as a commodity, and not as an ecosystem attribute. As a result, the economics of hatchery over habitat restoration dominated the policy dialogue and research was devoted to hatcheries.[34] As a tribute to this disposition, it has been noted that, "[i]n many cases, populations that have not declined are composed largely or entirely of hatchery fish."[35]

In the meantime, it is evident that past responses to the salmon decline have not been engaged as *land use* conflicts. The imbalance pervaded the debate: the use of land for farming provides economic value, livelihood, community, and character; leaving lands flooded, inundated, and unusable is effectively a wasted opportunity to improve and make use of the land.

B. Valuing the Relationship between Salmon Recovery and Ecosystem Functions

It might be difficult to justify questioning a salmon restoration policy that "puts fish into the rivers and ocean where anglers and commercial fishers have a chance to recreate and to make profits."[36]

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31. *See* BLUMM, *supra* note 31, at 111(discussing the belief that manipulation of nature was an improvement).

32. SCARCE, *supra* note 31, at 106-07 (recognizing that the "dream of buying habitat instead of hatcheries seems far-fetched, for the substantial cost of water or streamside land would be difficult to bear in times of governmental belt-tightening. And it is doubtful that taking energy-and labor-intensive hatcheries out of production and spending that money on habitat would yield as many salmon, thereby harming and not enhancing the productivity so important to rationalized systems.").

33. The first listing of Pacific Salmon occurred in 1989 and involved winter Chinook. 54 Fed. Reg. 32,085 (Aug. 4, 1989).

34. *See* SCARCE, *supra* note 31, at 115 (noting that "governmental and economic entities continue to exert control over salmon biology by effectively limiting the questions that can be researched by scientists.").

35. NAT'L RES. COUNCIL, *supra* note 13, at 77.

36. SCARCE, *supra* note 31, at 106.

Nevertheless, hopes for salmon recovery through hatcheries may have been doomed from the start: "there was little concern among hatchery biologists for maintaining the characteristics of wild salmon. The emphasis was on the quantity of salmon produced and not the quality of those fish."[37] As such, although hatchery fish may be fine for the dinner table, the practice risks havoc on the survivability of salmon.[38] The problem (as always) is in recognizing that our past approach to environmental management has become a *cause* of decline; yet our ability to remain adaptive, which is driven by the notion of "principled flexibility," may yet justify our experimental approach to resource management.[39] In either event, we may need our logic to fail to understand the depth of Holmes' insight in the *Common Law*: "The life of the law has not been logic: it has been experience."[40] Hatchery programs failed to restore the

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37. SCARCE, *supra* note 31, at 110. *See also* KURT FRESH ET AL., GUIDANCE FOR PROTECTION AND RESTORATION OF THE NEARSHORE ECOSYSTEMS OF PUGET SOUND 3 (2004) (arguing that "restoration projects that seek to place species-specific habitats, engineered structures, or animals in the landscape are less likely to succeed."), http://www.pugetsoundnearshore.org/technical_papers/guidance.pdf.

38. *See, e.g.*, SNOHOMISH BASIN SALMONID RECOVERY TECHNICAL COMM., *supra* note 18, at vii (identifying artificial production as a potential risk in three ways: gene introgression in wild salmon; ecological risks including increased competition; and "masking the true status of wild fish due to large numbers of hatchery fish.").

39. Robin Kundis Craig, *"Stationarity is Dead"— Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 HARV. ENVTL. L. REV. 9, 17-18 (2010) (The notion of principled flexibility has been described in the climate change context as ". . . both the law and regulators (1) distinguish in legally significant ways uncontrollable climate change impacts from controllable anthropogenic impacts on species, resources, and ecosystems that can and should be actively managed and regulated, and (2) implement consistent principles for an overall climate change adaptation strategy, even though the application of those principles in particular locations in response to specific climate change impacts will necessarily encompass a broad and creative range of adaptation decisions and actions.").

40. OLIVER WENDELL HOLMES, *The Common Law, in* 3 THE COLLECTED WORKS OF JUSTICE HOLMES 109, 115 (S. Novick ed., 1995). As Holmes stated:
"It is revolting to have no better reason for a rule of law than that so it was laid down in the time of Henry IV. It is still more revolting if the grounds upon which it was laid down have vanished long since, and the rule simply persists from blind imitation of the past."
Oliver Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457, 469 (1897).

salmon population, and certainly could be considered a failure in our past logic.[41]

As in many natural resource decisions, the price of salmon in the marketplace has played an influential role in determining their treatment in policy and management decisions.[42] Other values[43] for

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41. It may at least be observed that, as one type of hallmark for the measure of unacceptable loss, the Endangered Species Act (ESA) has found a special place in the Pacific Northwest, and that Pacific Salmon has provided extensive fodder for law and literature under the ESA. *See generally*, Blumm, *supra* note 31; Michael C. Blumm, *Reexamining the Parity Promise More Challenge Than Successes to the Implementation of the Columbia Basin Fish and Wildlife Program*, 16 Envtl. L. 461 (1986).

42. Of course, the market value of salmon may include the subsistence value in maintaining the salmon population at a certain level, a value that particularly attaches to those "who market either salmon or the privilege of trying to capture or view salmon." NAT'L RES. COUNCIL, *supra* note 13, at 119 (including, among others, "fishers, processors and distributors; restaurants, suppliers, and boat builders; and tour operators, fishing guides, and charter boat operators . . ."). This direct value can come from averages of commercial and recreational salmon fishing harvests. Aaron de Leest, *The 1999 Pacific Salmon Agreement: Will it Work?,* 7 S.W. J. L. & TRADE AM. 173, 174-75 ("The annual Pacific salmon harvest has a value of some $300 million in the commercial harvest and an estimated value of $108 million to $396 million in recreational salmon fishing."). *See also* Karol de Zwage Brow, *Truce in the Salmon War: Alternatives for the Pacific Salmon Treaty*, 74 Wash. L. Rev. 605, 611 (1999); NAT'L RES. COUNCIL, *supra* note 13, at 124-25. As an example of policy and management decisions not considering the full value of the Pacific Northwest is the growth of dams and hydroelectric power along the Columbia River, which led to the salmon population reaching an all-time low. *Id.* at 131-38. *See also* ROBERT T. LACKEY, *Restoring Wild Salmon to the Pacific Northwest: Chasing an Illusion?* §6 in WHAT WE DON'T KNOW ABOUT PACIFIC NORTHWEST FISH RUNS—AN INQUIRY INTO DECISION-MAKING 91-143 (Patricia Koss & Mike Katz, Eds., Portland State Univ. 2000) *available at* http://www.epa.gov/wed/pages/staff/lackey/pubs/illusion.htm; Ivy Anderson, *Protecting the Salmon: An Implied Right of Habitat Protection in the Stevens Treaties, and Its Impact on the Columbia River Basin,* 24 VT. L. REV. 143, 152 (1999).

43. Ecosystem valuation implements the concept of Total Economic Value (TEV), which generally estimates values in two categories: use values and nonuse values. Use values consist of direct use value (extractive, consumptive and structural uses), indirect use value (derived from services of functioning ecosystems), and option value (relating to value in obtaining benefits in the future). Nonuse values come from ecosystem processes that provide benefits without regard to use and consist of existence value (knowledge of existence) and bequest value (ability to pass to future generations). *See* MARK SMITH, ET AL., PAY:

salmon that are generally excluded from market valuation involve their contribution to genetic diversity,[44] the future role of salmon[45] and the value attached for protecting the salmon for its future use,[46] symbolic and cultural worth,[47] biological and ecological values,[48] and the social values of the salmon, including nutritional heath, recreation, spiritual, altruistic,[49] and significance to the region's heritage.[50] These values have been described as non-use values, in which worth appears to correspond to mere existence or existence over time.[51] In the Pacific Northwest, wild salmon are valued in a way that exceeds their market value.[52] Symbolic values stem from a self identification process where local families and community members identify with salmon.[53] Wild salmon provide spiritual values that have been adopted by fishing communities and are embraced in local and regional artwork.[54] Communities outside the Pacific Northwest associate with the salmon's courageous journey

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ESTABLISHING PAYMENTS FOR WATERSHED SERVICES 32 (2008), http://cmsdata.iucn.org/downloads/pay.pdf.

44. NAT'L RES. COUNCIL, *supra* note 13, at 119.

45. *Id.*

46. TED L. HELVOIGT & DIANE CHARLTON, THE ECONOMIC VALUE OF ROGUE RIVER SALMON 15 (ECONorthwest 2009), http://savethewildrogue.org/files/RogueSalmonFinalReport.pdf.

47. NAT'L RES. COUNCIL, *supra* note 13, at 123.

48. *Id.*

49. Altruistic value is defined as saving the salmon as a good for use now not at a later date but for a purpose inconsistent with its direct value. *See* HELVOIGT & CHARLTON, *supra* note 47, at 15.

50. NAT'L RES. COUNCIL, *supra* note 13, at 123.

51. William J. Jaeger, *Saving Salmon with Fishwheels: A Bioeconomic Analysis,* 37 NAT. RESOURCES J. 785, 786 (1997). *See also* NAT'L RES. COUNCIL, *supra* note 13, at 119. Because the salmon population has been in a steady decline, the salmon's full value is complex and difficult to estimate. HELVOIGT & CHARLTON, *supra* note 47, at 19; NAT'L RES. COUNCIL, *supra* note 13, at 121.

52. *See* DE LEEST, *supra* note 43, at 174. *See also*, Letter from Douglas G. Hennick, Wash. Dep't of Fish and Wildlife, to Mark Stamey, Snohomish Cnty. Pub.Works 3 (July 6, 2011) http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/Smith%20Island/DouglasHennick7-6-11.pdf ("The DEIS's method of estimating a dollar value of the fish that can be produced by this project substantially underestimates their true value to the community.").

53. NAT'L RES. COUNCIL, *supra* note 13, at 123.

54. *Id.*

upstream as the fish follow familiar scents from ocean to their birthing waters.[55]

The way we conceptualize salmon has the potential to create gaps between the market and a fuller, more complete value of salmon as it influences the decision-making process.[56] The circumstances of undervaluation are common to ecosystem services:

> Ecosystem services are especially difficult to measure for the same reason that ecosystems themselves are threatened. Many of the services provided by ecosystems are positive externalities. The flood-control benefits, water-filtration services, and species-sustaining services offered by ecosystems are usually external to the parties involved in the market decision as to whether and at what price a given habitat will be sold. As a result, the habitats that support complex ecosystems tend to be sold too cheaply in the absence of public intervention, since important social benefits are not captured in the price.[57]

The focus on market value of goods produced by ecosystems (without corresponding attention given to the method of production) has contributed to species decline – not merely through consumption, but also by the lack of understanding or incentive to protect ecosystem functions that produce the good. In the context of environmental quality and sustainability, it has recently been observed that the commodification of nature has produced unacceptable, expensive, and unsustainable environmental conditions:

> From time immemorial we have too lightly valued some of the most basic resources on which we depend, including the air we breathe, the water we drink, and the ability of the earth to support a wide variety of life. The cumulative impact of human activity on the natural systems that

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55. *Id.*

56. *Id.* at 125.

57. Lawrence H. Goulder & Donald Kennedy, *Valuing Ecosystem Services: Philosophical Bases and Empirical Methods*, *in* NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS 28 (Gretchen C. Daily ed., 1997).

> produce these resources, particularly over the past one hundred years, and our rather recent understanding of the dramatic scope of that impact, make it impossible for us to take them for granted any longer.[58]

What we have failed to do in the past – and in important ways continue to fail to do – is account for the services that functioning ecosystems provide.

The ecosystem services approach fills some of the gaps in a sustainability analysis by demanding that we account for the linkages between ecosystem goods and services, market and nonmarket values, and ecosystem processes and human wellbeing, especially when value plays a role in determining how we interact with, transform, and use nature and its resources.[59] Hence, when we discuss species protection and recovery, ecosystem services requires identification and valuation of those ecosystem processes that can support recovery of the species.[60] Moreover, when the ecosystem services resulting from habitat restoration are included in the salmon valuation analysis, preserving and restoring salmon habitats becomes a more viable concept because it adds the value of the natural benefits secured through restoration while promoting salmon

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58. Joshua S. Reichert, *Perspectives on Nature's Services*, *in* NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS xviii-xix (Gretchen C. Daily ed., 1997).

59. *See generally* Karl-Goran Maler, Sara Aniyar, & Asa Jansson, *Accounting for Ecosystem Services as a Way to Understand the Requirements for Sustainable Development*, 105 PNAS 9501 (2008) (discussing the importance and methods of accounting for ecosystem services: interpreting sustainable development to mean "one where human welfare . . . is not going down over time. Productive capacity of an economy is determined by its capital stocks. These are man-made, human, and natural capital. Sustainable development requires that enough of these stocks are left to subsequent generations."); Keith H. Hirokawa, *Three Stories About Nature: Property, the Environment, and Ecosystem Services*, 62 MERCER L. REV. 541 (2011); Keith H. Hirokawa, *Disasters and Ecosystem Services Deprivation: from Cuyahoga to the Deepwater Horizon*, 74 ALBANY L. REV. 543 (2011).

60. NAT'L RES. COUNCIL, COMM. ON ASSESSING AND VALUING THE SERV. OF AQUATIC AND RELATED TERRESTRIAL ECOSYSTEMS, Valuing Ecosystem Serv.: Toward Better Envtl. Decision-Making 172 (2005) [hereinafter VALUING ECOSYSTEM SERV.] (". . . ecosystems provide a wide range of services. Because of the interconnection of processes within an ecosystem, it may be difficult to isolate and study the production of one ecosystem service without simultaneously considering other services.").

recovery.[61] The ecosystem services analysis creates more tools for land use and environmental decision makers, at least because of the realization that "[e]cosystems are capital assets: if properly managed, ecosystems supply a stream of critical life-support services."[62]

Either by themselves or as indicators, salmon may be described as "essential parts of the aquatic and riparian ecosystems that they inhabit."[63] First, salmon are intricately involved in ecosystem processes. With an increased salmon population the waterways involved will experience a larger transfer of nutrients as a result of spawning and dying salmon as well as food sources for other aquatic wildlife. The carcasses of adolescent and adult salmon provide resources for those higher on the food chain.[64] A transfer of nutrients from the salmon to the water occurs when the salmon swim upstream to spawn and then die soon after.[65] This natural process deposits a tremendous amount of nutrients that the salmon eggs and carcasses may carry to the stream where the fish will spawn and die.[66] The nutrients sustain healthy plant populations along the riparian areas of ocean tributaries.[67]

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61. As one District Court has noted, "[a] species' simple presence in its natural habitat may stimulate commerce by encouraging fishing, hunting, and tourism . . . .All of the industries we have mentioned-pharmaceuticals, agriculture, fishing, hunting, and wildlife tourism-fundamentally depend on a diverse stock of wildlife . . . ." *In re Delta Smelt Cons. Cases*, 663 F.Supp.2d 922, 941 (E.D.Cal. Oct. 8, 2009) ("A Fish and Wildlife Service report that found that in 2001 recreational anglers spent $35.6 billion, recreational hunters spent $20.6 billion, and wildlife watchers spent $38.4 billion. United States Fish & Wildlife Serv., 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation 4 (2001)"). *See also* U.S. FISH & WILDLIFE SERV., FINAL ENVIRONMENTAL IMPACT STATEMENT DOUBLE-CRESTED CORMORANT MANAGEMENT IN THE UNITED STATES 43 (2003). Salmon habitat restoration will add to these values by creating jobs for commercial fishing and related businesses, cleaner water, flood protection, and recreational uses that the open space of larger salmon habitats will bring. HELVOIGT & CHARLTON, *supra* note 47, at 10-11.

62. Geoffrey Heal, et al., *Protecting Natural Capital Through Ecosystem Service Districts*, 20 STAN. ENV. L. J. 333, 334 (2001).

63. NAT'L RES. COUNCIL, *supra* note 13, at 123.

64. *Id.*

65. *See generally* R.E. Bilby et al., *Transfer Of Nutrients From Spawning Salmon To Riparian Vegetation In Western Washington*, 132 TRANSACTIONS OF THE AM. FISHERIES SOC'Y, 733 (2003), *available at* http://www.fs.fed.us/pnw/lwm/aem/docs/bisson/2003_bisson_transfer_of_nutrients.pdf.

66. *Id.* at 733.

67. *Id.* at 734.

The more pervasive reason that an ecosystem approach differs from past efforts to revive the salmon population relates to the services that *accompany* restoration of nature's capacity to sustain the salmon population. Salmon habitat restoration often supplies the added benefits that result from restoring the functionality of floodplains where the salmon habitats are located.[68] These natural benefits include improving the watershed by increasing and improving wetlands, water quality, flood control, and ground water recharge; greenhouse gas reduction and climate change impact control; soil and erosion control; delivery of nutrients to and from riparian vegetation; pollination; food provision; and they may involve expansive umbrella habitats to augment biodiversity.[69]

Underdeveloped lands tend to improve water quality by reducing the amount of contamination entering the watershed through pollutant filtration in upstream wetlands, vegetation, and soils.[70] Therefore, the restoration of a natural floodplain will have the effect of restoring the water quality improvement function of the watershed.[71] A salmon restoration project may restore the forested and vegetated watershed back to its natural state from the farmland, enhancing the watershed's functionality.[72] Meanwhile, as wetlands filter out waterborne contaminants and provide a renewable supply of

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68. Margaret E, Byerly, *A Report to the IPCC on Research Connecting Human Settlements, Infrastructure, and Climate Change,* 28 PACE ENVTL. L. REV.936, 954 (2011). *See also* DAVID BAKER, ET AL., GAINING GROUND: WETLANDS HURRICANES AND THE ECONOMY THE VALUE OF RESTORING THE MISSISSIPPI RIVER DELTA 22, http://www.eartheconomics.org/FileLibrary/file/Reports/Louisiana/Earth_Economics_Report_on_the_Mississippi_River_Delta_compressed.pdf (discussing who might receive the benefits of the services provided by certain ecosystems in the Mississippi River Delta).

69. NAT'L RES. COUNCIL, *supra* note 13, at 123. Biological diversity has principal values of "adaptedness in existing populations and the potential for further evolution, the maintenance of the spatial and temporal bases of production, the knowledge gained from studying diverse organisms, and indeed the services that organisms provide to other inhabitants of the earth, including the ecological services that support human activities." *Id.*

70. James Salzman, Barton H. Thompson Jr. & Gretchen C. Dailey, *Protecting Ecosystem Services: Science, Economics, and Law*, 20 STAN. ENVTL. L. J. 309, 314 (2001).

71. Byerly, *supra* note 69, at 954.

72. *See* Ruhl, *Strategies*, *supra* note 16, at 431-33.

fresh drinking water,[73] they also store large amounts of water and increase aquifer recharge.[74] Wetlands serve as vital breeding and nursing grounds for an array of aquatic and terrestrial species, and as such offer substantial value in the production of ecological goods.[75] Coastal wetlands provide and regulate the nutrients and energy that are critical to the success of the species that live within them.[76] Wetlands store, cycle, and process nutrients in the water.[77] They also provide structural and erosion control services, which ensure that the lands adjacent to the water body or wetland are protected[78] from shocks from flows that would normally erode the adjacent land.[79]

These are important considerations, and in some cases the mere identification of these benefits may be sufficient to justify an ecosystem restoration project. However, in other (perhaps far more numerous) cases, these benefits must be quantified so that alternative land use choices can be compared on a common ground. Finding common ground may be complicated, of course, due to the priorities underlying competing perspectives, the traditional segregation between the study of social and natural phenomena,[80] and the disparities in how gains and losses are valued.[81] The economic component of ecosystem services helps by providing a valuation of non-use values in a common vocabulary. However, as illustrated in the case that follows, it is the framework of sustainability that insures the comparison is meaningful.

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73. MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: WETLANDS AND WATER 30 (2005), http://www.maweb.org/documents/document.358.aspx.pdf.

74. *Id.*

75. *See* Valuing Ecosystem Serv., *supra* note 61, at 167.

76. *Id.*

77. MILLENNIUM ECOSYSTEM ASSESSMENT, *supra* note 74, at 32.

78. *Id.* at 30.

79. *Id.*

80. *See* Bongghi Hong, et al., *Connecting the Ecological-Economic Dots in Human-Dominated Watersheds: Models to Link Socio-Economic Activities on the Landscape to Stream Ecosystem Health*, 91 LANDSCAPE AND URBAN PLANNING 78, 79 (2009).

81. Thomas C. Brown & Robin Gregory, *Why the WTA-WTP Disparity Matters*, 28 ECOLOGICAL ECON. 323, 330 (1999) (recognizing that a "consequence of the disparity is that policies framed as achieving a reduction in losses will be viewed as more valuable than policies framed as achieving a gain.").

IV. GUIDING ENVIRONMENTAL DECISIONS: A CASE STUDY OF THE SMITH ISLAND RESTORATION PROJECT

A developing case that illustrates the potential of ecosystem services to sustainable land use choices is found in Snohomish County, Washington, where local government and private partners are pursuing the restoration of estuarine marshes through the Smith Island Salmon Habitat Restoration Project.[82] The controversy surrounding this project exhibits the pitfalls of the conventional logic regarding valuing land, the elusive nature of Ruhl's "three myths,"[83] but also the benefits of investigating the benefits of inclusiveness and divergent voices in a typical sustainable fashion. The initial SEPA determination[84] for the Smith Island Project was understandably negative: the intended consequences of the action would be environmentally beneficial, with few obvious adverse impacts arising from the removal of human-induced alterations to salmon habitat and floodplain function.[85] However, in what followed, the Smith Island Restoration Project illustrated a productive way to take advantage of ecosystem services and the otherwise complex process of environmental impact review.

A. Dikes Along the Snohomish River

The Snohomish River basin is the second largest river basin draining into the Puget Sound and its second largest river estuary.[86]

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82. *Smith Island Restoration Project*, SNOHOMISH CNTY. PUB. WORKS: SURFACE WATER MANAGEMENT http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SWM/Work_Areas/Habitat/Salmon/smithisland.htm (last visited Aug. 12, 2011); Snohomish Cnty. Pub. Works, State Envtl. Policy Act (SEPA) Envtl. Checklist, Attachment 1 Detailed Project Description 7-8, 2009 (on file with author).

83. Ruhl, *Three Myths, Three Themes, Three Directions*, *supra* note 27, at 103-04.

84. Snohomish Cnty. Pub. Works, Determination of Non-Significance (DNS) 1 (Apr. 2009) (on file with author).

85. *Id.*

86. SNOHOMISH CNTY. DEPT. OF PUB. WORKS, SURFACE WATER MGMT. DIVISION, SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, 3-4, 11-17 (June 2005), http://www.co.snohomish.wa.us/documents/Departments/Public_Works/surfacewatermanagement/snohomishsalmonplanfinal/Final_Compiled_Plan.pdf [hereinafter SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN].

Despite the astounding habitat features existing in the watershed,[87] the Snohomish River has long been viewed for its potential to serve development and economy rather than ecology. When Dr. Henry Smith explored the Snohomish River Basin in 1863, "he found thousands of acres of freshwater tidelands and low-lying prairies that he said could 'easily be reclaimed by ditching.'"[88] Early settlers of the Snohomish River Valley found "[n]o land anywhere can be found of superior fertility, or that will produce larger crops of grain or vegetables . . . "[89] Non-native settlement in the Snohomish River Valley region began in 1853, and the entire forest in the Snohomish River floodplain was harvested by 1902.[90] Many of the estuarine tidal marshes were reclaimed by dikes by 1909[91] or impaired through logging. Overall, 85% of the prior existing estuary ecosystem has been destroyed,[92] including approximately forty-four miles of riparian and estuarine habitat along the Snohomish River and its tributaries, which has been diked and as such destroyed.[93]

Although the conversion of estuarine lands to other uses has arguably been productive,[94] the depletion of salmon has marred any

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87. The Snohomish River basin provides "a highly productive and diverse environment [that] provides unique and critical habitat for Chinook and other salmon for rearing, migration, and transitioning between fresh- and saltwater (smoltification)." *Id.* at 11-17.

88. Lynn Thompson, *Snohomish Cnty. Tries to Reconcile Resorting Salmon Habitat, Preserving Farmland,* SEATTLE TIMES, Oct. 13, 2008, *available at* http://seattletimes.nwsource.com/html/localnews/2008259770_fishvfarm13m.html.

89. SNOHOMISH CNTY. DEPT. OF PUB. WORKS, SURFACE WATER MGMT. DIVISION, A HISTORICAL ANALYSIS OF HABITAT ALTERATIONS IN THE SNOHOMISH RIVER VALLEY, WASHINGTON, SINCE THE MID-19TH CENTURY: IMPLICATIONS FOR CHINOOK AND COHO SALMON 23 (2001), http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/AquaticHabitat/Salmon/snohomish/Hab_Alertations/finalhablossreport.pdf [hereinafter A HISTORICAL ANALYSIS].

90. *Id.* at 21.

91. *Id.* at 22.

92. SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, *supra* note 87, at 11-19.

93. *Id.*

94. On the other hand, in 1995, the Initial Watershed Assessment for Water Resource Inventory Area reported significant adverse influences from municipal, agricultural, and industrial land uses on water quality, as well as an absence of both in-stream and out-of-stream habitat features. *See generally* PAC. GROUNDWATER GRP, ET AL., DRAFT, INITIAL WATERSHED ASSESSMENT, WATER RESOURCES AREA

gains in productivity in the Snohomish River Basin and Puget Sound area. Salmon and steelhead runs were identified for protection under the federal Endangered Species Act,[95] after which the State of Washington struggled to maintain control of salmon recovery efforts by passing the State Salmon Recovery Act.[96] Through the Act, the Washington State legislature seeks to "improve salmonid fish runs . . . ."[97] Further, it is acknowledged by the State that such an improvement should be accomplished with strong localized efforts and regional participation in habitat restoration projects.[98]

The burden of salmon recovery in the Snohomish Basin has since fallen into the hands of two complementary groups: the Snohomish Basin Recovery Forum and the Snohomish Basin Salmonid Recovery Technical Committee.[99] Following the listing of Chinook Salmon and Bull Trout under the ESA, the Snohomish Basin Salmon Conservation Plan was adopted in an effort to centralize salmon needs and challenges across the entire Snohomish River basin[100] with the stated goal of restoring salmon production "to a level that will sustain fisheries and non-consumptive salmon-related cultural and ecological values."[101] These were lofty goals, of course, but the real turning point was evidenced in the formulation of the salmon recovery vision. In the Snohomish River Basin Salmon Conservation Plan, the Forum explicitly adopted a "habitat hypothesis" to provide an ecosystem-based foundation and framework for recovery planning and activities:

7, SNOHOMISH RIVER WATERSHED (Mar. 17, 1995), http://www.ecy.wa.gov/pubs/95006.pdf.

95. Endangered Species Act of 1973, 16 U.S.C. § 1531 et. seq. (1973); 50 CFR §223.102 (1996).

96. WASH. REV. CODE § 77.85.005 (1999). In this early initiative to restore the salmon populations the legislature stated that "habitat restoration is a vital component of salmon recovery efforts." *Id.*

97. *Cowlitz Cnty. v. Martin,* 177 P.3d 102, 104 (Wash. Ct. App. 2008); Wash. Rev. Code § 77.85.005 (1999).

98. *Cowlitz Cnty. v. Martin,* 177 P.3d at 104-05; Wash. Rev. Code § 77.85.005 (1999).

99. SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, *supra* note 87, at 3-5.

100. *Id.* at 3-4.

101. *Id.* at 8-1.

> Habitat quantity and quality affect capacity and survival throughout the salmon life cycle. The quantity and quality of aquatic habitat and the watershed process conditions that create and sustain them have been substantially altered across the Snohomish River basin. Over many decades, public and private actions have changed land use and land cover across the landscape and altered the character and condition of stream corridors and floodplains.[102]

In the investigation of this hypothesis, the Forum recognized that an ecosystem approach was a necessary foundation for salmon recovery, given that "watershed processes drive habitat conditions and, in turn, population performance."[103]

With its restoration plan focused on habitat, the Forum identified estuary restoration as a fundamental component of its implementation plan.[104] The new focus helped the Forum to identify the loss of salmon rearing habitat as the leading cause of population decline in the Chinook and other species.[105] The conservation plan established the goal of preserving 1,483 acres and restoring an additional 1,237 acres of estuarine habitat.[106] The plan called for County acquisition of vital estuary and tidal marshlands for restoration purposes through the Priority Lands Acquisition (PLA) program.[107] The PLA program has enabled the county to identify and secure funding for acquisition of properties that demonstrate high restoration potential, recreational opportunities, or other ecosystem services such as flood control.[108]

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102. *Id.* at 5-5.

103. *Id.* at 5-7. *See also id.* at 5-5 ("An ecosystem approach to salmon recovery is critical. Watershed processes initiated throughout the river basin strongly influenced habitat capacity and conditions downstream. Furthermore, multiple habitat factors may be at work in limiting the population, or may shift in relative importance as conditions vary over time.").

104. SNOHOMISH CNTY. PUB. WORKS, STATE ENVTL. POLICY ACT (SEPA) ENVTL. CHECKLIST, ATTACHMENT 1, *supra* note 83, at 7-8.

105. SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, *supra* note 87, at 5-5.

106. *Id.* at 8-6.

107. SNOHOMISH CNTY. PUB. WORKS, STATE ENVTL. POLICY ACT (SEPA) ENVTL. CHECKLIST, ATTACHMENT 1, *supra* note 83, at 3.

108. *Id.* By the time the Snohomish River Basin Salmon Conservation Plan was published in 2005, Snohomish County had acquired approximately 350 acres for

With the financial and technical support of its partners in the Forum,[109] the County engaged property owners in the floodplain for the purpose of acquiring ownership interests in properties with potential restoration value, including Smith Island.[110]

B. The Smith Island Salmon Restoration Project

Smith Island, which comprises 486 acres in the Snohomish River estuary, provided productive estuarine land before being diked and drained to create farmland.[111] The recapture of salmon habitat by restoring the estuarine characteristics on Smith Island was identified as a high priority in the Forum's recovery efforts[112] and the PLA[113]

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habitat restoration, mitigation, and public access. *See* SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, *supra* note 87, at 8-14.

109. For instance, at the time the Snohomish River Basin Salmon Conservation Plan was completed, the City of Everett and U.S. Army Corps of Engineers were participating in restoration and mitigation projects in the Union Slough. *See* SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, *supra* note 87, at 8-15. Snohomish County, in conjunction with the Forum and the Washington State Department of Ecology, later launched efforts to restore salmon habitat and improve water quality in the upstream Norwegian Bay and Fields Raffle estuaries. *See also* DEP'T. OF ECOLOGY, SNOHOMISH RIVER BASIN: AN ECOSYSTEM IN TRANSITION, (Oct. 2009), http://www.ecy.wa.gov/pubs/0910085.pdf.

110. Snohomish County's Surface Water Management Division has been active in promoting and supporting habitat recovery efforts, including by leading or participating in salmon recovery planning on the Snohomish, Stillaguamish, Sammamish, Cedar, Skagit and Sauk Rivers and Lake Washington. *See Actions the Cnty. is Taking to Recover Salmon*, SNOHOMISH CNTY. SURFACE WATER MGMT DIV., *available at* http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SWM/Work_Areas/Habitat/Salmon/countyactions.htm. In addition, Snohomish County has assessed a property tax to support its Conservation Futures Fund. In 2011, Snohomish County awarded more than $3.1 million from the Fund for purposes of acquiring more than 3,000 acres of lands for salmon and wildlife habitat, water quality protection, and outdoor recreational opportunities. Press Release, Snohomish Cnty., Cnty. Approves Conservation Futures Acquisitions (June 1, 2011), *available at* http://www.co.snohomish.wa.us/documents/Departments/Council/News/NR-ConservationFutures.pdf.

111. SNOHOMISH CNTY. PUB. WORKS, STATE ENVTL. POLICY ACT (SEPA) ENVTL. CHECKLIST, ATTACHMENT 1, *supra* note 83, at 1.

112. Snohomish Basin Salmon Recovery Forum, Snohomish River Basin Chinook Salmon Near Term Agenda 24-25 (2001), http://www.co.snohomish.wa.us/documents/Departments/Public_Works/surfacewatermanagement/aquatichabitat/salmon/snohomish/near_term_actions/fulldoc.pdf.

for the Island's size, location, and potential to provide excellent rearing and staging habitat for juvenile salmon.

Although there are a variety of anticipated incidental benefits, the fundamental goal of the restoration project is to restore estuarine tidal marshlands that have been disconnected from the Snohomish River and, in the process, recapture lost critical salmon habitat in the Snohomish River watershed.[114] The restoration of estuary and tidal marshland provides much to the salmon habitat restoration effort because the slow water current allows the salmon to transition in the freshwater and saltwater mixing zone, fostering salmon rearing and migration.[115]

Currently, dikes disconnect the marshes of Smith Island from the Union Slough, protecting fallow pastures, a tree farm and nursery, a poplar tree plantation, and a boarding stable for horses.[116] The restoration of Smith Island would involve the removal of sectional pieces of the Union Slough dikes to allow for inundation.[117] Union Slough and the corresponding dikes to be breached are located on the eastern side of Smith Island.[118] The project will then construct dikes

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113. The largest parcel on Smith Island, the Rhodes property, was recognized by the PLA program as the highest priority land to acquire for habitat restoration purposes. SNOHOMISH CNTY. PUB. WORKS, STATE ENVTL. POLICY ACT (SEPA) ENVTL. CHECKLIST, ATTACHMENT 1, *supra* note 83, at 3. In conjunction with the acquisition of the Rhodes property, Williams NW Pipeline Company donated 32-acres of land for mitigation purposes, and a partnership with the City of Everett have contributed to the availability of project. *Id.* at 7-8. *See also* Lynn Thompson, *Snohomish Cnty. Tries to Reconcile Resorting Salmon Habitat, Preserving Farmland,* SEATTLE TIMES, Oct. 13, 2008, http://seattletimes.nwsource.com/html/localnews/2008259770_fishvfarm13m.html.

114. SNOHOMISH CNTY.PUB. WORKS, DETERMINATION OF SIGNIFICANCE (DS) AND REQUEST FOR COMMENTS ON SCOPE OF THE ENVIRONMENTAL IMPACT STATEMENT (EIS) 1, 2009 (on file with author) [hereinafter SNOHOMISH CNTY.PUB. WORKS, DETERMINATION OF SIGNIFICANCE].

115. John M. Volkman, *The Endangered Species Act and the Ecosystems of the Columbia River*, 14 HASTINGS W-N.W. J. ENVTL. L. & POL'Y 833, 834-35 (2008) (discussing the effectiveness of the Endangered Species Act in restoring Columbia River salmon).

116. SNOHOMISH CNTY PUB. WORKS, STATE ENVTL. POLICY ACT (SEPA) ENVTL. CHECKLIST, ATTACHMENT 1, *supra* note 83, at 2-3.

117. *Id.* at 4.

118. *Id.* at 9-11.

on the western side of the newly created estuary to protect the existing Interstate 5 (I-5) from frequent flooding.[119]

Three dike alignments were initially proposed for consideration along with a no action alternative.[120] Alignment A is a proposed 8360-foot dike to be constructed at the far west side of Smith Island towards I-5.[121] The alignment would provide 478 acres of estuary restoration and provide the least amount of area behind the dike, twenty-two acres, for agricultural and other land uses.[122] This alignment would provide flood protection for the existing I-5, telecommunication lines, City of Everett Sewage treatment plant, and underground parts of a natural gas pipeline.[123] A partnership with the City of Everett would allow the Smith Island dike to attach to an existing City of Everett setback dike, which was constructed in 2007 to further their estuary restoration initiative.[124] Under Alignment A, land acquisition of privately owned property would include property owned by A-1 Landscaping and Construction, Inc. (A-1 Landscaping), Buse Timber Company, Williams Northwest Pipeline, and the City of Everett.[125] Of the alternatives proposed, this alignment would restore the most estuarine ecosystem leaving the least amount of land behind the dike for other land uses.

Alternative B would be located slightly east of Alternative A, and would provide less restoration area and more agricultural land behind the dike.[126] The 6880-foot dike would create roughly 362 acres of estuary and leave 138 acres behind the dike for agricultural and other land uses.[127] Like the dike proposed in Alternative A, this dike would also connect with the City of Everett's existing dike and provide flood protection to the land uses west of the dike placement.[128] Acquisition of land and the placement of easements on privately owned land necessary for this dike alignment include property currently owned by A-1 Landscaping, Williams NW, and

119. *Id.*
120. *Id.* at 10.
121. *Id.*
122. *Id.*
123. *Id.*
124. *Id.*
125. *Id.*
126. *Id.*
127. *Id.*
128. *Id.*

the City of Everett.[129] Unlike Alternative A, the county would only need to acquire a portion of the A-1 Landscaping property.[130]

Alternative C would create the least amount of estuary restoration while preserving a larger amount of land for agricultural and other uses.[131] The 6375-foot dike alignment would restore 262 acres of habitat while providing 238 acres behind the dike for other land uses.[132] Alignment C connects to the pre-existing Union Slough dike (portions of which are to be breached for the project) instead of the City of Everett dike and will therefore "continue to provide flood protection to I-5, major telecommunication lines . . . the City of Everett's sewage treatment facilities, and much of the shallow-buried portion of the Williams NW natural gas pipeline . . . ."[133] This alignment will depend on the County's acquisition of the Williams NW property.[134]

Depending on the final dike alignment, the proposed project also contemplates a conservation mitigation area within the estuary for other permitted projects to use for mitigation purposes.[135] The largest mitigation area within the created estuary corresponds with Alternative A (100 acres), and the least with Alternative C (55 acres).[136]

The drive toward the restoration of salmon habitats has emboldened Snohomish County to participate in salmon recovery through protective legislation, conservation planning, and restoration projects that seek to recapture the benefits of functional estuary ecosystems. However, importantly, because the Smith Island project proposed the conversion of agricultural land on Smith Island (which were "created" during a past push in Snohomish County for productive agricultural land)[137] to "unproductive," "unusable" salmon habitat, the agricultural community voiced concerns about the

129. *Id.*
130. *Id.*
131. *Id.* at 11.
132. *Id.*
133. *Id.*
134. *Id.* at 10.
135. *Id.* at 4-5.
136. *Id.*
137. A HISTORICAL ANALYSIS, *supra* note 90, at 23.

impacts of the project on agricultural lands.[138] The County was faced with the difficult task of valuing a tradeoff involving fish and farms.

C. Fish vs. Farms in Snohomish County

It may have been (or at least could have been) predicted that the loss of available farmlands in Snohomish County, especially for protection of a fish, would be met with heartfelt opposition. The Snohomish County Salmon Conservation Plan acknowledges that "[f]arming is important socially and economically in the Snohomish River basin,"[139] a sense that has survived in the region ever since the settlers "expected [the land] to become 'the garden spot of the territory in a few years.'"[140] "Along with forestry and mining, agriculture dominated the earlier history of Snohomish County" – a history that was fostered by the deep and fertile soils characteristic of the region and of those who settled the community.[141] The County's self-assessment is simultaneously illustrative of the County's sense of itself and reminiscent of J.B. Ruhl's point about perpetuation of the myths of agriculture:

> Snohomish County agriculture gives life and diversity to our local, regional and international economies, and provides open space as well as fish and wildlife habitat. It also contributes to a level of food security for the region and provides access to affordable and nutritious food and fiber for animal and human use.[142]

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138. *See infra* Sec. IV.C for a discussion regarding the county's deep-seeded desire to protect farmland while balancing salmon conservation plans.

139. SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN, *supra* note 87, at 9-1.

140. *See also* Thompson, *supra* note 114.

141. Snohomish Cnty. Planning and Dev. Cnty. Serv., General Policy Plan: Land Use LU-50 (Effective Date Feb. 1, 2006) available at http://www.co.snohomish.wa.us/documents/Departments/PDS/10_Year_Update/GPP/LandUse.pdf ("From the early 1800's through to the 1980's, Snohomish County farms produced milk, eggs, chickens, hogs, beef, berries, vegetables such as corn, peas, pumpkins and other row crops, hay and nursery stock among other crops.").

142. *Id.* at LU-51.

Snohomish County has attempted to meet the challenge of retaining a sufficient amount of available farmland[143] while dodging the impacts of global and domestic market forces on Snohomish County markets.[144] Snohomish County has been planning for the conservation of agricultural lands and practices since 1982 with the preparation of the County's Agricultural Preservation Plan,[145] an effort that expanded with the Washington State Growth Management Act ("GMA")[146] requirement that local governments designate and conserve agricultural lands of "long-term commercial significance."[147]

At present, Smith Island is zoned for Agriculture-10 (AG-10), the purpose for which is "[t]o implement the goals and objectives of the County General Policy Plan, which include the goals of protecting agricultural lands and promoting agriculture as a component of the County economy . . . ."[148] Snohomish County provides protection of farming practices from encroachment in its code[149] and has also

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143. Although habitat restoration is relevant to this goal, development pressures constitute a more constant threat to farmland preservation. *See* Jesse J. Richardson, Jr., *Downzoning, Fairness and Farmland Protection*, 19 J. LAND USE & ENVTL. L. 59, 89 (2003) ("Each day, the farmer makes a decision: continue to farm or sell for development.").

144. Snohomish County has been losing agricultural lands for decades to meet development and housing needs in the growing County. *See* NYHUS COMMC'N, ET AL., A COMMUNITY VISION FOR SUSTAINABLE AGRICULTURE IN SNOHOMISH CNTY. A-23 (2009), *available at* http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/agsustainability.htm.

145. General Policy Plan: Land Use, *supra* note 142, at LU-50.

146. WASH. REV. CODE § 36.70A (1990).

147. WASH. REV. CODE § 36.70A.170 (1990). *See also* WASH. DEP'T OF COMTY., TRADE, AND ECON. DEV. (DCTED), DESIGNATION OF AGRICULTURAL LANDS IN CHELAN, KING, LEWIS, AND YAKIMA COUNTIES 9-10 (2004), *available at* http://www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&ItemID=5937&MId=944&wversion=Staging. In 2004, the DCTED reported that farming production among 35,939 farms has resulted in a total annual economic impact from the farming industry of more than $28 billion. *Id.* at 9 ("Fruit trees in bloom, cattle grazing, and golden wheat fields help to comprise the Washington environment."). However, DCTED notes that although farmland comprises approximately 36 percent of land in the state, the state has experienced continuing losses of farmland over the last forty years. *Id.* at 9-10.

148. Snohomish Cnty. Code § 30.21.025(3)(c)(i) (2003).

149. *See* Snohomish Cnty. Code § 30.32B.230 (2003) ("Normal agricultural activities shall not be regulated like development activities by the grading or drainage code on property where commercial agriculture is a lawful use, except

adopted planning policies to "simplify the permit process for routine maintenance and repair of dikes/levees and drainage systems," and investigate the extent to which "traffic interferes with farming" practices, methods of minimizing the impact of non-agricultural development on agricultural lands, and development incentives for farming.[150] Even the sole land use policy aimed at the impacts of agricultural practices – stormwater pollution – envisions protection *for* (not from) farming practices.[151] Similarly, Snohomish County recognizes the potential of habitat restoration programs to negatively impact the availability of farmland and commits to developing a framework that "shall be followed with appropriate policies and regulations to protect designated commercial farmlands."[152] The latter pledge has resulted in programs related to assistance to local farmers in marketing and advertising,[153] for the purchase and transfer of development rights on farmlands,[154] and for the creation of the Agricultural Advisory Board.[155]

The Snohomish County Agricultural Advisory Board has detailed the adverse impacts of the restoration project to the land committed to farming activities in the County and questioned "whether a proposal to convert farmland to nonfarm purposes adequately

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when the activities include development requiring another permit."); *id.* at § 30.32.140 (2003) ("[R]oad and utility development shall avoid prime farmland as much as possible and minimize disruption of current field and farm operation patterns."); *id.* at § 30.32B.200 (2003) ("Agricultural activities conducted on designated farmland in compliance with acceptable agriculture practices are presumed to be reasonable and shall not be found to constitute a nuisance unless the activities have a substantial adverse effect on the public health or safety.").

150. General Policy Plan: Land Use, *supra* note 142, at LU-55 (LU Policies 7.D.1-8).

151. Snohomish County has included among its land use policies that it "shall investigate improvements to development regulations that will reduce stormwater run-off and water quality impacts of upstream developments on designated farmland." *Id.* at LU-55 (LU Policy 7.D.4).

152. *Id.* (LU Policy 7.D.9).

153. *See* SNOHOMISH CNTY. AGRIC. ACTION PLAN 8-12 (2005) http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/AgActionPlan1-05.pdf.

154. *Purchase of Development Rights*, SNOHOMISH CNTY. PLANNING AND DEV. SERV., http://www1.co.snohomish.wa.us/Departments/PDS/Divisions/PlanningandTechnology/LR_Planning/Projects_Programs/Agriculture_Resources/Purchase_of_development_rights.htm (last visited Aug. 12, 2011).

155. Snohomish Cnty. Code § 2.06 et. seq. (2007).

addresses the county's policies that protect and conserve agriculture and agricultural lands . . . ."[156] Ultimately, the Snohomish County Agricultural Advisory Board objected to the Smith Island restoration for apparent conflicts between the goals and policies of supporting preservation of agricultural lands in the GMA and the County's express planning goals in favor of agricultural values and opportunities.[157]

In this unique situation, the lands at issue on Smith Island could not be used to concurrently serve agricultural production and the needed ecological functions. This does not mean that multifunctionality at Smith Island is inconceivable, but that the particular farming practices and habitat goals at issue each demand a mutually exclusive commitment. [158] Based on the premise that land cannot (in general) be created, the proposed farmland-to-habitat conversion would result in a net loss of farmland. As such, the position taken by the agricultural community is understandable.[159] The chair of the Agricultural Advisory Board stated, "[i]f there's an opportunity to create habitat and benefit farmers, I'm all for it. But to create habitat at the expense of farmers, I'll never agree to that."[160] According to this critique, the Smith Island project was posed not as a site-specific balance of community values, but an endorsement of one lifestyle choice over another, against which the character of Snohomish County and the very identities of farmers were called into question. In response, "[f]armers say preserving farmland is as important a goal as protecting salmon."[161]

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156. SNOHOMISH CNTY. AGRIC. ADVISORY BD., STATE ENVTL. POLICY ACT (SEPA) ENVIRONMENTAL CHECKLIST, Attachment 4, Proposed Conditions Paper 2 (proposed Sept. 9, 2008) (on file with author).

157. *Id.*

158. *See e.g.*, Ashira Pelman Ostrow, *Land Law Federalism,* 61 EMORY L.J. (forthcoming 2012) (manuscript at 22) (on file with author).

159. *See id.* ("Land is a finite resource. More land put to one use usually results in less land available for another use. Land preserved under a conservation easement cannot be used to develop affordable housing."). Of course, the premise itself is contextual: first, wetland-to-agricultural conversion continues, even if it is more highly regulated, resulting in the "creation" of lands for anthropocentric uses; second, even assuming that the land cannot be engaged as a multifunctional resource, the physical loss of farmlands could be mitigated by the redesignation of other lands to agricultural uses.

160. Thompson, *supra* note 114.

161. *Id.*

Similarly, Snohomish County Councilman John Koster condemned the "rosy, one-sided presentation of the Smith Island project" for perpetuating the "seemingly unstoppable destruction of thousands of acres of valuable farmlands . . . in the name of conservation for salmon or wildlife habitat."[162] Koster argued that the Smith Island project represents a "policy that any farmland-to-wetland conversion trumps Snohomish County's commitment to preserving our farmland," a policy that leaves "private property . . . to become nonproductive government lands."[163] Objectors to the Smith Island project continue to seek the assistance of the Agricultural Advisory Board.[164]

The agricultural objections fit into the larger context of a Snohomish-led, proactive effort to maintain farming viability in the County. First, Snohomish County reviewed a study commissioned by the Snohomish Agriculture Economic Development Action Team for visioning sustainable agriculture in the County.[165] In 2007, the County had launched the Agricultural Sustainability Project to examine the linkages between Snohomish County agriculture and general community well-being.[166] The resulting 2009 study identified trends of losing agricultural lands to other uses and identified strategies to reverse these trends. However, the report also found that the growing development pressures on agricultural uses were negatively influencing the local perception of the value of agricultural lands.[167] The report reinvigorated the fish/farms debate

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162. John Koster, *Under the Radar and Out of Control*, THE HERALD 1, Feb. 18, 2007, http://www.co.snohomish.wa.us/documents/Departments/Council/nr-kostereditorial.pdf.

163. *Id.*

164. *See, e.g.*, Mark Convey, Commentary, *Meeting Summary of the Snohomish Cnty. Agric. Advisory Bd.* (Mar. 10, 2009), http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/Summary031009.pdf ("He feels that losing the ranch as a result of the Smith Island project would be a tragic loss for both horse boarders and Snohomish County.").

165. NYHUS COMMC'N, *supra* note 145, at 3 ("In October 2007, Snohomish County initiated a project to create a vision of how the farming community and Snohomish County citizens want local agriculture to look and function 100 years from now.").

166. Christopher Schwarzen, *Initiative to Protect Farmland*, THE SEATTLE TIMES, Oct. 31, 2007, http://seattletimes.nwsource.com/html/snohomishcountynews/2003983985_farm31n.html.

167. NYHUS COMMC'N, *supra* note 145, at 4-5 ("Although agriculture is an important part of the Snohomish County economy, our engagement efforts revealed

by providing an inventory or lands, markets, and opportunities for sustaining the industry. In its comments to the Smith Island Project, the Agricultural Advisory Board insisted it be afforded an opportunity to review any restoration project with a potentially adverse impact on farmland, even though the Advisory Board does not wield veto power.[168] The Advisory Board also insisted that if the project cannot be situated on public lands that are not zoned for agricultural use, then it should be demonstrated that the project will benefit the agricultural community.[169]

The conflict between farmers and the salmon recovery efforts persists because the floodplains targeted for recovery are often viewed as prime farmland.[170] The agricultural community is driven to protect farmland in Snohomish County not only because it is their livelihood, but also it has been the land use policy in the area for nearly a century. It is a land use that is now faced with the adoption of a new policy seeking to restore salmon habitats through the transformation of farmland into estuary ecosystems.

D. Negotiating Toward Sustainable Land Uses: Using Ecosystem Services

Snohomish County focused on Alternative A, finding that it demonstrated a closer commitment to the intent of the proposal, and issued a Determination of Nonsignificance ("DNS").[171] However,

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that those citizens who had an existing understanding of agriculture's personal and public benefits also have a greater appreciation of the need to keep farmland in production. The challenge is with the urban and suburban Snohomish County citizens. With no direct relationship to agriculture, these citizens see no connection between the success of agriculture and their lives.").

168. Thompson, *supra* note 114.

169. The Advisory Board proposed two alternatives for an evaluation of the proposed project. First, the project proponent must show there are no other public lands that can be used for conservation, there will be no negative agricultural impact, the land used for project is the least valuable agricultural land, and that the project will directly benefit other agricultural lands in close proximity. Alternatively, the project applicant may preserve other farmland at a 3:1 ratio, to compensate for lost agricultural lands from the project. *Id.*

170. *Id.*

171. First, the county asserted that depending on the alignment of the proposed dike the project property consists of a majority of public lands. Second, not only

after receiving the public comments, particularly those from the agricultural community, the County withdrew its DNS,[172] issued a Determination of Significance ("DS"),[173] and began preparing a full environmental impact statement. In the DS, Snohomish County distinguished the "fundamental purpose of the Project" of providing critical salmon habitat from "other primary project elements" that were crafted to include restoration areas available for compensatory mitigation projects and "conservation and support of agricultural lands and activities."[174]

Snohomish County contacted Earth Economics, a Tacoma-based non-profit firm specializing in identifying the values for non-use ecosystem processes.[175] The County believed that an ecosystem

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will the project avoid interfering with operations on other farmlands, but it will produce positive impacts as a result of project co-benefits such as flood control and drainage of existing farmland. The plan further anticipates replanting all trees and vegetation on private agricultural lands to avoid negative impacts. Third, the county noted that the Smith Island farmland is isolated from all other farmland, in proximity to nonfarm use land, and currently exhibits wetland characteristics with a high water table. These characteristics have led to less draining activities and the land now resembles a regulated critical area. Lastly, the county relied on the likelihood of serving a direct benefit to other farmland in the area through increased flood protection, drainage improvements, finding resources, and conservation easements protecting future farmland interests. SNOHOMISH CNTY. PUB. WORKS, STATE ENVTL. POLICY ACT (SEPA) ENVTL. CHECKLIST, Attachment 5, County's Response to Snohomish County Agricultural Advisory Board, Proposed Conditions Paper 1, 2009 (on file with author).

172. SNOHOMISH CNTY. PUB. WORKS, WITHDRAWAL OF DETERMINATION OF NON-SIGNIFICANCE (DNS) (June 2009), http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/AquaticHabitat/Salmon/SmithIslandWithdrawal62609.pdf; Letter from Snohomish Cnty. Pub. Works to Interested Parties Re: Smith Island Restoration Project (June 26, 2009), http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/AquaticHabitat/Salmon/DNStoDSLetter.pdf.

173. SNOHOMISH CNTY.PUB. WORKS, DETERMINATION OF SIGNIFICANCE, *supra* note 115.

174. *Id.*

175. Earth Economics is a non-profit organization located in Tacoma, Washington. Since 1998, Earth Economics has been at the forefront of applying a whole systems economic analysis to assess the interaction and health of human economies and natural ecosystems on state, national and international scales. The stated goal of Earth Economics is to help communities shift towards economically viable and environmentally sustainable economic policies. *See* EARTH ECON., http://www.eartheconomics.org/ (last visited Dec. 17, 2011).

services analysis would "provide Snohomish County and citizens with a more comprehensive view of the value of the Smith Island Restoration Project, by understanding it as a project that generates goods and services (referred to as "ecosystem services" in general), and returning real economic benefits."[176] In preparing an Ecosystem Services Valuation ("ESV") for the Smith Island Salmon Restoration project, Earth Economics was first asked to identify the net values of the restoration project with the specific goal of determining whether the benefits outweigh the costs.[177] Secondly, Earth Economics was asked to calculate the value of the project for Snohomish County in terms of salmon harvesting.[178] To answer these questions the ESV appraised and compared three proposed alternatives: a no action alternative ("no action"); a proposal to restore 390-acres of salmon habitat ("Alternative 1"); and a proposal to restore 290-acres of salmon habitat ("Alternative 2").[179] The ESV systematically analyzed the project costs, the project benefits (including the projected ecosystem services), and the net present value of each alternative.[180]

The project costs of taking no action on Smith Island include the costs of property acquisition for the project, ongoing maintenance of the land, and upgrading the current levee system to meet the Army Corps of Engineers' standards.[181] The project cost of no action was an estimated $6,050,000.[182] When analyzing the project costs of Alternatives 1 and 2 the factors also include the cost of the current land acquisition, the feasibility of the alternative, the permitting and design of the alternative, and the supervision and construction of the project.[183] Alternatives 1 and 2 each have an estimated project cost of $14 million.[184]

176. EARTH ECON., ECONOMIC VALUATION OF SMITH ISLAND RESTORATION PROJECT 2 (2010) (on file with author).

177. *Id.* at 1.

178. *Id.*

179. *Id.* at 3.

180. *Id.* Net present value was determined by looking at the costs and revenue of the project over a 100-year span applying a 2.7% discount rate. *Id.*

181. *Id.* at 4.

182. *Id.* at 4, tbl. 2.

183. *Id.* at 4.

184. *Id.* at 5.

The project benefits for each alternative were appraised to incorporate an estimation of the benefits provided by restored ecosystem function in the estuary and were calculated to account for current land uses of Smith Island such as horse boarding.[185] For the no action alternative, Earth Economics valued the existing ecosystem service benefits with the current land occupation of a horse boarding ranch.[186] For Alternatives 1 and 2, Earth Economics provided a more comprehensive analysis based on the economic benefits derived from restoring ecosystem functionality in the estuarine habitats identified for restoration at Smith Island, as well as the economic benefits from an increase to the salmon harvest.[187] The ecosystem services projected to improve from the project include aesthetic value, biological control, disturbance regulation, erosion control, food, gas and climate regulation, habitat functionality, pollination, recreation, soil formation, water quality, and waste treatment, water regulation, and water supply.[188]

To provide an estimate of the post-construction ecosystem services values anticipated from Alternatives 1 and 2, Earth Economics drew from a large database of studies to assign both low and high economic values of the respective ecosystem services.[189] This valuation method reflected the method used for real property appraisals, where the values of the ecological good were valued in

185. *Id.*

186. *Id.* at 6.

187. *Id.*

188. *Id.* It should be noted that although other ecosystem services will be enhanced from the Smith Island Restoration Project, an economic value was not given for every project ecosystem functionality improvement. *Id.* For instance, Earth Economics was careful in its ecosystem services valuation to avoid calculating indirect values. Although Earth Economics noted the indisputable importance of salmon to Pacific Northwest communities, it was difficult to assign an economic value for this role and, as such, many cultural values were omitted from the project benefit valuation. Likewise, the ecological value of salmon was not assigned an economic value. The ESV noted that the ecological benefits of the restoration project include biodiversity, the important nutrient cycling that the salmon provide to the region, and that the salmon are a food source of the Orca whale, which is an endangered species. Nevertheless, the complexities of appraising these benefits compelled their exclusion from the final valuation. Therefore, certain important ecosystem services were not included in the valuation, likely resulting in an underestimation of the total costs and benefits of the project. *Id.* at 7.

189. *Id.* at 6.

correspondence with values of the same or similar ecological goods in analogous positions.[190] Earth Economics identified each ecosystem good provided, the sum of which was calculated for the overall ecosystem services valuation of the ecosystem or ecosystem to be restored.[191]

Earth Economics examined the ecosystems services in each of the four categories that have been identified by the Millennium Ecosystem Assessment, including provisioning services, regulating services, supporting services, and cultural services.[192] Provisioning services valued in the ESV included drinking water and food, raw materials, and medicinal resources.[193] In describing food as an ecosystem service, Earth Economics notes that, "[f]arms are considered modified ecosystems, and food is an ecosystem good with labor and built capital inputs;"[194] marine regions are the largest ecosystem that produces food from "wild ecosystems."[195] With regard to raw materials, Earth Economics specifically addressed the importance of the Snohomish River Basin's raw materials to Washington State, which "include biological materials used for medicines, fuel and fiber, art and construction materials from timber to gravel,"[196] materials that are important to the local community because they are easily marketable in the Snohomish Basin region.[197]

Regulating services "affect climate, floods, disease, wastes, and water quality."[198] Through the absorption of carbon dioxide and sulfur dioxide and release of oxygen by vegetation, functioning ecosystems are able to regulate greenhouse gases and the earth's

190. *Id.* at App. C, 23.

191. *Id.* at 6. Because the condition of the Smith Island ecosystem would not be functioning at full health the valuation reduced the number by a percentage that represents the ecosystems current and initial degraded health, which will be improved to full health over time. *Id.*

192. *Id.* at App. B, 16, tbl. 2.

193. *Id.* at App. B, 17, tbl. 2.

194. *Id.* at App. B, 18. Earth Economics has recognized food as "one of the most important functions of the ecosystem." *Id.*

195. *Id.*

196. *Id.* at App. B, 19.

197. *Id.*

198. MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: SYNTHESIS 5 (2005), *available at* http://www.millenniumassessment.org/en/Synthesis.aspx.

climate.[199] The ESV accounts for the added value that soil, plants and tree cover provide for erosion control.[200] Water regulation, quality, and treatment depend on the ability of the land cover to properly absorb, filter, and control the flow of the water that enters the ecosystem.[201] Earth Economics reasons that watershed related benefits are especially important to the Snohomish County Community because County water supplies are drawn from watersheds that naturally filter the drinking water.[202] The loss of forest and vegetation can decrease the water supply because of adverse affects on ground water recharge.[203] Restored land cover is also likely to provide biological control of pest species.[204] Lastly, Earth Economics estimated the extent to which natural conditions and processes provide protection from storms, flooding, and dry spells.[205]

Supporting services resulting from the Smith Island project include, among others, "soil formation, photosynthesis, and nutrient cycling."[206] Earth Economics recognized the importance of pollination services to the fertilization process of the local crops and plants.[207] In addition, with an increased salmon population the

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199. EARTH ECON., *supra* note 177, at App. B, 17, tbl. 2.

200. Erosion control corresponds with disturbance regulation, and natural stream bank erosion results instead of the enhanced erosion that occurs from human alteration. *Id.* at App. B, 20. Earth Economics recognizes that the river has a natural erosion effect when the water impounds on the riverbanks, which can provide habitat and nutrients for the fish. *Id.* However, when this natural erosion is accelerated by human development, it can increase the sediment and turbidity levels in the water, leading to adverse affects on water quality and habitat functionality. *Id.*

201. *Id.* at App. B, 17, tbl. 2.

202. *Id.* at App. B, 18.

203. *Id.*

204. *Id.* at App. B, 17, tbl. 2.

205. *Id.*

206. MILLENNIUM ECOSYSTEM ASSESSMENT, *supra* note 199, at 5. Supporting services are considered "necessary for the production of all other ecosystem services. They differ from provisioning, regulating, and cultural services in that their impacts on people are often indirect or occur over a very long time, whereas changes in the other categories have relatively direct and short-term impacts on people." *Id.* at 40.

207. EARTH ECON., *supra* note 177, at App. B, 17, tbl. 2. It has been stated that, "[w]ithout natural pollination services, yields of important crops would decline precipitously and many wild plant species would become extinct." Gretchen Daily

waterways will experience a larger transfer of nutrients as a result of spawning and dying salmon.[208] Biodiversity and habitat, and the productivity of each, provide a stable ecosystem for the plants and animals that are residents of the Snohomish Basin and are essential to the oceanic food chain.[209] Furthermore, it is not only the structural habitat that is important, but also the corresponding chemical and biological processes that are necessary to sustain habitat success for breeding and rearing.[210]

Although certain components of cultural significance were not attributed a specific economic value, Earth Economics recognized the cultural significance of the salmon population in the Pacific Northwest in the ecosystem services valuation. Cultural Services deemed relevant to ecosystem value may include aesthetics, recreation and tourism, scientific and education, and spiritual and religious non-use values that correspond with salmon habitat and land cover.[211] The Smith Island valuation was limited to aesthetics, recreation, and tourism. Earth Economics provided an analysis of "[t]he role which natural beauty plays in attracting people to live, work and recreate in an area"[212] As well as an investigation into the appeal of a healthy ecosystem to those interested in recreational and community activities.[213]

From these categories, Earth Economics identified individual ecosystem services according to the different land cover that would exist on Smith Island and assigned economic values for the ecosystem services provided. For example, the service of water

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et al., *Ecosystem Services: Benefits Supplied to Human Society by Natural Ecosystems Benefits*, 2 ISSUES IN ECOLOGY 10 (Spring 1997).

208. EARTH ECON., *supra* note 177, at App. B, 17, tbl. 2. The salmon swim upstream to spawn and then die soon after. This natural process deposits a tremendous amount of nutrients that the salmon eggs and carcasses may carry to the stream where the fish will spawn and die. This transfer of nutrients plays a key role in the aquatic ecosystem of the tributaries of the Northern Pacific Ocean.

209. Earth Economics states, "[b]iodiversity is also an ecosystem service . . . because novel products have been derived from genetic and chemical properties of species; it provides secure food base (multiple sources of food with different seasonal availability); people ascribe value to it simply for its existence." *Id.* at App. B, 20-21.

210. *Id.* at App. B, 21.

211. MILLENNIUM ECOSYSTEM ASSESSMENT, *supra* note 199, at 5.

212. EARTH ECON., *supra* note 177, at App. B, 17, tbl. 2.

213. *Id.*

regulation for the land cover of Monospecies Forest and Commercial Tree Nurseries was valued at $13.17.[214] In contrast, the water regulation services provided by palustrine wetlands were valued at $7,970.85,[215] and estuarine scrub-shrub marshes or estuarine tidal forests existing in the area suggested a value ranging from $136.56 to $6,135.92 for the service of water regulation.[216]

Earth Economics then established a range of values for each ecosystem service predicted for the varying land covers that may result from the Smith Island project:

References with Land Cover Type, Ecosystem Service and Values Used[217]

Land Cover	Ecosystem Services	Reference	Low Value ($)	High Value ($)
Mono-species Forest & Commer-cial Tree Nursery	Aesthetic & Recrea-tional	Bishop, K.		619.50
		Boxall, P.C., McFarlane, B.L. and Gartell, M.	12.72	
	Biological Control	Krieger, D.J.		12.72
	Gas & Climate	Pimentel, D.	12.05	15.20

214. *Id.* at App. A, 15, tbl.1.

215. *Id.*

216. *Id.* Along with water regulation, Earth Economics looked at water quality values and often coupled water quality with the costs and benefits of waste treatment services. These were only found to be a service on poplar plantation, pasture, estuarine scrub-shrub marshes, and estuarine tidal forests land covers. The lowest value was $3.78 on pasture-land, while on the estuarine land the range of values was estimated to fall between $289.43 and $1,101.65. Earth Economics described these functions as how the land cover will absorb the organic waste and filter out of the pollution within each ecosystem. *Id.* at App. B, tbl. 2.

217. *Id.* at App. A, 12, tbl.1.

	Regulation	Reyes, J. and Mates, W.	1.47	
	Habitat Refugium & Nursery	Haener, M.K. and Adamowicz, W. L.		10.12
	Pollination	Hougner, C. 2006	90.80	90.80
	Water Regulation	Loomis, J.B. 1988	13.17	13.17
	Water Supply	Ribaudo, M. and Epp, D.J.	705.07	894.05
Total			835.45	1,655.55
Poplar Plantation/ Biosolids Applica-tion	Gas & Climate Regulation	Pimentel, D.		15.20
		Reyes, J. and Mates, W.	12.05	
	Water Regulation	Loomis, J.B. 1988	13.17	13.17
	Water Treatment	Costanza et al., 1997	51.69	51.69
Total			76.90	80.05
Shrub	Aesthetic & Recrea-tional	Bishop, K.		873.80
		Boxall, P.C., McFarlane, B.L. and Gartell, M.	0.25	85.35
	Gas & Climate	Bagstad and Boumans, 2006	8.49	

	Regulation	(unpublished)		
	Habitat Refugium & Nursery	Haener, M.K. and Adamowicz, W. L.	2.08	
		Kenyon, W. and Nevin, C.		685.33
Total			10.82	1,644.48
Palustrine Wetland	Aesthetic & Recrea-tional	Doss, C.R. and Taff, S.J.	5,737.41	6,338.62
	Habitat Refugium	Streiner and Loomis 1996		2,027.38
		Vankooten, G.C. and Schmitz, A.	8.11	
	Water Regulation	Thibodeau, F.R. and Ostro, B.D.	7,970.85	7,970.85
Total			13,716.37	16,336.85
Estuarine Scrub-Shrub	Aesthetic	Bagstad and Boumans, 2006 (unpublished)	70.13	224.32
Marsh & Estuarine Emergent Marsh Mud flat	Food	Woodward and Wui, 2001		1,270.49
		Bagstad and Boumans, 2006 (unpublished)	54.97	
	Gas & Climate	Bagstad and Boumans, 2006	32.97	358.94

	Regulation	(unpublished)		
	Habitat Refugium & Nursery	Kazmierczak, 2001b	228.94	546.22
	Raw Materials	Bagstad and Boumans, 2006 (unpublished)	4.39	4.47
	Recreation	Bagstad and Boumans, 2006 (unpublished)	1.45	604.48
	Storm Protection	Bagstad and Boumans, 2006 (unpublished)	1,436.42	1,436.42
	Water quality or water treatment	Bagstad and Boumans, 2006 (unpublished)	289.43	1,101.65
	Water Regulation	Woodward and Wui, 2001	136.56	6,135.92
	Water Supply	Bagstad and Boumans, 2006 (unpublished)	43.80	116.79

Total			2,295.05	11,799.69
Pasture	Biological Control	Pimentel et al. (1995)	12.54	12.54
	Erosion Control	Barrow (1991) Costanza et al. (1997)	24.51	28.78
	Food	U.S. Dep't of Comm. (1995)	31.62	31.62
	Gas & Climate Regulation	Copeland et al. (in press)	0.08	
		Fankhauser and Pearce (1994)		5.22
	Pollination	Pimentel et al. (1995)	13.86	13.86
	Recreation	Boxall, P.C., (1995)	0.03	0.03
	Waste Treatment	Pimentel et al. (1995) Jones et al.		48.24

		(1985)	2.78	
	Soil Formation	Pimentel et al. (1995)		6.65
		Sala and Paruelo (1997)	0.67	
Total			86.10	146.94
Estuarine Tidal Forest	Biological Control	Krieger, D.J. (2001)	12.72	
		Pimentel et al. (1995)		42.25
	Gas & Climate Regulation	Reyes, J. and Mates, W.	12.05	
		Boumans (unpublished)		797.63
	Habitat & Refugium	Farber, S., Costanza, R. (1987)	12.33	
		Johnston, R.J. et al. (2002)		1,479.98
	Pollination	Hougner, C. (2006)	90.80	90.80
		Fankhauser and Pearce (1994)		5.22
	Recreation	Boxall, P.C. et al. (1996)	0.17	
		Bishop, K. (1992)		619.50
	Water quality & Water Treatment	Bagstad and Boumans (unpublished)	289.43	1,101.65

	Water Regulation	Loomis, J.B. (1988) Woodard & Wui (2001)	13.17	6,135.92
	Water Supply	Whitehead, J.C. et al. (1997) Ribaudo, M., Epp, D.J. (1984)	6.30	894.05
Total			436.98	11,162.78

Once the ecosystem services were compiled, Earth Economics calculated the ecosystem services projected to flow from each alternative and showed the dollar value of ecosystem services that each alternative would generate.[218] For the no action alternative, the ecosystem services valuation is estimated between $395,405.50 (low) and $539,946.10 (high). Alternative 1 was estimated to yield an economic value of $903,408.50 (low) to $4,596,808.60 (high). Alternative 2 was estimated to yield a benefit of $678,735.90 (low) to $3,423,906.00 (high) in ecosystem services.

The project appraisals provided a basis for Earth Economics to provide a final calculation of the Net Present Value ("NPV") of the project for each alterative. The NPV represents the value of the Smith Island Restoration Project and is calculated by taking the sum of the ecosystem services valuation, the salmon harvesting valuation, and the horse boarding land use for each alternative, then subtracting the related project costs of each alterative from that sum and applying

218. A significant economic component of the project benefits valuation includes the projected increase in salmon harvesting expected to result from the restoration project. Under the no action alternative, there was no increase in the salmon harvest expected, resulting in no economic value. Alternative 1 anticipated an increased harvest of between 3952 and 6287 salmon, yielding an economic value of approximately $771,880 to $1,228,054 per year. This analysis assumes that the salmon will be sold at $13 a pound and each average 15 pounds. For Alternative 2, the restoration project is expected to increase the salmon harvest by 2,941 to 4,679 salmon per year, producing an economic value of $573,962 to $913,169 per year. *Id.* at 8-9.

an appropriate discount rate.[219] Earth Economics estimated an NPV for the no action alternative at $8,215,217 (low) to $13,195,681 (high), translating to a return of $1 to $2 for every $1 invested.[220] Alternative 1 yielded the largest return of $3 to $13 for every $1 invested, with a complete value ranging from $44,861130 (low) to $187,843,846 (high).[221] The NPV for Alternative 2 was estimated to be between $ 30,299, 842 (low) and a high of $136,578,849, returning $2 to $9 dollars for every $1 investment.[222]

The Smith Island ESV findings demonstrate that "safeguarding ecosystem services represents one of the wisest economic investments society could make."[223] Through this ecosystem valuation, Earth Economics illustrated that ecosystem services offers a method to assess the total value of the salmon restoration project, one which, more importantly, may show that the value of flooding land (and making it "unusable") can outweigh the market value of maintaining land in a "usable" state.[224] The ESV therefore might serve as an important tool to insure accountability for public investments. In this case, the ecosystem services gain from restoring salmon habitat explains why habitat restoration can be an economically sensible decision.

Yet the problem in this case may have been that the ESV proved too much; the ESV revealed that farming is not the highest and best use of Smith Island. As such, it is conceivable that the ESV may have caused more political problems in Snohomish County, given the potential for the ESV to be used throughout the County agricultural lands. Perhaps due to an emerging dialogue in Snohomish County about sustainability and multifunctional land use, the ESV was not formally adopted as part of the County's DEIS for the Smith Island project.[225]

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219. *Id.* at 13.

220. *Id.* at 11-12.

221. *Id.*

222. *Id.*

223. Gretchen C. Daily, *Valuing and Safeguarding Earth's Life-Support Systems*, *in* NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS 369 (Gretchen C. Daily ed., 1997).

224. *See generally* EARTH ECON., *supra* note 177, at 1 (offering evidence that an ecosystem service valuation can conclude that the economic benefit from restoring salmon habitats can outweigh the alternative of maintaining the current land use).

225. Ironically, the Farm Bureau focused on the absence of a TEV in its comments to the DEIS, arguing that the estimated return for the salmon (the only

D. A Sustainable Framework: Many Voices Lead to Multifunctional Lands

Snohomish County debated, investigated, and negotiated agriculture, salmon recovery, and the Smith Island restoration potential for several years. Pressures from land use interests, environmental concerns, and economic growth converged during that time.[226] County Executive Aaron Reardon and County Councilmember Dave Somers co-sponsored and launched a collaborative and inclusive group to develop a Sustainable Lands Strategy ("SLS") in anticipation of the potential storm.[227] As initially conceived, the SLS was intended to facilitate cooperation among otherwise competing interests, particularly among fish and farms: as Councilmember Dave Somers suggested, "both goals are broadly supported, but disagreements come up when they both can't

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dollar figure provided in the DEIS) showed "the stunning inefficiency of the project." Letter from Ed Hussmann, President of the Snohomish Cnty. Farm Bureau to Mark Stamey (undated), at 2, *available at* http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/Smith%20Island/EdHusmann7-6-11.pdf. However, the Washington Department of Fish and Wildlife noted that the DEIS's valuation undervalued salmon, and the DFW's letter was supported by a comment letter from Earth Economics. *See* Letter from Douglas G. Hennick, Wash. Dept. of Fish and Wildlife, to Snohomish Cnty. Pub. Works 3 (July 6, 2011), *available at* http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/Smith%20Island/DouglasHennick7-6-11.pdf.; Letter from David Batker, Exec. Dir. of Earth Econ. to Snohomish Cnty. (July 6, 2011), *available at* http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/Smith%20Island/DavidBatker7-6-11.pdf.

226. As the SLS Executive Committee notes, the planned conversion of habitat restoration and compensatory mitigation of thousands of acres in Snohomish County "brought the issue of conflicting land-use priorities to a head." DAN EVANS & LEW MOORE, SUSTAINABLE LANDS STRATEGY EXEC. COMM., SNOHOMISH CNTY. SUSTAINABLE LANDS STRATEGY PHASE I FRAMEWORK REPORT 3 (Feb. 26, 2011), *available at* http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/022811-SLS_FrameworkReport.pdf.

227. Press Release, Snohomish Cnty., Reardon, Somers Approve of Land Strategy Protecting Farms, Fish (Apr. 12, 2011), *available at* http://www.co.snohomish.wa.us/documents/Departments/Executive/News/Joint.SLSSigning.4.12.11.pdf.

be met in the same place."[228] The purpose of the SLS was to circumvent or "reconcile" these disagreements in a positive, forward-looking planning effort.[229] The SLS has proven a huge success. As Agricultural Advisory member Brian Bookey accounts, "As we got into the process, the conflicts were clear: farm versus fish . . . . But we learned that we can get past the butting heads and that we have a means to find and protect the best farmland and best fish habitat."[230]

Notably, the SLS Executive Board consisted of habitat restoration professionals, experts, and advocates from the Tulalip Tribes and Stillaguamish Tribe of Indians, Futurewise and the Cascade Land Conservancy, as well as agricultural experts from the Conservation District and the Agricultural Advisory Board.[231] In light of the history of felt competition in the region, it might be considered extraordinary that the SLS survived its first meeting. Nevertheless, the diverse array of represented interests agreed upon two fundamental but challenging principles of collaboration. First, the SLS Executive Committee worked diligently with the understanding that its conclusions would be formulated only "on a consensus decision-making basis: all members must agree on recommendations advanced to the conveners."[232] Second, the group agreed that the SLS would "build on opportunities to achieve net gain in the productivity for both agriculture and the natural environment."[233] The SLS Executive Committee was also starkly honest about the challenge: at the outset, the group acknowledged both that the loss of agricultural lands to other uses was occurring "at an unsustainable rate, threatening the productivity and future economic viability of

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228. News Release, Snohomish Cnty. Council, Snohomish Cnty. Commits to Enhancing Farms and Fish, *available at* http://www.co.snohomish.wa.us/documents/Departments/Council/News/NR-SustainableLandsStrategy.pdf.

229. DAN EVANS & LEW MOORE, SUSTAINABLE LANDS STRATEGY EXEC. COMM., SNOHOMISH CNTY. SUSTAINABLE LANDS STRATEGY FRAMEWORK REPORT 7 (Mar. 14, 2011), *available at* http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/Ph1Rpt041211.pdf [hereinafter EVANS & MOORE (Mar. 14, 2011)]

230. Press Release, Snohomish Cnty., *supra* note 228.

231. EVANS & MOORE (Mar. 14, 2011), *supra* note 230, at 5.

232. *Id.* at 4.

233. SLS EXEC. COMM., DRAFT PROBLEM AND OPPORTUNITY STATEMENT (July 19, 2010), *available at* http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/opportunity0710.pdf.

agriculture in the county,"[234] while salmon recovery was "limited by [the County's] ability to restore properly functioning habitat and ecological processes,"[235] with the greatest concentration of lands suitable for restoration occurring on farming lands.[236]

The SLS Executive Committee convened in June 2010 and set a vigorous pace, meeting monthly with fairly well-defined progress goals.[237] After the issuance of the *Draft Snohomish County Sustainable Lands Strategy Framework Report*, in February 2011,[238] the executive committee completed for public release its Phase I Framework Report on March 14, 2011.[239] The report was released with the proclamation that sustainable strategies are achievable. Councilmember Dave Somers declared: "We're proving that preserving our farmlands and restoring our salmon runs are not mutually exclusive goals, we can and must have both."[240] The diversity of interests in the group was illustrated by the range of resolutions, including the creation of separate administrative entities and process, a designated lands re-designation process, and a conditional use permit process for habitat restoration projects.[241] Ultimately, the group abandoned the idea of creating more bureaucracy on grounds that it would add substantial costs.[242]

The Phase I plan indicates that the SLS is based on certain guiding principles to which all parties agree,[243] including 1) respect for tribal authority; 2) that the strategy produces a "net gain"[244] by improving

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234. *Id.*

235. *Id.*

236. EVANS & MOORE (Mar. 14, 2011), *supra* note 230, at 3.

237. SLS EXEC. COMM., WORK PLAN & SCHEDULE OVERVIEW (July 2010), http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/schedule0710.pdf.

238. EVANS & MOORE (Feb. 26, 2011), *supra* note 227.

239. EVANS & MOORE (Mar. 14, 2011), *supra* note 230.

240. Press Release, Snohomish Cnty., *supra* note 228.

241. SLS EXEC. COMM., DISCUSSION DRAFT: POLICIES & CRITERIA FOR RESTORATION AND MITIGATION PROJECTS ON AGRIC. LAND (September 16, 2010), http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/policies0910.pdf.

242. EVANS & MOORE (Mar. 14, 2011), *supra* note 230, at 5.

243. *Id.* at 7.

244. *Id.* ("An effective Sustainable Lands Strategy must simultaneously and substantially improve agricultural economic vitality and potential productivity; ecological health and restoration of fish and wildlife populations to harvestable levels; and quality of life, including tribal culture rooted in fish, wildlife, and native

agricultural, ecological, and tribal cultural health; 3) that decisions on habitat restoration should be well-informed and the decision making process should take advantage of informational resources; 4) that habitat restoration should concurrently pursue "multiple imperatives"[245] representing the competing interests at stake; 5) that land use plans at the intersection of agriculture and habitat should be coordinated; 6) that beneficial outcomes result from mutual respect; 7) that SLS strategies should emphasize win-win strategies; and 8) that the SLS would be outcome-based, with emphasis on efficiency and effectiveness.[246] The Phase I plan also adopts as an ecosystem functionality principle the importance of observing "process drivers" as follows: "Top priority should be given to protecting and restoring the health of natural processes (e.g., hydrology) that support a broad spectrum of farming, fish, wildlife, and community needs rather than protection and restoration of site-specific functions or individual assets."[247]

One of the most significant insights of the SLS Executive Committee was the opportunity to integrate the available resources – not just the combined decades of advocacy expertise represented on the Executive Committee, but also the vast data and analysis of Snohomish County capital resources that had accumulated over the years from various agencies, committees and communities.[248] The integration was intended to soften the conflict between fish and farms:

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plants.") Notably, the Phase I plan falls short of recommending this strategy for all projects:

> The Committee concluded that it was not feasible or desirable to rigidly apply the net gain principle to each habitat project, which would involve specific offsets or mitigation, and a "bean counting" evaluation, for each restoration project that impacts agricultural land or productivity. Instead, the Committee decided that net gain for both farms and fish should be achieved through a broad package of enhancements over the next seven years, coinciding with the time remaining in the current federally approved salmon recovery plans for the Snohomish and Stillaguamish basins that are the primary drivers of habitat restoration projects that impact agricultural lands and wildlife. *Id.* at 8.

245. *Id.* at 7.
246. *Id.* at 6-7.
247. *Id.* at 8.
248. *Id.* at 8-11.

> A great deal of planning, study, and community involvement has already gone into producing current strategies for sustaining both salmon and agriculture in Snohomish County. However, the two efforts have largely taken place on separate tracks and some key elements of each have not yet been completed. The unfortunate outcome of this disparate approach is that today fish and farm interests often find themselves pitted against each other in the late stages of decision-making as they attempt to implement projects. The SLS initiative is intended to forge a link between fish/wildlife and farm enhancement plans and to create a method for reconciling the land and water resource needs of each.[249]

In harmonizing the County's efforts, the integration would be critical in assessing the feasibility and sustainability of the County's investments.[250]

Notably, the implementation component of the Phase I Report depends on field application, and in this sense it could be argued that the plan adopts an adaptive strategy[251] to offset the complexities of habitat restoration. To this end, the Phase I Report contemplates demonstration that its goals are achievable to reconcile the foreseeable conflicts, and recognizes that even the demonstration will be challenging:

> Reconciling the resource needs of fish and farms, and advancing both, is at the heart of the SLS mission. The first step in this effort should be to demonstrate the application of SLS principles in a restoration project or two. A second, and perhaps concurrent, action is to develop reach-level land allocation and protection plans for the Snohomish and Stillaguamish River basins. Especially important are reach or sub-basin plans for the two estuaries, where proposed

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249. *Id.* at 9.

250. SNOHOMISH CNTY. SUSTAINABLE LANDS STRATEGY PHASE I REPORT 11 (2011), http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/Ph1Rpt041211.pdf.

251. *See* Craig, *supra* note 40, at 9 (proposing a framework of "principled flexibility").

> dikebreaching habitat projects to restore critical estuary habitat for ESA-listed salmon and other species constitute more than 90% of the potential impact to designated agricultural lands in the county. Other priority reaches would include areas where there are critical issues that would benefit from SLS coordination - surface and ground water management strategies in upper watershed areas, Skykomish Scenic River protections and drainage, side-channel habitat and flood control on the mainstems.[252]

The Phase I Report recognizes that the trials should identify the reasons for loss of farmlands, while monitoring the effects of its "net gain" approach.

Not all agricultural advocates were satisfied with the SLS process or product. Reminiscent of a past in which "fish are not as important as farmers,"[253] the Snohomish County Farm Bureau refused to participate in, or support, the SLS based on its allegation that it "appeared to be a highly biased process aimed at flooding Ag-land for fish habitat; without consideration of restoring other lands, equal in quantity and quality, to the flooded lands taken."[254] Another commentator asked, "[W]hat about priorities? In a future where farming generations haven't the land to farm, and where working families can't quite afford the diets they need, will it really matter if developers are happier and the salmon runs are larger?"[255] Likewise, Councilmember John Koster has continued to disparage salmon habitat restoration through the SLS, asserting the need for a "fair and balanced process."[256] Of course, others have complained about the

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252. Evans & Moore (Mar. 14, 2011), *supra* note 230, at 11.

253. Alex G. Alexander, *Land-use Strategy is Decades Behind*, THE HERALD (May 4, 2011), *available at* http://www.heraldnet.com/article/20110504/OPINION02/705049967.

254. Letter from Ed Husmann, President of Snohomish Cnty. Farm Bureau, to Marv Thomas, Chairman, Snohomish Cnty. Agric. Board (Mar. 7, 2011), *available at* http://www.snocofarmbureau.com/issues.html. *See also* Meeting of the Snohomish Cnty. Agric. Advisory Board (Mar. 22, 2011) (describing the testimony of Ed Husmann: "[he] indicated that the primary objective of the SLS is to flood agricultural land"), *available at* http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/AgboardMeetingSummary03-22-11f.pdf.

255. Alexander, *supra* note 254.

256. John Koster, *Proposed Strategy Raises Deep Concerns*, THE HERALD, (Apr. 30, 2011), http://www.heraldnet.com/article/20110430/OPINION03/704309997.

agricultural biases in similar policies, arguing that they "tip[] the balance toward agricultural interests, and leave[] salmon with nothing."[257] Yet, in the space between fish and farms, the SLS may have succeeded in providing a framework for promoting all of the relevant interests.

V. CONCLUSION

This is an ongoing project that has implications beyond the specific commitments of the Smith Island dikes. As noted above, the transformation of Smith Island to salmon habitat plays a critical role in the regional salmon habitat recovery plan. To that end, the Washington Department of Fish and Wildlife has requested that the proposed dike realignment be considered a "temporary structure" in recognition of its likely relocation in the future with the ultimate purpose of restoring larger amounts of Smith Island habitat.[258] On the other hand, the Snohomish County Farm Bureau continues to object to use of the word "restoration" in the context of floodplain re-establishment because the term also entails destruction of farmland.[259] These comments represent the opposite ends of a spectrum that involves the multiple voices of sustainability that are regularly implicated in such restoration projects. With these competing interests in mind, the Smith Island EIS is best viewed as a vehicle that can facilitate the many voices of sustainability and foster the success of the Sustainable Lands Strategy.

One persistent predisposition in natural resource policy making has been that "[t]here is a cost beyond which you just have to say very regrettably we have to let species or sub-species go extinct."[260] Land

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See John Koster, *Significant Concerns with the Sustainable Lands Strategy*, SNOHOMISH CNTY. COUNCIL NEWS (May 2, 2011), http://archive.constantcontact.com/fs048/1101964962166/archive/1105373504519.html.

257. Press Release, The Native Circle, Washington State Would Abrogate Critical Area Protections On Agricultural Lands (Apr. 14, 2011), *available at* http://thenativecircle.org/2011/04/washington-state-would-abrogate-critical-area-protections-on-agricultural-lands/.

258. Letter from Hennick to Snohomish Cnty. Pub. Works, *supra* note 53.

259. Letter from Husmann to Stamey, *supra* note 226.

260. SCARCE, *supra* note 31, at 188 (quoting Senator Slade Gordon). *See also* Long, supra note 27, at 443 (noting that, even in the late 1990's, "although most

use is inundated with market biases, often leading to (from the ecosystem services point of view) misconceptions about the relative values of particular environmental amenities and processes.[261] It may be these same perceptions that have driven the manner in which we have valued (or undervalued) ecosystems in the past.[262] The process through which we prioritize land uses would benefit from a full assessment of the value in competing land uses, and as such, it is a process that may benefit from the consideration of ecosystem services research.[263]

In this process, it may be difficult to skirt past the complex, often rhetorical, controversies that surround the comparison of different ecosystem goods and opportunities.[264] The ecosystem services approach brings to the table a clear demand that the fullest value of ecosystem goods *and* services be placed before a decision making body, at least so that the direct value attributable to goods does not artificially outweigh the nonmarket services implicated by a community's commitment to a given land use. Importantly, sustainability provides a framework for consideration of ecosystem services valuations in a pluralistic and inclusive decision making process, even if we are left a bit unguided on how the "triple-bottom line" elements should complement one another.[265]

Seattle residents reported that they supported protection of the wild fish, fewer were willing to bear the additional expense for such protection.").

261. In City of Seattle, for instance, "some [business owners] are strong advocates for trees and others are not, or are even opposed to having trees near their businesses. Some business owners raise concerns about trees blocking signs, creating debris, or producing too much shade. For other business owners, the benefits trees provide are very important to their business environment." CITY OF SEATTLE URBAN FOREST COALITION, SEATTLE URBAN FOREST MANAGEMENT PLAN 74 (2007), *available at* http://www.seattle.gov/environment/documents/Final_UFMP.pdf.

262. James Salzman, *A Field of Green? The Past and Future of Ecosystem Services*, 21 J. LAND USE & ENV. L. 133, 134-35 (2006) (arguing that the historical lack of recognition of ecosystem services has come from ignorance, market economics, and institutional limitations).

263. *See* SMITH, *supra* note 44, at 33 ("Incorporating ecosystem services into decisions on watershed management thus changes the range of options available, and may also change the choices made.").

264. *See generally* Douglas A. Kysar & James Salzman, *Environmental Tribalism*, 87 MINN. L. REV. 1099 (2002-2003).

265. *See* US INTERAGENCY WORKING GROUP ON SUSTAINABLE DEVELOPMENT INDICATORS, SUSTAINABLE DEVELOPMENT IN THE UNITED STATES: AN

The case of Pacific Salmon habitat restoration in the Snohomish River floodplain provides an apt example of how the sustainability framework can be useful to inform public investments: sustainable salmon habitat restoration strategies can offer substantial benefits to other lands uses and interests. Breaching dikes has the effect of expanding the sloughs and watercourses that exist over dike-protected land. Restoring floodplains allows the public to enjoy a wide variety of scientific, aesthetic, and recreational services provided by floodplain ecosystems. Increasing the watershed's capacity to absorb high water flows improves natural flood control services,[266] and may alleviate the need to construct dikes, levees, and other substitute flood control structures.[267]

Ultimately, Snohomish County's effort to inform their decision making illustrates the clear advantage of experimenting with this blend of ecology and economics, and as James Salzman notes, "[t]here is no substitute for doing and, whether the initiatives end in failure or success, notes from the field lay the foundation for better-crafted initiatives to follow."[268] The Smith Island Restoration Project will test the potential of ecosystem services, and it will test sustainability as a negotiating platform. It may also prove to be an important marker in the development of sound environmental and land use decision making. At least, the Smith Island case demonstrates that habitat restoration is valuable beyond the market worth of both salmon and the bare land.

EXPERIMENTAL SET OF INDICATORS 9 (1998), *available at* http://teclim.ufba.br/jsf/indicadores/SDI%20US%20SUST%20DEVEL%20INDICAT.PDF ("If we think of sustainable development as a three-legged stool, then one leg can be thought of as representing the economy, another as representing the environment, and the third representing society or equity.").

266. VALUING ECOSYSTEM SERV., *supra* note 61, at 168.

267. *Id.* at 169.

268. James Salzman, *Creating Markets for Ecosystem Services: Notes from the Field*, 80 N.Y.U. L. REV 870, 958 (2005).