

Toxics and Nutrients Grant for the Puget Sound National Estuary Program

March 19, 2013

Project Name	Description	Action Agenda Linkage	Recipient	Link	Output	Outcome	Total Cost
Scientific Investigations of Toxics and Nutrients							
Juvenile Chinook Salmon Contaminant Monitoring	WDFW will sample juvenile Chinook salmon for measuring exposure to known chemicals of concern entering Puget Sound via stormwater, wastewater treatment facilities, atmospheric deposition to marine waters, and groundwater. WDFW will sample fish sound-wide from four Puget Sound embayments in 2013. Within each embayment, sampling sites will include the river mouth and two adjacent marine shorelines. This sampling augments previous sampling initiated as early as 1998, and will be used to establish a solid time series of contaminant conditions in juvenile Chinook salmon that can be used to fulfill the Toxics in Fish goal of tracking time trends of fish health.	Biennial Science Work Plan	Northwest Fisheries Science Center (NOAA Fisheries)	http://www.nwfsc.noaa.gov/	The primary output of the proposed project will be a current measurement of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon from four major Puget Sound river mouths and embayments encompassing a wide gradient of contaminant inputs.	Outcomes associated with providing an assessment of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon include: 1) an assessment of progress towards 2020 recovery goals for toxic in fish, 2) a measure of the effectiveness of current strategies and near term actions outlined in the 2012 Action Agenda to reduce the toxics threat to juvenile Chinook salmon, and 3) guidance on toxics reduction strategies.	\$ 87,376
SoundToxins Partnership Harmful Algal Blooms Monitoring	SoundToxins responds to an increasing threat of harmful algal blooms (HABs) in Puget Sound. This project will standardize methods and results, create a science advisory group to guide future program direction, and deliver an effective, robust citizen science monitoring program providing critical information to federal and state agencies, tribal harvesters, fish and shellfish farmers, community members and academia for decision-making and resource allocation.	Biennial Science Work Plan	University of Washington	http://www.soundtoxins.org/	<ul style="list-style-type: none"> On-site training sessions for newly established or expanded SoundToxins monitoring sites. SoundToxins database with all data from the project period, as well as historical program data. 150 samples analyzed for nutrient, chlorophyll a and toxin data (Cellular domoic acid, dinophysistoxins (DSP toxins), and saxitoxin) from comprehensive sites. Timely alerts to resource managers when HAB species are detected above preset thresholds. An Ecology-approved QAPP. 	<ul style="list-style-type: none"> Protection of public health by minimizing the risks from HABs tainted seafoods harvested from Puget Sound. Reduction of potential economic losses to Puget Sound fisheries caused by product recalls and inability to harvest. Increased efficiency of HABs monitoring by WDOH. Enhanced volunteer engagement and expertise. Institutionalization of SoundToxins within NWFSC and WSG 	\$ 86,777
High Resolution Marine Water Quality Monitoring	This project supports six profiling buoys for a comprehensive view of water, oxygen, and nutrient dynamics. The buoys provide high-resolution, near-real time, on-line and calibrated water quality data for Admiralty Reach, South Puget Sound, Hood Canal, the Main Basin, and Dabob Bay.	Biennial Science Work Plan	University of Washington	http://orca.ocean.washington.edu/index.shtml	Our major output is the high-resolution, near-real time, on-line and calibrated oxygen and water quality data from six profiling buoys throughout Puget Sound, with public access from a variety of sources.	Effective regulation and restoration of Puget Sound water quality demands an understanding of oxygen changes due to anthropogenic effects distinct from oceanic input. The use of the high-resolution data in major basins, in concert with other monitoring approaches, facilitates that understanding and optimizes Ecology's ability to make effective water quality regulation and enhances the Puget Sound Partnership's ability to direct effective restoration actions.	\$ 125,000
Juvenile Chinook Salmon Contaminant Monitoring (Sample Collection)	WDFW will sample juvenile Chinook salmon for measuring exposure to known chemicals of concern entering Puget Sound via stormwater, wastewater treatment facilities, atmospheric deposition to marine waters, and groundwater. WDFW will sample fish sound-wide from four Puget Sound embayments in 2013. Within each embayment, sampling sites will include the river mouth and two adjacent marine shorelines. This sampling augments previous sampling initiated as early as 1998, and will be used to establish a solid time series of contaminant conditions in juvenile Chinook salmon that can be used to fulfill the Toxics in Fish goal of tracking time trends of fish health.	Biennial Science Work Plan	Washington Department of Fish and Wildlife	http://wdfw.wa.gov/conservation/research/projects/marine_toxics/index.html	The primary output of the proposed project will be a current measurement of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon from four major Puget Sound river mouths and embayments encompassing a wide gradient of contaminant inputs.	Outcomes associated with providing an assessment of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon include: 1) an assessment of progress towards 2020 recovery goals for toxic in fish, 2) a measure of the effectiveness of current strategies and near term actions outlined in the 2012 Action Agenda to reduce the toxics threat to juvenile Chinook salmon, and 3) guidance on toxics reduction strategies.	\$ 49,624

Box Model and Storm Data	<p>“Box Model” Analysis of PAHs in Puget Sound: Ecology will update the computerized prediction tool called the “Box Model” with new information and will analyze polycyclic aromatic hydrocarbons (PAHs) and reanalyze polychlorinated biphenyls (PCBs). The model will be used to help develop an overall source reduction strategy to protect aquatic life in Puget Sound and meet Puget Sound Partnership targets for toxics.</p> <p>Assessing Stormwater Data: Cities and counties currently collect water quality data on discharges of polluted runoff (stormwater). These discharges are the largest pathway for toxic chemicals entering Puget Sound. Ecology will compile and analyze the monitoring data from the eight “Phase 1” stormwater jurisdictions to provide an integrated analysis of stormwater. This information will be useful in managing stormwater inputs to Puget Sound.</p>	Biennial Science Work Plan	Ecology	https://fortress.wa.gov/ecy/publications/summarypages/0903015.html	<p>Box Model: Final QAPP. Final Report. PSTLA data in EIM. Established reduction targets for modeled contaminants needed to meet environmental quality targets.</p> <p>Stormwater: (1)Final QAPP (2) Final Report(3) Preliminary regional analysis of Phase 1 permittee contaminant information (2009-2012)</p>	<p>Box Model: Prioritized costs needed to achieve reductions. Impacts of reductions in non-urban areas evaluated. Educational tool for public and managers on impacts, recovery timeframes, and management options.</p> <p>Stormwater: Information to inform regional stormwater managers Box Model: No adverse impacts on PS ecosystem when targets achieved. Stormwater: Reduce toxic and nutrient inputs to Puget Sound from stormwater. Improve nearshore habitat by reducing threats from toxic chemicals.</p>	\$ 160,475
Biomonitoring for Emerging Contaminants	<p>There are a wide range of chemicals in use in the Puget Sound basin which information is lacking on occurrence, exposure and biological impacts. Many of these chemical have characteristics that make them potentially persistent, bioaccumulative and/or endocrine disrupting. Through a competitive grant process, Ecology selected a University of Washington proposal for funding.</p>	Biennial Science Work Plan	University of Washington	http://deohs.washington.edu/	<p>Information on occurrence, exposure and biological impacts from endocrine disrupting compounds. Data to support development and improvement of Puget Sound toxics indicators for protection of biological resources. Final reports summarizing results of individual studies.</p>	<p>Prioritize source control strategies to reduce impacts from endocrine disrupting compounds on Puget Sound ecosystem. Support development of toxics related indicators and benchmarks to assess the health of Puget Sound. Reduce impacts from endocrine disrupting compounds on the Puget Sound ecosystem.</p>	\$ 500,000
Ferry-Based Monitoring	<p>To improve data on Puget Sound water quality, Ecology will expand the ferry monitoring network beyond the Victoria Clipper to include public ferries run by the Department of Transportation. Installation of automated instruments on select ferries will allow Ecology to record measurements continuously as ferries make their multiple daily runs. Ferries occupy strategic cross-sections in Puget Sound – often at the very constriction points between basins that would let us most easily measure water exchange and circulation between those basins. These measurements are key to understanding overall water quality and for improving the performance of numerical models in Puget Sound.</p>	Biennial Science Work Plan	Ecology	TBD	<p>Draft and Final report summarizing the data obtained and its use in improving our understanding of Puget Sound water quality and incorporation into PS models. Improved understanding of the exchange of water between Puget Sound and the Strait of Juan de Fuca through Admiralty Inlet; a key driver of water quality in Puget Sound. Improved numerical models of Puget Sound that can be used for TMDLs and subsequent setting of NPDES permit limits and load allocations for diffuse pollution sources as appropriate.</p>	<p>Cleaner water in Puget Sound.</p>	\$ 261,107
State of the Science for Shellfish Processes, Sediment Interactions, and Watershed Attenuation of Nitrogen in the Puget Sound Ecosystem	<p>USGS will evaluate the state of science for shellfish processes, sediment interactions, and watershed attenuation of nitrogen in the Puget Sound ecosystem.</p>	Biennial Science Work Plan	USGS	TBD	<p>Develop reports compiling the current state of the science on shellfish nutrient dynamics, quantifying nutrient fluxes from Puget Sound sediments, and characterizing the nutrient attenuation potential of the Puget Sound Watershed</p>	<p>Increased knowledge of key nutrient processes. More effective and tailored management actions that are more likely to solve nutrient problems.</p>	\$ 301,500
Nutrient Synopsis	<p>Ecology will combine already summarized information into a web site targeting the general public and local governments. The purpose is to highlight elements of various publications that have quantified nitrogen from various sources and pathways to Puget Sound.</p>	Biennial Science Work Plan	Ecology	http://www.ecy.wa.gov/programs/eap/Nitrogen/Index.html	<p>Draft and final compilation of nitrogen in the Puget Sound ecosystem as web page. Draft and final report summarizing recent field observations to better understand how water is exchanged between Puget Sound and the Strait of Juan de Fuca through Admiralty Inlet.</p>	<p>Qualitative and quantitative information on nitrogen in the Puget Sound ecosystem. Improved communication to both technical and general audiences.</p>	\$ 130,256

WA Shellfish Initiative Ocean Acidification Blue Ribbon Panel	Washington Sea Grant provided administrative support for the Ocean Acidification Blue Ribbon Panel. Puget Sound is particularly vulnerable to ocean acidification. Washington's coastal waters experience seasonal upwelling where waters that are naturally low in oxygen and rich in carbon dioxide rise to the surface. These upwelled waters are naturally more acidic. Coastal waters also receive excess nitrogen from human activities that can stimulate algae blooms. As these blooms die and sink, bacteria decompose them, depleting oxygen from the surrounding water.	Biennial Science Work Plan	University of Washington	http://www.ecy.wa.gov/water/marine/oceanacidification.html	The Panel will make recommendations to the Governor, NOAA, EPA and regional research groups, and other policy-makers, regarding additional research and monitoring needs and actions to understand, prevent/mitigate, and adapt to acidification of Puget Sound.	The Panel will point the way to advancing our scientific understanding of the effects of ocean acidification and will help shape our response to this pressing problem, strengthening the link between science and effective management of our natural resources. Prevent, mitigate, and / or adapt to acidification of Puget Sound	\$ 20,000
pH Model Scope	Pacific Northwest National Laboratory (PNNL) will scope a model for addressing pH in Puget Sound. It will 1) define monitoring needs to support pH modeling, 2) assess alternative pH modeling frameworks and identify the preferred alternative, and 3) define how key modeling rates and coefficients will be determined.	Biennial Science Work Plan	Ecology	TBD	Plan for simulating pH with the Puget Sound Water Quality model. Better understanding of human nutrient loading effects on low pH in Puget Sound. Therefore, better understanding of how potential nutrient load reductions could improve pH levels.	Healthier pH levels in Puget Sound waters.	\$ 40,000
Roofing Project	The Puget Sound Toxics Loading Assessment identified roofing materials as one of the largest potential sources of cadmium, copper, and zinc in the Puget Sound Basin. This study will evaluate leaching of metals and phthalates from various roofing materials in common use in the Puget Sound region.	Biennial Science Work Plan	Ecology	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_roofingscope_03202012.pdf	(1) Final QAPP. (2) Final Report. (3) Data on metals and phthalates found in various roofing materials. (4) Data on metals and phthalates in runoff from various roofing materials.	(1) Alternatives assessment for roofing materials. (2) Better alternatives implemented for roofing materials. (3) Educational outreach to inform consumers on lower impact roofing materials. (4) Metals and phthalate inputs to Puget Sound reduced. (5) Biological impairments to Puget Sound from metals and phthalates reduced.	\$ 472,839
Puget Sound Crab and Shrimp Assessment	Current toxics monitoring programs do not adequately address Dungeness crabs and spot prawns. These species are important because of their abundance, their role in the food web, and because people eat them. Ecology signed an Inter-Agency Agreement (IAA) with the Washington Department of Fish and Wildlife (WDFW) to analyze these species for chemical contamination. The Department of Health (DOH) will analyze the results for seafood safety.	Biennial Science Work Plan	WA State Department of Fish and Wildlife	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_toxics_iaawdfw.pdf	Final QAPP- Final Report- Data on crab and spot prawn in Puget Sound as support for a human health risk assessment from consumption of these species	Data to assess contaminant levels in crab and spot prawn. Baseline information to assess effectiveness of actions to reduce toxics in seafood Reduced risk to consumers from consumption of crab and spot prawn	\$ 189,387
Prevent Substances from Being Used in the First Place							
Derelict Piling Removal	Creosote pilings are a leading cause of Polycyclic Aromatic Hydrocarbon (PAH) pollution in Puget Sound; as the pilings remain submerged, they release toxics both into the sediment and directly into water as the creosote degrades over time. With an Ecology grant, Pierce County will remove about 120 derelict creosote pilings along the shoreline near Chambers Creek. This project is part of the Pierce County Master Site Plan.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans	Pierce County Public Works and Utilities	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_toxics_agreementpierceco.pdf	Remove 120 creosote-treated pilings that are leading contributors of PAH pollution.	Prevent PAH pollution to Puget Sound. Reduced pollution load leads to cleaner water quality and a healthier ecosystem.	\$ 160,000
Landscaper Accreditation	Through a competitive process, Ecology funded the Cascadia Consulting Group to establish a Landscaper Accreditation Program. The program will reduce nutrients, toxics, and pathogens from reaching Puget Sound and improve habitat. Currently, there are not enough land care professionals in our region with practical knowledge about green infrastructure, restoration horticulture, and other sustainable practices. The program will comprehensively address all aspects of sustainable, ecological land care, provide practical knowledge for people in the field, recognize individuals for their knowledge, and help create a "green sector" of professionals focused on sustainable land care.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 1.4 NTA 1 -- Landscaper Accreditation	Cascadia Consulting Group	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_lap_cascadia.pdf	Develop a program in Washington that comprehensively addresses all aspects of sustainable, ecological land care, provides practical knowledge for people in the field, recognizes individuals for their knowledge, and helps create a "green sector" of professionals focused on sustainable land care.	Help reduce the overall use of pesticides and synthetic fertilizers in the soil and water. Help reduce PAH and particulate emissions from two-stroke engines. Increase natural stormwater filtration and reduce stormwater runoff through cutting edge landscape design, development, and maintenance.	\$ 280,000

Landscaper Certification	Through a competitive process, Ecology funded the Cascadia Consulting Group to establish a Landscaper Accreditation Program. The program will reduce nutrients, toxics, and pathogens from reaching Puget Sound and improve habitat. Currently, there are not enough land care professionals in our region with practical knowledge about green infrastructure, restoration horticulture, and other sustainable practices. The program will comprehensively address all aspects of sustainable, ecological land care, provide practical knowledge for people in the field, recognize individuals for their knowledge, and help create a "green sector" of professionals focused on sustainable land care.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 1.4 NTA 1 -- Landscaper Accreditation	Ecology	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_lap_cascadia.pdf	Develop a program in Washington that comprehensively addresses all aspects of sustainable, ecological land care, provides practical knowledge for people in the field, recognizes individuals for their knowledge, and helps create a "green sector" of professionals focused on sustainable land care.	Help reduce the overall use of pesticides and synthetic fertilizers in the soil and water. Help reduce PAH and particulate emissions from two-stroke engines. Increase natural stormwater filtration and reduce stormwater runoff through cutting edge landscape design, development, and maintenance.	\$ 20,000
PBDE Enforcement	Numerous persistent, bioaccumulative toxics (PBTs) and other toxics have been recently banned for certain uses in Washington: While it is illegal to sell the specified products containing these toxics, there was no active enforcement to check if the bans are working. This project includes purchasing items likely to contain PBDEs, sampling the products, and communicating with retailers and manufacturers if PBDEs are found.	C 1.6 -- Increase compliance with and enforcement of environmental laws, regulations, and permits; C 1.6 NTA 2 -- Compliance for Use of Toxics in Products	Ecology	http://www.ecy.wa.gov/programs/swfa/pbt/pbde.html	Sample products offered for sale to Washington consumers for specific banned chemicals, and work to ensure that any manufacturer found to violate the law is brought into compliance. Expand the amount of knowledge available on the prevalence of other halogenated flame retardants (especially PBT flame retardants) used as substitutes in applications where PBDEs have been banned.	Reduce the use of banned PBDEs in Washington State.	\$ 255,144
Pesticide Use Survey	When pesticides reach waterbodies they cause problems, and the Puget Sound Toxics Assessment found that urban pesticide use was the leading source of copper. The Washington State Department of Agriculture (WSDA) will conduct a survey of typical urban pesticide use. Assessment WSDA will mail surveys to 6,000-8,000 homeowners and complete in-person surveys of professional commercial and public applicators. Results will drive future education and outreach efforts.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 5 -- Pesticide Use Survey	Washington State Department of Agriculture	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_nutrients_usgs.pdf	(1) Establish stakeholder advisory committee. (2) Draft and final QAPP. (3) Survey designed and executed. (4) Draft and final Report.	WSDA and USDA NASS will provide an overview of pesticide use in urban areas. (1) Increased knowledge of pesticide use in urban areas, (2) developed and approved survey protocol for gathering pesticide use information in urban areas, and (3) identification of education and outreach opportunities leading to a potential decrease in urban pesticide use and pesticide loading to Puget Sound.	\$ 73,985
Expansion of Wood Stove Removal Program	Puget Sound Clean Air Agency (PSCAA) will extend and complement the existing Wood Smoke Reduction Program (WSRP) in Pierce County. Wood burning is a major source of PAHs and fine particle emissions in Pierce County. PSCAA will expand the "on the ground" wood stove replacement program. Under the grant, PSCAA will 1) increase the capital funds available for incentives and 2) to recruit and enroll households in the expanded WSRP.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans	Puget Sound Clean Air Agency	http://www.pscleanair.org/programs/community/woodstove.replacement/	This project will expand and improve the efficacy of previous wood stove replacement programs. We expect that it will enable the removal, replacement or retrofitting of about 1000 wood stoves and fireplaces, which will significantly reduce them, or completely and permanently eliminate them as PAH sources.	This project is expected to reduce PAH emissions by more than 800 pounds annually. Since the PAH emissions are directly dependent on the fuel consumption, the PAH emissions from these devices would have remained relatively constant for many years to come.	\$ 334,387
Puget Sound Creosote Removal Project	The Department of Natural Resources (DNR) will use \$500,000 to remove creosote pilings to reduce PAH inputs and improve habitat within Puget Sound. DNR will also conduct effectiveness monitoring. Piling removal will occur in Hood Canal.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans	Department of Natural Resources (DNR)	http://www.dnr.wa.gov/ResearchScience/Topics/AquaticCleanUpRestoration/Pages/aqr_creosote_removal_program.aspx	1) Remove approximately 675 piling and 4,400 square feet of overwater structure from five sites. 2) Remove approximately 785 tons of creosote-treated debris from piling and beach debris removals Reduce PAH inputs of 324 kg per year (0.35 tons) in Puget Sound.	1) Reduction in PAH sediment, water, and air concentration and potential future inputs through the removal of creosote pilings. 2) Improved nearshore habitat (increased light penetration, decreased debris. Improved herring spawning habitat. 3) Accurate assessment of total number of creosote-treated pilings remaining in Puget Sound. 4) Estimated total of PAH input to Puget Sound based on number of pilings remaining.	\$ 500,000

Development of a Chemical Hazard-Based Technical Alternative Assessment Guidance (TAAG) Document	With the assistance of two consultants, Ecology is leading a collaborative process with stakeholders to define elements of and finalize a method for conducting safer alternative assessments, using existing models as a starting point for discussion. Based on the results of the Puget Sound Toxics Assessment, Ecology will identify chemicals or products that are good candidates for scientifically defensible assessment and work with partners to conduct alternatives assessments.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 1 -- Chemical Alternatives Assessments	Clean Production Action	http://www.ecy.wa.gov/programs/hwtr/ChemAlternatives/altAssessment.html	Final Alternative Assessment Guidance document vetted through stakeholder process and posted to website. Conduct safer alternatives assessment on at least one chemical or product.	Businesses and governments will use the Alternative Assessment Guidance to conduct alternative assessments on chemicals they are using. The annual pounds of hazardous materials are reduced. By 2015, increase the use of safer chemicals cumulatively by 40%.	\$ 27,000
Technical Writer for Alternative Assessment Guidance	With the assistance of two consultants, Ecology is leading a collaborative process with stakeholders to define elements of and finalize a method for conducting safer alternative assessments, using existing models as a starting point for discussion. Based on the results of the Puget Sound Toxics Assessment, Ecology will identify chemicals or products that are good candidates for scientifically defensible assessment and work with partners to conduct alternatives assessments.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 1 -- Chemical Alternatives Assessments	Pure Strategies, Inc	http://www.ecy.wa.gov/programs/hwtr/ChemAlternatives/altAssessment.html	Final Alternative Assessment Guidance document vetted through stakeholder process and posted to website. Conduct safer alternatives assessment on at least one chemical or product.	Businesses and governments will use the Alternative Assessment Guidance to conduct alternative assessments on chemicals they are using. The annual pounds of hazardous materials are reduced. By 2015, increase the use of safer chemicals cumulatively by 40%.	\$ 69,450
Safer Alternatives Assessment	With the assistance of two consultants, Ecology is leading a collaborative process with stakeholders to define elements of and finalize a method for conducting safer alternative assessments, using existing models as a starting point for discussion. Based on the results of the Puget Sound Toxics Assessment, Ecology will identify chemicals or products that are good candidates for scientifically defensible assessment and work with partners to conduct alternatives assessments.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 1 -- Chemical Alternatives Assessments	Ecology	http://www.ecy.wa.gov/programs/hwtr/ChemAlternatives/altAssessment.html	Final Alternative Assessment Guidance document vetted through stakeholder process and posted to website. Conduct safer alternatives assessment on at least one chemical or product.	Businesses and governments will use the Alternative Assessment Guidance to conduct alternative assessments on chemicals they are using. The annual pounds of hazardous materials are reduced. By 2015, increase the use of safer chemicals cumulatively by 40%.	\$ 66,213
Preventing Automobile Leaks	Seattle Public Utilities and Ecology will coordinate hands-on workshops addressing vehicle leaks in and around Seattle. There will be about 100 workshops where participants will learn how to detect oil and other fluid leaks, identify the sources of the leaks, repair common minor leaks, clean up spills, and properly dispose of auto fluids. Seattle Public Utilities and Ecology will conduct post-workshop surveys to assess behavior change.	C 2.4 -- Control sources of pollutants;	Seattle Public Utilities	http://www.ecy.wa.gov/fixcarleaks.html	Host at least 98 hands-on workshops in the Seattle area to will teach participants how to detect oil and other fluid leaks, identify the sources of the leaks, repair common minor leaks, clean up spills, and properly dispose of auto fluids. Conduct evaluation of overall effectiveness of the program	Reduce drips and leaks of oils and other fluids from automobiles, the leading source of these pollutants. Reduced oil and fuel loading to Puget Sound results in cleaner water and healthier ecosystems.	\$ 200,000
Green Chemistry TBD	Establish a Green Chemistry Center. Details TBD.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 3 -- Green Chemistry Road Map	TBD	http://www.ecy.wa.gov/sustainability/greennchem.html	Establish a Green Chemistry Center in Puget Sound.	TBD	\$ 550,000
Limit or Manage the Amount of Toxics and Nutrients Released in the the Environment							
Nutrient Bioextraction: Shellfish at Work	This project will mitigate anthropogenic nutrient loads and support habitat renewal in Budd Inlet through the establishment of a community-based shellfish gardening and bioextraction program.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution;	Pacific Shellfish Institute	http://www.ecy.wa.gov/puget_sound/docs/fedgrants_psi_agreement.pdf	Mussel aquaculture can 1) augment other strategies for removing excess nutrients from the marine system; 2) utilize the natural system to produce a compost product that is useful to the local community; 3) spur pollution control efforts; and 4) get the community engaged in learning about their local marine system and developing community-based solutions to wastewater issues in urban areas.	Project outputs will contribute to a fishable and swimmable Budd Inlet by mitigating nutrient enrichment while educating the community about local water quality processes and alternative nutrient removal strategies.	\$ 65,276

Clean Water BMPs for Agricultural Activities	The Agricultural Best Management Practices Fund to Control Nutrient and Pathogen Pollution (Agriculture BMP Fund) is a fund to pay for the installation of agricultural BMPs to address nutrient and pathogen pollution. The fund will pay for eligible agricultural BMPs including fencing to protect waters from livestock, off-stream watering, and livestock feeding. Interested land owners must work through a conservation district, local government, tribe, or other governmental entity. The Agriculture BMP Fund is specifically designed so smaller landowners are eligible. Ecology's 319 Funding Guidelines are the basis for the NEP Agriculture BMP Guidance; the only provisions added were specific to the NEP grant requirements.	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.2 NTA 1 -- Priority Areas for Voluntary Incentive and Regulatory Programs	Ecology	http://www.ecy.wa.gov/puget_sound/docs/NEP_Ag_BMP_Funds_Guidance_2012.pdf	Annual reports describing the BMPs installed and in progress, total amount spent, and locations of projects.	Short-term outcome: BMPs to reduce pathogen and nutrient pollutants installed. Long-term outcomes: (1) reductions in nitrogen and pathogen loading from agricultural areas, (2) improvements to dissolved oxygen concentrations in sensitive areas of Puget Sound, and (3) improvements in fecal coliform concentrations in shellfish growing areas.	\$ 136,301
Development of a Fish Consumption Rate	Under our state's Clean Water Act authorities, Washington is revising its fish consumption rates to better protect people who eat its fish, and also to protect our environment and restore Puget Sound. The state's fish consumption rates are important because they drive regulatory standards about how clean the state requires our waters and sediments to be. The current fish consumption rates, developed in the 1980s and 1990s, are not accurate. New rates are necessary to protect high consumers of fish. The fish consumption rate is part of the equation that is used to calculate chemical criteria for toxics, and is an important driver in establishing water quality permit conditions and limits, and regulating the discharge of toxics into the aquatic environment. EPA has changed its default fish consumption rate. Ecology and the Northwest Indian Fisheries Commission (NWIFC) entered into an interagency agreement (IAA, pdf) to determine a state fish consumption rate acceptable to NWIFC member tribes.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 3 -- Fish Consumption Rates and Management Standards	Northwest Indian Fisheries Commission	http://www.ecy.wa.gov/programs/wq/swqs/Currsqwqruleactiv.html	Determine a state fish consumption rate acceptable to NWIFC member tribes for Washington clean-up and water quality criteria development,	Ecology can adopt a more appropriate fish consumption rate.	\$ 100,000
Local Source Control	Local Source Control (LSC) partnerships focus directly on assisting small businesses to prevent polluted runoff from entering Puget Sound. The LSC partnership works with local jurisdictions to preserve waters in Puget Sound through source control. By addressing possible causes of pollution at the source of use, technical assistance to small businesses is making a difference. This approach is expected to save businesses money while protecting our water quality. The NEP funds are being spent through the existing LSC program and are funding four new municipal programs in Puyallup, Port Angeles, Everett and Bothell.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 1.4 NTA 3 -- Conduct Local Source Control Business Assistance Visits	Bothell, Everett, Port Angeles, Puyallup, and Ecology	http://www.ecy.wa.gov/programs/hwtr/lsp/index.html	Each source control specialist will conduct between 100-300 source control site visits per full time equivalent per year, depending on the type of source control technical assistance provided and the number of small businesses located in the jurisdiction.	Businesses prevent, manage and control waste in a way that reduces the likelihood and amount of toxics reaching the sanitary sewer and stormwater system. Less stormwater pollution resulting in improved water quality.	\$ 1,188,108
Local Source Control Round 3	The Local Source Control (LSC) partnership focuses directly on assisting small businesses to prevent polluted runoff from entering Puget Sound. The NEP funds are being spent through the existing LS Control program and are funding four new municipal programs in Puyallup, Port Angeles, Everett and Bothell. Additional Round 3 funds would pay for years 3 and 4 for the Bothell program.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 1.4 NTA 3 -- Conduct Local Source Control Business Assistance Visits	Bothell	http://www.ecy.wa.gov/programs/hwtr/lsp/index.html	Each source control specialist will conduct between 100-300 source control site visits per full time equivalent per year, depending on the type of source control technical assistance provided and the number of small businesses located in the jurisdiction.	Businesses prevent, manage and control waste in a way that reduces the likelihood and amount of toxics reaching the sanitary sewer and stormwater system. Less stormwater pollution resulting in improved water quality.	\$ 200,000
Non-Point Inspectors	This project funds two Department of Ecology inspectors for the Whatcom Pollution Control Action Team (PCAT). The PCAT is an important facet of the Washington Shellfish Initiative and is designed to identify and address pollution from a variety of point and nonpoint sources, including on-site sewage systems, farm animals, pets, and stormwater runoff. Due to persistent and growing concerns over vulnerable shellfish resources in Portage Bay and Drayton Harbor, Whatcom County was identified as an initial focus area for a PCAT. The team includes and is dependent on several other agency and tribal partners at both the operations and field level.	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.1 NTA 2 -- Effectiveness of Incentive	Ecology	http://www.ecy.wa.gov/programs/wq/nonpoint/Agriculture/	(1) 00 site inspections per year, (2) Every parcel inspected installs necessary best management practices to protect water quality	(1) Decreased nitrogen concentrations in streams, rivers, and groundwater as shown by ongoing monitoring programs. (2) Meet fecal coliform standards in shellfish areas. (1) Meet drinking water quality standards in groundwater (2) Meet dissolved oxygen standards in marine waters. (3) Continue meeting fecal coliform standards in shellfish areas long-term.	\$ 850,137

Phosphorus Management for Lake Whatcom	Lake Whatcom has seen a marked decline in water quality as a result of residential development in its watershed. Scientific analysis has identified the conversion of land from a "forested condition" to a "developed condition" as the primary driver of this decline. The City of Bellingham will retrofit grassy ditches and an unpaved roadway section, installing enhanced treatment and infiltration systems designed specifically for phosphorus removal. This project will treat runoff from 18 acres of residential development which currently adds over 18 pounds of dissolved phosphorus to the lake annually. The City of Bellingham will monitor system effectiveness, and will use this information to improve subsequent retrofit projects and infrastructure improvements.	C 2.3 -- Fix problems caused by existing development; C 2.3 NTA 1 -- Stormwater Retrofit Projects	City of Bellingham	http://www.cob.org/services/environment/lake-whatcom/index.aspx	<ul style="list-style-type: none"> • Retrofit 1,200 lineal feet of grassy ditches, converting them into enhanced treatment and infiltration systems. This would produce a total of 7,200ft2 of infiltrative area. • Install 9,650ft2 of native planting to replace grassy ditch slopes. Plant selection will focus on plants that maximize phosphorus uptake and provide year-round evapotranspiration. • Retrofit 3,060ft2 of gravel alleyway, converting it into a self-mitigating pervious pavement section. • Manage runoff from 17 acres of residential development, including about 6 acres which lies in adjacent Whatcom County but drains into the City of Bellingham 	In totality, the upgraded facilities will be able to manage runoff from 18.02 acres of development which currently discharges more than 18 pounds of phosphorus per year into Lake Whatcom. According to Ecology-approved stormwater modeling software, the engineered treatment and infiltration systems will remove at least 15 pounds of this phosphorus, and route the remainder through adjacent treatment systems associated with previous improvements. This would represent 9% of the TMDL recommended reduction in total loading.	\$ 432,560
Johns Creek Estuary Conservation	Capitol Land Trust will purchase the 47-acre Bayshore Golf Course which occupies most of the Johns Creek delta in Oakland Bay. The project will eliminate the input of nitrogen and lawn chemicals into Johns Creek and Oakland Bay and retire water rights that reduce instream flow in Johns Creek during critical summer months.	C 2.3 -- Fix problems caused by existing development	Capitol Land Trust	http://www.capitollandtrust.org/	Acquire a 47-acre golf course on Oakland Bay and Johns Creek. Cease operation of the golf course, stop irrigation and nitrogen/lawn chemical application, begin restoring property.	A source of fertilizers and lawn chemicals will be removed, and summer irrigation water will be returned to instream flow, resulting in increased water quality and quantity in Johns Creek and Oakland Bay. <ul style="list-style-type: none"> • Decreased concentrations of nitrogen and/or phosphorus in marine and freshwater. • Improved dissolved oxygen concentrations in marine or freshwater. • Improved aquatic life health due to lower pollution pressures. • Improved summer flow in Johns Creek. 	\$ 251,247
Nutrient Reduction PIC: Murden Cove	The Kitsap Public Health District will assess, identify and correct residential nutrient non-point pollution sources in the Murden Cove watershed through a Pollution Identification and Correction (PIC) program. These improvements in water quality will protect critical shellfish and aquatic habitat and public health.	C 9.4 -- Develop and implement local and tribal pollution identification and correction (PIC) programs	Kitsap Public Health District	http://www.biwatershedcouncil.org/murden-cove-nutrient-and-bacteria-reduction.html	Complete 175 PIC property inspections. Ensure correction of 100% of nutrient and fecal bacteria sources. Complete monthly water quality monitoring for fecal bacteria, pH, temperature, dissolved oxygen and nutrients.	Show a statistically significant reduction in nutrient loading and fecal bacteria, with improvements in dissolved oxygen, pH and temperature. These improvements in water quality will provide protection of public health and critical aquatic habitat.	\$ 255,802
OSS Denitrification Verification	The goal of the study is to evaluate and verify new technologies to reduce nitrogen in domestic wastewater. Ecology entered into interagency agreements (IAAs) with the Department of Health (DOH) and the University of Washington (UW) to provide technical expertise to field test three innovative public domain technologies. If the field testing in the Puget Sound basin shows the technologies are effective and reliable, DOH will take the appropriate steps to develop standards for these nitrogen-removal technologies for use in Washington.	C 5.1 -- Effectively manage and control pollution from on-site sewage systems; C 5.1 NTA 3 -- OSS Nitrogen Treatment Technologies	Department of Health	http://www.doh.wa.gov/CommunityandEnvironment/WastewaterManagement/OnsiteSewageSystemsOSS.aspx	(1) Establish stakeholder advisory committee. (2) Draft and final QAPP. (3) Selection and installation of treatment technologies to be evaluated. (4) Draft and final Report.	DOH will approve (if appropriate) up to two new on-site sewage system technologies. (1) Increased use (either voluntary or regulatory) of nitrogen-removing systems in areas suffering from low dissolved oxygen levels, (2) reductions in nitrogen loading from on-site sewage systems, and (3) improve dissolved oxygen concentrations in sensitive areas of Puget Sound	\$ 297,863
OSS Denitrification Verification	The goal of the study is to evaluate and verify new technologies to reduce nitrogen in domestic wastewater. Ecology entered into interagency agreements (IAAs) with the Department of Health (DOH) and the University of Washington (UW) to provide technical expertise to field test three innovative public domain technologies. If the field testing in the Puget Sound basin shows the technologies are effective and reliable, DOH will take the appropriate steps to develop standards for these nitrogen-removal technologies for use in Washington.	C 5.1 -- Effectively manage and control pollution from on-site sewage systems; C 5.1 NTA 3 -- OSS Nitrogen Treatment Technologies	University of Washington	http://www.doh.wa.gov/CommunityandEnvironment/WastewaterManagement/OnsiteSewageSystemsOSS.aspx	(1) Establish stakeholder advisory committee. (2) Draft and final QAPP. (3) Selection and installation of treatment technologies to be evaluated. (4) Draft and final Report.	DOH will approve (if appropriate) up to two new on-site sewage system technologies. (1) Increased use (either voluntary or regulatory) of nitrogen-removing systems in areas suffering from low dissolved oxygen levels, (2) reductions in nitrogen loading from on-site sewage systems, and (3) improve dissolved oxygen concentrations in sensitive areas of Puget Sound	\$ 317,267

Fish Consumption Rate Rule-Making	This project funds one part of the multi-year Department of Ecology effort to update the fish consumption rate part of the water quality standards.	C 6.4 -- Ensure all centralized wastewater treatment plants meet discharge permit limits through compliance monitoring, technical assistance, and enforcement where needed ; C 6.4 NTA 1 -- Water Quality Standards Update	Ecology	http://www.ecy.wa.gov/programs/wq/swqs/Currsqwruleactiv.html	Progress updating the Human Health Criteria in the state's water quality standards.	Updated Human Health Criteria in the state's water quality standards.	\$ 62,000
Solutions for 5 Director Talks	The directors of the Washington State Departments of Agriculture and Ecology and the Conservation Commission have initiated a process to more efficiently and effectively address water quality on agricultural lands. Project(s) will be determined based on the outcome of the 5-Director talks. Example: Ensure BMPs being use on agricultural land are adequately addressing nutrients.	TBD	Ecology	http://www.ecy.wa.gov/programs/wq/nonpoint/Agriculture/AddressNutrNPSissuesltr.pdf	To be determined based on project selected	To be determined based on project selected	\$ 100,000
South Landers Street Storm Drain Cleaning	Through a competitive process, Ecology is funding the Seattle Public Utilities to remove legacy pollutant loads from their stormwater systems.The S Lander Street storm drain cleaning will reduce pollution loads to the East Waterway superfund site. Established pollution prevention programs are designed to prevent recontamination of the stormwater system.	C 2.3 -- Fix problems caused by existing development; C 2.3 NTA 3 -- Legacy Pollutant Removal	Seattle Public Utilities	http://www.seattle.gov/util/	A total of approximately 24,800 linear feet of storm drain pipe will be cleaned in the S Lander St S storm drain systems. Material removed from the lines will be dewatered and disposed in accordance with local, state, and federal regulations. The proposed line cleaning will remove sediment that contains elevated levels of lead, mercury, zinc, PCBs, bis(2-ethylhexyl)phthalates, butylbenzylphthalates, HPAH, benzyl alcohol, and benzoic acid. Most of these chemicals are the contaminants of concern identified for the East Waterway sediments.	It is difficult to predict load reductions that can be achieved through line cleaning. Based on data from previous line cleaning efforts, approximately 30 - 150 lbs of contaminated sediment have been removed per linear foot of line cleaned. With 28,400 feet of line proposed to be cleaned, approximately 400 - 2,100 tons of contaminated material will be removed from the storm drain system that could otherwise be discharged to the East Waterway.	\$ 550,000
Stormwater Center	Stormwater, or polluted runoff, is the leading cause of water pollution in urban areas across the nation. As rain and snow melt runs off rooftops, paved streets, highways, and parking lots, it picks up pollution such as oil, fertilizers, pesticides, soil, trash, and animal waste. Then the runoff carries that pollution into storm drains and downstream waters. Water in storm drains is usually not treated and flows into our lakes, rivers and Puget Sound. For this project, the Washington Stormwater Center will assemble information from a variety of local, regional, and state-wide sources into a web-based information system.	C 2.1 -- Manage urban runoff at the basin and watershed scale;	University of Washington	http://www.wastormwatercenter.org/	Prepare for the creation of a Stormwater Information Repository (annotated literature review, IDDE manual and repository, and white paper on recommended next steps).	Creation of a Stormwater Information Repository.	\$ 27,062
Measure Program Performance							
Agriculture BMP Effectiveness Monitoring	Ecology, local partners, and stakeholders will work to improve water quality at a sub-watershed scale by 1) prioritizing agricultural areas for Best Management Practices (BMPs) implementation, 2) providing baseline data for identifying pollution sources and measuring water quality improvements, and 3) determining both programmatic effectiveness and water quality improvements. Effectiveness of BMPs will be measured from both a water quality standards and a watershed health prospective.	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.1 NTA 2 -- Effectiveness of Incentive Programs	Ecology	TBD	Information generated from this project can be used to guide implementation of BMPs and track the effectiveness of actions.	Improved use of BMPs on agricultural land.	\$ 150,000
Grant Administration							
Administration	The Department of Ecology administers the Toxics and Nutrients NEP Grant. Ecology is working with the Environmental Protection Agency, the Puget Sound Partnership, the other state entities with NEP grants, and numerous other partners at the federal, tribal, state, and local levels and non-governmental organizations, academia, and business to develop and implement projects.	Multiple	Ecology	http://www.ecy.wa.gov/puget_sound/grants_fed_toxics.html	Administer all aspects of the toxics and nutrients NEP grant including determining funding priorities, budgets, outreach, and technical assistance.	Reduced amounts of toxics and nutrients in fish, water, and sediment.	\$ 961,833

Administration	The Department of Ecology administers the Toxics and Nutrients NEP Grant. Ecology is working with the Environmental Protection Agency, the Puget Sound Partnership, the other state entities with NEP grants, and numerous other partners at the federal, tribal, state, and local levels and non-governmental organizations, academia, and business to develop and implement projects.	Multiple	Ecology	http://www.ecy.wa.gov/puget_sound/grants_fed_toxics.html	Administer all aspects of the toxics and nutrients NEP grant including determining funding priorities, budgets, outreach, and technical assistance.	Reduced amounts of toxics and nutrients in fish, water, and sediment.	\$ 340,491
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