



DEPARTMENT OF
ECOLOGY
State of Washington

Stormwater Technical Resource Center

2011 Report to the Legislature

January 2011
Publication no. 11-10-009

Publication and Contact Information

This report is available on the Department of Ecology's website at <http://www.ecy.wa.gov/biblio/1110009.html>

For more information contact:

Water Quality Program
P.O. Box 47600
Olympia, WA 98504-7600

Phone: 360-407-6400

Washington State Department of Ecology - www.ecy.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Yakima 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

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Stormwater Technical Resource Center

Report to the Legislature

by

Douglas C. Howie, P.E.

Kathleen Emmett

Jocelyn Winz

Water Quality Program
Washington State Department of Ecology
Olympia, Washington

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Acknowledgements

The authors of this report would like to thank the following individuals and organizations for their contribution to the creation of the Stormwater Technical Resource Center in Washington State:

Executive Management Team

Dr. John Stark Washington State University, Puyallup Campus
Dr. Joel Baker University of Washington Urban Waters Tacoma
Tanyalee Erwin Washington State University, Puyallup Campus
Curtis Hinman Washington State University, Puyallup Campus
Mark Palmer City of Puyallup
Joy Rodriguez City of Puyallup
Kim Davenport University of Washington Urban Waters Tacoma
Kurt Marx University of Washington Urban Waters Tacoma
John Lenth Herrera Environmental
Grant Gilmore Association of Washington Business Institute

Advisory Committee Members:

Claudia Newman American Rivers/ WA Environmental Council
Chris Cary Association of Washington Businesses
Mel Oleson Association of Washington Businesses
Rob Buchert Association of Washington Cities-Eastern WA
Rich Wagner Association of Washington Cities- Western WA
Alex Zimmerman Building Industry Association of Washington
Bill Moore Washington State Department of Ecology
Gary Smith Independent Business Association
Unfilled NW Indian Fisheries Commission
Bruce Wulkan Puget Sound Partnership
Tom Putnam Puget Sound Keepers/People for Puget Sound
Donald Gatchalian Washington State Assoc. of Counties-Eastern WA
Jim Bachmeier Washington State Assoc. of Counties – Western WA
Ken Stone Washington State Department of Transportation

Executive Summary

The passage of House Bill 2222 in 2009 set in motion the creation of the Stormwater Technical Resource Center (Center) that would focus resources on protecting Washington's waters through improvements in regional stormwater management. The Bill, codified in RCW 90.48.545, directs the state Department of Ecology (Ecology) “as funding becomes available... to create a stormwater technical resource center in partnership with a university, nonprofit organization, or other public or private entity to provide tools for stormwater management.”

A key component of the Center is technical assistance to stormwater permit holders. Through training, one-on-one assistance, sharing of information, and education and outreach services, the Stormwater Technical Resource Center will provide assistance to industrial, construction, and municipal stormwater permit holders to address immediate and upcoming stormwater issues.

To provide seed money for creation of the Center, Ecology solicited grant proposals for a Center that would benefit stormwater management programs across Washington and support NPDES (National Pollutant Discharge Elimination System) stormwater permit programs. In late 2009, Ecology awarded funding to the City of Puyallup and its two primary associates: Washington State University (WSU) and the University of Washington (UW). Their charge was to convene an advisory committee to consult on the development and the overall administrative strategy of a Stormwater Technical Resource Center.

The Center has been established as non-profit organization. Center staff created a 5-Year Business Plan, (Appendix C), and has started to deliver the following services:

- Technology Assessment Protocol–Ecology (TAPE) program to review and evaluate emerging technologies designed to treat stormwater pollutants.
- The WSU Puyallup Low Impact Development (LID) Research Program.
- Business and municipal stormwater services.
- Education and outreach.
- Technical assistance for stormwater permittees.

Long-term funding for the Center includes base support though cost reimbursement for technical reviews, trainings, monitoring, and other technical resource services. In addition, donations, endowments, bonds, conferences, membership dues, grants, and support from in-kind services and dedicated accounts are all evaluated in the Business Plan as possible revenue sources.

The Center enjoys broad-based public and private sector support, evidenced by the many letters of endorsement attached in Appendix B. A list and schedule of future deliverables are provided in the Business Plan.

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History and Background

The need for strong and consistent stormwater management is evident in our waterways. Stormwater runoff in urban and rural areas is the primary transporter of toxic, nutrient, and pathogen pollutants to surface and groundwater resources.

In many cases, federally mandated stormwater permits require those in the regulated community to change the way they do business to better protect our water resources. Particularly in the industrial and business sectors, this often means turning to consultants to meet permit requirements. Industrial, construction, and municipal stormwater permittees are in need of technical support to meet their permit requirements. The federally mandated National Pollutant Discharge Elimination System (NPDES) stormwater permits are complex and broad reaching and can be challenging for permittees to implement. In addition, each time the permits are reissued, additional requirements often come into play, raising the bar of already stringent requirements.

RCW 90.48.545 directs Ecology to create a center to research and develop innovative and cost-effective technical solutions to stormwater discharges, conduct pilot projects to test technical solutions and serve as a clearinghouse and outreach center for stormwater technology. The Center will also coordinate with federal, state, local agencies and private organizations that administer programs related to stormwater control measures and collaborate with existing stormwater outreach programs.

Since its formation in July 2010, the Center has met or exceeded the requirements in RCW 90.48.545. A status report of those activities follows.

Status of Activities Listed in RCW 90.48.545

As directed by RCW 90.48.545, an advisory committee was formed to assist in developing the overall management and administrative strategy the Center. The advisory committee includes representatives from state agencies, local governments, the business community, the environmental community, tribes and the building and development industry. Advisory committee meetings have been held frequently since May 2010. One of the first tasks of the Advisory Committee was to focus the work of the Center and articulate a mission. Supporting Vision Statements include:

- Provide direct and effective assistance to NPDES industrial, construction and municipal permittees.
- Coordinate, promote and evaluate emerging stormwater technologies.

- Guide stormwater management towards demonstrated effective strategies.
- Serve as the central clearinghouse for stormwater data, management and technologies.

In addition, the Advisory Committee, Center staff, and Ecology have prioritized the work of the Center through discussions with the Advisory Committee, a survey of other stormwater centers, needs-assessment surveys to the stormwater regulated community, and communications with stormwater managers, permittees and businesses.

Review and evaluate emerging stormwater technologies

In addition to awarding a grant to create the framework for the Center, Ecology awarded the City of Puyallup and its partners, the University of Washington and Washington State University, funding to establish a program to review and approve emerging stormwater treatment technologies through the Technology Assessment Protocol – Ecology (TAPE).

Ecology’s TAPE program reviews and evaluates new and innovative technologies for stormwater treatment and control. Ecology developed the TAPE process for vendors, designers, and manufacturers who wish to have their stormwater treatment technologies certified for use in Washington State. The program benefits industrial, construction, and municipal stormwater managers alike. Due to budget constraints, Ecology put the program on hold in 2008, with the exception of ten technologies already at various stages of the approval process.

Under the auspices of the Center, TAPE is being revised and re-opened for new Best Management Practices (BMPs) applications and evaluations. In coordination with Ecology (formalized in a Memorandum of Understanding) the Center will serve as an information repository and point of communication for ongoing developments with the TAPE process. Short and midterm plans include the Center administering the TAPE process. The necessary framework and staffing have been identified in the organizational chart and financial report.

Tasks completed include:

- Assembly of a Stakeholders Advisory Group (SAG)
- Development of a sustainable business plan and administrative framework for TAPE reviews,
- Selection of a Board of External Reviewers (BER).
- Publication of a new TAPE application form and overview document for applicants.

Current efforts are underway to update the guidance manual used for evaluation of emerging stormwater treatment technologies. Proponents currently in the TAPE program may choose to follow either the existing protocol (January 2008 revision) or the new protocol planned for finalization in early 2011. Proponents submitting a technology to the TAPE program for the first time can choose between the January 2008 revision and the new protocol until December 31, 2011. New technologies that apply after the reopening the program will be billed a fee to cover the cost of the review. Funds received from proponents are reserved for use within the TAPE program only.

Significantly, the Center can also provide a location for field-testing emerging technologies. By allowing evaluation of the technologies in their pilot stages, using synthetic storms at the Center, we can potentially shorten the approval process and get to cleaner water faster.

Research and develop

The Center will research and develop innovative, cost-effective technical solutions to remove pollutants from runoff and to reduce or eliminate stormwater discharges. The Center Advisory Committee selected WSU Research and Extension Center in Puyallup, Washington as a location for the Center, in part, because research is already underway to retrofit the campus to significantly reduce stormwater runoff. The retrofit project includes a significant research and monitoring component to measure the effectiveness of various low impact development (LID) practices.

The existing WSU LID program, incorporated into the Center, serves as the host to a collection of innovative LID stormwater structures including pervious pavements, rain gardens, and rain water harvesting systems. To compliment this host of structures is a series of collection and monitoring stations and ports that allow on-site scientists to monitoring the effectiveness of the combined series of LID structures. The LID Center is unique in the United States in that it is a full scale, replicated test site.

Conduct pilot projects to test technical solutions

Due in part to the on-going LID research, the Center provides sites designed for field-testing emerging technologies. The Center's website will post the results from this research. The Center is seeking additional opportunities and grant funding for research on LID and other stormwater issues.

On-site retrofits are used as a public demonstration and education facility on "green" development techniques and materials. These LID techniques include structures that significantly reduce stormwater runoff and create a basis for research that will be the focus of future LID effectiveness studies, as well as being a national demonstration. The project to install the LID retrofit included the installation of permeable paving surfaces and stormwater bio-retention facilities.

Staff and funding from outside the Center is also used for LID research. The Center will be the conduit for training in LID techniques. The Center is developing classes on LID techniques and design criteria which broaden the audience base of the existing technical design workshop series offered.

Serve as a clearinghouse and outreach center

The Center is developing a web-based information clearinghouse service to assist stormwater permittees and landowners. The service will continue to grow with a user-friendly interface and powerful search engine - answering the primary declared need of industrial, business, and municipal permittees.

The Center is also compiling and producing materials to use as training and assistance guides for permittees, targeting resources for municipalities, industry and business, construction, and rural non-point-source land-owners. The Center provides services and information related to:

- Stormwater management tools - including BMPs, case studies, and literature.
- Permit assistance tools - including document templates, permit implementation guides, outreach materials and literature.
- Training, classes, and workshops - including step-by-step guides, web-based training videos, links to local training providers, and course information.
- Funding resources - including links and information on stormwater funding sources and best ways to manage stormwater funds.

Based on the needs-assessment survey results from permittees under Ecology's general stormwater NPDES permits, services to industrial stormwater permittees will be given priority in 2011. The Center has already begun to provide assistance to industrial stormwater permittees through training modules, planned workshops, short on-line videos, the development of resource materials, training guides and the reopening of an approval process for new, innovative technologies for stormwater management and control. Staff is available to answer questions called in to the Center or posted on the website.

Assist

The Center will assist in the development of stormwater control methods to better protect water quality. This includes source control, product substitution, pollution prevention, and storm water treatment. Currently the Center's website lists local and regional stormwater-related events, workshops, and training sessions. Further, as discussed in the Business Plan, the development of stormwater control methods to protect water quality is one of the many to-come services to be provided by the Center. The Center will tailor assistance on source control, product substitution, pollution prevention and storm water treatment for municipal, industry, business and construction permittees through the State.

Coordinate

The Center provides a location where agencies can exchange information on ordinances, guidance manuals, and techniques. In addition, Advisory Committee members represent key agencies and private organizations that oversee and administer programs related to stormwater control measures. Frequent meetings and weekly teleconferences assure coordination and

communication among all of the participants. Each member represents a distinct constituency that they coordinate with and keep informed of the activities of the Center.

Collaborate

Resources at the Center are working to establish national standards for testing emerging technologies as well as providing up-to-date and peer-reviewed stormwater management education, research and technical support. In addition, the Center is coordinating with Ecology and other organizations within Washington State on classes targeting business and municipal stormwater permittees and stormwater professionals.

Funding

During the past year, Ecology has met with staff from the Center and the Advisory Committee to identify funding strategies. While there is still a need for base-level support to grow the Center, funding mechanisms for the Center include cost reimbursement for technical reviews, trainings, monitoring and other technical resource services. In addition, donations, endowments, bonds, conferences, membership dues, grants and support from in-kind services and dedicated accounts are all evaluated in the Business Plan.

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Appendices

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Appendix A: RCW 90.48.545

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RCW 90.48.545

Storm water technical resource center — Duties — Advisory committee — Report to the legislature.

(1) As funding to do so becomes available, the department shall create a storm water technical resource center in partnership with a university, nonprofit organization, or other public or private entity to provide tools for storm water management. The center shall use its authority to support the duties listed in this subsection through research, development, technology demonstration, technology transfer, education, outreach, recognition, and training programs. The center may:

- (a) Review and evaluate emerging storm water technologies;
- (b) Research and develop innovative and cost-effective technical solutions to remove pollutants from runoff and to reduce or eliminate storm water discharges;
- (c) Conduct pilot projects to test technical solutions;
- (d) Serve as a clearinghouse and outreach center for information on storm water technology;
- (e) Assist in the development of storm water control methods to better protect water quality, including source control, product substitution, pollution prevention, and storm water treatment;
- (f) Coordinate with federal, state, and local agencies and private organizations in administering programs related to storm water control measures; and
- (g) Collaborate with existing storm water outreach programs.

(2) The department shall consult with an advisory committee in the development of the storm water technical resource center. The advisory committee must include representatives from relevant state agencies, local governments, the business community, the environmental community, tribes, and the building and development industry.

(3) The department, in consultation with the storm water technical resource center advisory committee, shall identify a funding strategy for funding the storm water technical resource center.

(4) The department shall encourage all interested parties to help and support the technical resource center with in-kind services.

(5) The department shall prepare and submit a biennial progress report to the legislature.

[2009 c 449 § 2.]

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Appendix B: Letters of Support

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December 17, 2010

Ted Sturdevant
Director, Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Subject: Stormwater Technical Resource Center

The Association of Washington Business (AWB) supports the Stormwater Technical Resource Center (Center) established by the Legislature in 2009 under RCW 90.48.545.

Located at the WSU Research and Extension Center, Puyallup, WA, the Center is a non-profit organization co-managed by the University of Washington-Tacoma, Urban Waters Center, designed to provide centralized assistance statewide to stormwater permittees throughout the business community and municipalities. The Center will provide permittees with information and training related to stormwater technologies, conduct research on new best management practices, test new technologies and advance stormwater pollution prevention management practices.

The Center's role is pivotal in transitioning stormwater management from "words on paper" in the permits to actions on the ground by permittees. The Center will perform this role by providing every permittee access to resources that explain the: who, what, when, where and why contained in the permit in plain, understandable terms that direct effective action. This will be accomplished using a range of learning approaches that will fit the learning styles of the diverse group of permittees. The Center intends to provide call-in technical support for simple questions and a referral system to businesses for more complex concerns. Additional support mechanisms will be incorporated as needs or experience dictates.

To support the Center's educational and assistance mission, it will host testing and evaluation functions for the Technology Assessment Protocol - Ecology (TAPE) program. This aspect of the Center will provide an ever increasing variety of cost effective best management practices, including treatment systems, for use by

ASSOCIATION OF WASHINGTON BUSINESS
Membership Government Affairs Member Services AWB Institute

T 360.943.1600 ✉ PO Box 658, Olympia, WA 98507-0658
T 800.521.9325 🏠 1414 Cherry St. SE, Olympia
F 360.943.5811 www.awb.org

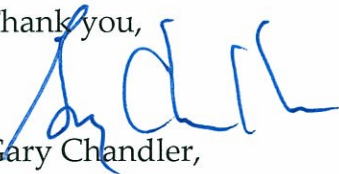
permittees. The TAPE program also will provide an essential component in Ecology's Clean Water Act mandated anti-degradation program.

Since its inception, the Center has helped raise awareness among business, non-governmental organizations, agencies and local governments of the technical and regulatory challenges each other faces. This awareness is providing the foundation for a valuable partnership among these stakeholders. Effective partnerships are critical as the nation moves toward more complex and demanding permits. The EPA is expected to issue new municipal and industrial stormwater permits in 2012 incorporating these kinds of changes; many of which will be incorporated into Washington's permits issued by Ecology.

AWB believes it is good business and good environmental stewardship to continue to support the Center and its critical role in promoting a cost-effective approach to controlling stormwater, one of the major pollutant sources across the State, as identified by Ecology and the Puget Sound Partnership's Action Agenda. While all stormwater permittees will benefit from the resources provided by the Center, small business and various state wide jurisdictions with limited resources will have the assistance they need to comply with the permit requirements.

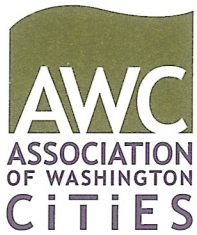
AWB requests that the Legislature adopt the same position in supporting and continuing the good work of the Center.

Thank you,



Gary Chandler,
Vice President Government Affairs

c.c. Doug Howie, Ecology



December 28, 2010

Doug Howie
Washington State Department of Ecology
PO Box 47696
Olympia, WA 98504-7696
DOHO46@ecy.wa.gov

Subject: Stormwater Technical Resource Center

The Association of Washington Cities (AWC) supports the Stormwater Technical Resource Center (Center) established by the Legislature in 2009 under RCW 90.48.545. Located at the WSU Research and Extension Center, Puyallup, WA, the Center is a non-profit organization co-managed by the University of Washington-Tacoma, Urban Waters Center, designed to provide centralized assistance statewide to stormwater permittees throughout the business community and municipalities. The Center will provide permittees with information and training related to stormwater technologies, conduct research on new best management practices, test new technologies and advance stormwater pollution prevention management practices.

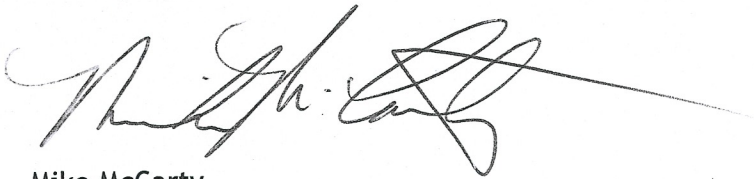
The Center's role is pivotal in transitioning stormwater management from "words on paper" in the permits to actions on the ground by permittees. The Center will perform this role by providing every permittee access to resources that explain the: who, what, when, where and why contained in the permit in plain, understandable terms that direct effective action. This will be accomplished using a range of learning approaches that will fit the learning styles of the diverse group of permittees. The Center intends to provide call-in technical support for simple questions and a referral system to businesses for more complex concerns. Additional support mechanisms will be incorporated as needs or experience dictates.

To support the Center's educational and assistance mission, it will host testing and evaluation functions for the Technology Assessment Protocol - Ecology (TAPE) program. This aspect of the Center will provide an ever increasing variety of cost effective best management practices, including treatment systems, for use by permittees. The TAPE program also will provide an essential component in Ecology's Clean Water Act mandated anti-degradation program.

Since its inception, the Center has helped raise awareness among business, non-governmental organizations, agencies and local governments of the technical and regulatory challenges each other faces. This awareness is providing the foundation for a valuable partnership among these stakeholders. Effective partnerships are critical as the nation moves toward more complex and demanding permits. The EPA is expected to issue new municipal and industrial stormwater permits in 2012 incorporating these kinds of changes; many of which will be incorporated into Washington's permits issued by Ecology.

AWC believes it is good business and good environmental stewardship to continue to support the Center and its critical role in promoting a cost-effective approach to controlling stormwater, one of the major pollutant sources across the State, as identified by Ecology and the Puget Sound Partnership's Action Agenda. While all stormwater permittees will benefit from the resources provided by the Center, small business and various state wide jurisdictions with limited resources will have the assistance they need to comply with the permit requirements. AWC requests that the Legislature adopt the same position in supporting and continuing the good work of the Center.

Thank you,

A handwritten signature in black ink, appearing to read "Mike McCarty", with a long horizontal line extending to the right.

Mike McCarty
Chief Executive Officer
Association of Washington Cities
1076 Franklin Street SE
Olympia, WA 98501

cc: Andy Meyer, Special Project Coordinator, AWC
Rich Wagner, AWC Western WA representative to the STRC Advisory Committee
Rob Bucher, AWC Eastern WA representative to the STRC Advisory Committee
Tanyalee Erwin, Research Associate Faculty, WSU Puyallup

Independent Business Association

**16541 Redmond Way #336C
Redmond, WA 98052
425-453-8621**

December 20, 2010

Governor Gregoire
Office of the Governor
PO Box 40002
Olympia, WA 98504 0002

Dear Governor Gregoire:

Small businesses subject to being covered by one of the state's general stormwater permits are in desperate need of the services to be provided by the Stormwater Technical Assistance Centers (SWTRC) that was established by the you and the Legislature in 2009. An estimated 6,000+ small businesses are required to comply with the state's general stormwater permits.

The General Stormwater Permits are highly complex documents that impose a very large number of highly technical requirements on small businesses that must be covered by these permits.

In most cases, the complexity and technical requirements of these permits are beyond the expertise of the average small business owner. The complexity and technical expertise required to comply with these general stormwater permits will put some small businesses at risk of survival.

The Stormwater Technical Resource Center is gearing up to provide technical assistance, information, and the evaluation of proven techniques to protect stormwater quality along with meeting the requirements of the state's complex stormwater permits. These services from the SWTRC will be vital to protecting our state's stormwater and to enable small businesses to cost effectively implement the general stormwater permits in Washington State.

Small business owners generally are supportive of protecting stormwater water quality for the good of our state's environment. But, small businesses must have the information, assistance and evaluation of stormwater protection mechanisms that will be provided by the SWTRC in order to meet the permits' requirements.

IBA urges you, the Department of Ecology and the Legislature to support and facilitate the implementation of the SWTRC to the maximum extend possible

On behalf of the small businesses participating in the Independent Business Association that are required to comply with the state's general stormwater permits, the IBA is very supportive of the Stormwater Technical Resource Center, as it is now developed, as a critical tool to protect our state's stormwater and to effectively assist small businesses and others to implement the general stormwater permits across the state in the most expeditious and cost effective manner.

Thank you,

A handwritten signature in black ink, appearing to read 'GS', with a stylized flourish at the end.

Gary Smith
Executive Director



**Washington State
Department of Transportation**
Paula J. Hammond, P.E.
Secretary of Transportation

Transportation Building
310 Maple Park Avenue SE
Olympia, WA 98504-7300
360-705-7000
TTY: 1-800-833-6388
www.wsdot.wa.gov

December 13, 2010

Mr. Doug Howie
Washington Department of Ecology
PO Box 47696
Olympia, WA 98504-7696

RE: Washington Stormwater Technical Resource Center

Dear Mr. Howie:

The Washington State Department of Transportation (WSDOT) supports the Stormwater Technical Resource Center (Center) established by the Legislature in 2009 under RCW 90.48.545. Located at the WSU Research and Extension Center, Puyallup, WA, the Center is a non-profit organization co-managed by the University of Washington-Tacoma, Urban Waters Center, designed to provide centralized assistance statewide to stormwater permittees throughout the business community and municipalities. The Center will provide permittees with information and training related to stormwater technologies, conduct research on new best management practices, test new technologies and advance stormwater pollution prevention management practices.

The Center's role is pivotal in transitioning stormwater management from "words on paper" in the permits to actions on the ground by permittees. The Center will perform this role by providing every permittee access to resources that explain the: who, what, when, where and why contained in the permit in plain, understandable terms that direct effective action. This will be accomplished using a range of learning approaches that will fit the learning styles of the diverse group of permittees. The Center intends to provide call-in technical support for simple questions and a referral system to businesses for more complex concerns. Additional support mechanisms will be incorporated as needs or experience dictates.

To support the Center's educational and assistance mission, it will host testing and evaluation functions for the Technology Assessment Protocol – Ecology (TAPE) program. This aspect of the Center will provide an ever increasing variety of cost effective best management practices, including treatment systems, for use by permittees. The TAPE program also will provide an essential component in Ecology's Clean Water Act mandated anti-degradation program.

Mr. Doug Howie
December 13, 2010
Page 2

Since its inception, the Center has helped raise awareness among business, non-governmental organizations, agencies and local governments of the technical and regulatory challenges each other faces. This awareness is providing the foundation for a valuable partnership among these stakeholders. Effective partnerships are critical as the nation moves toward more complex and demanding permits. The EPA is expected to issue new municipal and industrial stormwater permits in 2012 incorporating these kinds of changes; many of which will be incorporated into Washington's permits issued by Ecology.

WSDOT believes it is good business and good environmental stewardship to continue to support the Center and its critical role in promoting a cost-effective approach to controlling stormwater, one of the major pollutant sources across the State, as identified by Ecology and the Puget Sound Partnership's Action Agenda. While all stormwater permittees will benefit from the resources provided by the Center, small business and various state wide jurisdictions with limited resources will have the assistance they need to comply with the permit requirements. WSDOT requests that the Legislature adopt the same position in supporting and continuing the good work of the Center.

Sincerely,



Megan White, P.E., Director
Environmental Services Office

MW:ks

cc: Ken Stone

January 18, 2011

Doug Howie
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

Subject: Stormwater Technical Resource Center

Dear Doug:

The Puget Sound Partnership supports the Stormwater Technical Resource Center (Center), established by the Legislature in 2009 under RCW 90.48.545, as a regional resource to improve research, training, technical assistance, and BMP review related to stormwater management and low impact development (LID). Located at the WSU Research and Extension Center in Puyallup, the Center is a non-profit organization co-managed by the University of Washington-Tacoma, Urban Waters Center. The Center was founded to provide centralized assistance statewide to stormwater permittees throughout the business community and municipalities.

We understand the Center is planning to provide four primary services: Technical assistance, information and training to business permittees; technical assistance, information and training to local government staff; review of new stormwater best management practices through the Technology Assessment Protocol – Ecology (or TAPE) program; and LID research and training.

We support the center providing these services, as all are needed in order to develop and transfer the information and training needed to improve stormwater management efforts in the Puget Sound region. We encourage the center to provide information and training to all local government stormwater staff, both permitted and non-permitted.

Stormwater runoff is one of the greatest threats to a healthy and prosperous Puget Sound – our success in protecting and recovering Puget Sound hinges in large part on our ability to continually improve how we manage stormwater runoff. The Puget Sound Action Agenda calls for numerous near-term and longer-term actions related to stormwater, including advancement of LID, full implementation of permits, monitoring, education, and adjusting our management actions based on new information.

The Puget Sound Partnership believes it is good business and good environmental stewardship to support the Center and its efforts to promote a cost-effective approach to controlling stormwater runoff.

Thank you,



Bruce Wulkan
Stormwater Program Manager

cc: Scott Redman, Puget Sound Partnership
Tanyalee Erwin, WSU Puyallup

Appendix C: Business Plan with 5-year budget

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Washington Stormwater Technical Resource Center (WSTRC)

BUSINESS PLAN January 2011

Presented on behalf of the WSTRC Executive Management Team
WSU Puyallup Res & Ext Center
2606 W Pioneer
Puyallup, WA 98371-4998
Tel: 253-445-4504
Email: terwin@puyallup.wsu.edu

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I. Executive Summary

Overview

Federal law requires Washington State business and municipalities to protect stormwater from contamination. Washington is known nationally for its leadership in stormwater management. The Washington State Stormwater Technical Resource Center was established as a result of House Bill 2222 legislation, and codified in RCW 90.48.545 to improve stormwater quality through education, information sharing, and research on new technologies. The direction for the Washington Stormwater Technical Resource Center (Center) was created in 2009 and funded by an Ecology grant until June 2011. Currently, the WSTRC is run by a partnership of business, government, environmental, and education interests and is directed by Washington State University and the University of Washington.

Located at the WSU Research and Extension Center, Puyallup, WA, the Washington Stormwater Technical Resource Center (Center), is a non-profit organization that will serve as a centralized resource for stormwater managers, providing information and training related to stormwater technologies, research, testing, management practices and stormwater pollution prevention, in addition to serving as a connection and support point for industry leaders and National Pollutant Discharge Elimination System (NPDES) permittees.

Services Offered

Washington Stormwater Technical Resource Center will offer short and long-term services focused on industrial, construction and municipal permit support as well as clearinghouse information for rural non-point source stormwater management. The Center will also serve a coordinating role to house and assist the Technology Assessment Protocol - Ecology (TAPE) program and provide a platform for stormwater events and aggregate like interests related to stormwater issues.

Customer Focus

Washington Stormwater Technical Resource Center will serve businesses in 50+ industries within the state of Washington that require coverage under an industrial or construction stormwater general permit as well as municipalities, with or without, coverage under a municipal stormwater permit and landowners interested in non-point source stormwater management techniques. Stormwater permittees that will benefit from the Center are:

- Estimated 3600+ businesses currently requiring permits
(*Roughly 88% fall in the small business category*)
- Estimated 100+ municipalities and special purpose districts requiring permits

Executive Management Team

The Executive Management Team (EMT) currently serves the Washington Stormwater Technical Resource Center as the founders and creators. Acting interim Co-Directors are represented by Dr. John Stark (WSU) and Dr. Joel Baker (UW Tacoma, Center for Urban Waters). Appendix A1 organizational chart represents current and future developments within the Center, Table 1 is a detailed list of members of the EMT:

Table 1 - The Center's Executive Management Team

Joel Baker	253-692-5659 ext. 8005	University of Washington Tacoma Port of Tacoma Chair, Environmental Science 1900 Commerce St Tacoma WA 98402-3100	Center Co-Director	UW Tacoma	jebaker@u.washington.edu
Tanyalee Erwin	253-445-4504	WSU Puyallup Res & Ext Center 2606 W Pioneer Puyallup, WA 98371-4998	Research Associate	WSU Faculty	terwin@puyallup.wsu.edu
Grant Gilmore	360-943-1600	Association of Washington Business Institute (AWBI) 1414 Cherry St. SE Olympia, WA 98507	Institute Program Director	AWB Institute	grantg@awb.org
Curtis Hinman	253-445-4590	WSU Puyallup Res & Ext Center 2606 W Pioneer Puyallup, WA 98371-4998	LID Research Program Director	WSU Faculty	chinman@cahnrs.wsu.edu
Douglas Howie	360-407-6444	Department of Ecology Headquarters, Lacey P.O. Box 47600 Olympia WA 98504-7600	Water Quality Grant Manager	Dept. of Ecology	doho461@ecy.wa.gov
John Lenth	206-441-9080	Herrera Environmental Consultants 1220 4th Avenue E Olympia WA 98506	Principal Scientist	Herrera	jlenth@herrerainc.com
Mark Palmer	253-435-3606	City of Puyallup Public Works 1100 39 th Ave. SE Puyallup, WA, 98374	Stormwater Engineer City of Puyallup	City of Puyallup	mpalmer@ci.puyallup.wa.us
John Stark	253-445-4568	WSU Puyallup Res & Ext Center 2606 W Pioneer Puyallup, WA 98371-4998	Center Co-Director	WSU Puyallup	starki@puyallup.wsu.edu

Members of the EMT have extensive experience running both for-profit and non-profit ventures. Cumulative experiences take the form of city, state, private sector and educational institution models. Stormwater and water quality issues are a key focus for this group and many of the EMT members have multiple years working in the field of water quality, stormwater management, education and research. Specifically, the EMT has experience in organizing events, developing training platforms, marketing to the local community and achieving key goals.

Stormwater Center Advisory Committee

The EMT relies upon key stakeholders to assist with decision making and work plan details, these individuals bring expertise from all areas of our state and make up the Center's Advisory Committee (AC). The following representatives are listed below:

Claudia Newman, Bricklin & Newman, LLP
Representing: American Rivers/ WA Environmental Council

Mel Oleson: Senior Scientist, The Boeing Company
Representing: Association of Washington Businesses

Chris Cary: Civil/Environmental Engineer, Tree Top, Inc.
Representing: Association of Washington Businesses

Rich Wagner, Councilmember, City of Auburn
Representing: Association of Washington Cities- Western WA

Rob Buchert, Stormwater Manager, City of Pullman
Representing: Association of Washington Cities-Eastern WA

Alex Zimmerman, CSI Geosynthetics
Representing: Building Industry Association of Washington

Gary Smith, Independent Business Association
Representing: Independent Business Association

Roger James (for Tom Putnam, Putnam Resources, Ltd)
Representing: Puget Sound Keepers/ People for Puget Sound

Bruce Wulkan, Stormwater Program Manager, Puget Sound Partnership
Representing: Puget Sound Partnership

Don Gatchalian, Assistant Public Services Director, Yakima County.
Representing: Washington State Association of Counties - Eastern WA

Ken Stone: Resource Programs Branch Manager, Environmental Services Office,
Washington State Department of Transportation
Representing: Washington State Department of Transportation

Bill Moore: Department of Ecology
Representing: Washington State Department of Ecology

Success Factors

Washington Stormwater Technical Resource Center is uniquely qualified to succeed due to the following reasons:

- Industrial, Construction, and Municipal stormwater permittees are in need of technical support to meet their permit requirements.
- No other state or northwest regional organization can offer such a diverse set of technical support expertise and coordination of resources for this critical need.
- New technologies are coming online to support stormwater efforts and, the Center will help streamline this process.
- The management team has a track record of successfully achieving the goals set by the Center as well as other organizations for which they have worked.
- Members of the Stormwater Community fully support and believe in the Center's mission.

Financial Highlights

Washington Stormwater Technical Resource Center is currently seeking additional funds in order to fulfill our mission and vision. Specifically, these funds will be used as follows:

Expenses related to:

- Staffing and operations
- Tools and services
- Education and outreach
- Special events
- Research and development

Top line projections over the next five years are as follows:

	FY 1	FY 2	FY 3	FY 4	FY 5
Revenue	\$905,000	\$1,155,750	\$1,244,238	\$1,325,754	\$1,403,316
Total Expenses	\$926,724	\$1,167,097	\$1,203,507	\$1,241,078	\$1,278,389
Net Income	(\$21,724)	(\$11,347)	\$40,730	\$84,676	\$124,927

II. Organization Overview

What is the Mission and Vision of the Washington State Stormwater Technical Resource Center?

Mission Statement:

To protect Washington's waters through improvements in stormwater management, serving as the central resource in Washington for integrated NPDES education, permit technical assistance, stormwater management and new technology research, development, and evaluation.

Vision Statement:

The Washington Stormwater Technical Resource Center will be the preferred one-stop source of stormwater management support systems, knowledge, and resource referrals for all businesses and governmental agencies in Washington State.

The Center is a partnership of business, government and academic organizations, created under the direction of the Washington State Legislature, committed to leveraging resources to provide tools for stormwater managers through research, development, technology demonstration, technology transfer, education, outreach, recognition and training programs.

According to RCW 90.48.545, the Center shall provide a number of statewide services to improve stormwater management through education, information sharing, and research on new practices and technologies. The focus in the initial year was to establish an advisory committee, hire program staff, review similar stormwater centers and develop the business plan. The business plan covers operations to reopen the emerging stormwater technology review process, conduct forums and surveys, produce progress reports for the legislature and develop a scope of services and products designed to support stormwater permittees, with a focus on the industrial, construction and municipal stormwater permittees. The Center will provide education and technical assistance to businesses and local governments for cost-effective stormwater management that will improve the health and well-being of citizens and natural resources throughout the state. The following section encompasses drivers in relation to the mission and vision for the Center;

Summary of need:

NPDES Stormwater Permit Assistance Programs (Business & Municipalities)

The NPDES stormwater permits that impact many businesses and entities throughout Washington include but are not limited to the Phase I and Phase II municipal stormwater permits, the industrial stormwater general permit, and the construction stormwater general permit. These are complex and broad-reaching permits that can be overwhelming for permittees to implement.

A common theme throughout the many surveys conducted by the Center focused on the need for the Center to act as a resource for education and technical information for NPDES stormwater permit-related information and services for municipal, industrial and construction permittees. Although there are several groups and entities providing some level of NPDES support and information sharing throughout the state, the Center will provide a connection point to resources for priority NPDES permit support.

The following sections focus on resource services for the three primary permits that are in place or coming up for reissuance soon: the municipal stormwater permits, the industrial stormwater general permit, and the construction stormwater general permit.

Each permit and permittee has somewhat different requirements and needs; therefore the services outlined below are organized into three categories: municipal resource services, business/industrial resource services, and construction resource services.

NPDES municipal stormwater permits impose complex and involved regulatory requirements on over 110 jurisdictions (totaling 116 municipal permittees) in Washington State. The current round of NPDES municipal stormwater permits were issued in 2007 and expire in 2012. As such, much of the initial effort to clarify permit requirements and prioritize areas where municipalities need support has already occurred. The Center's Municipal Resource Services will remain flexible to meet priority municipal needs as they arise throughout the remainder of the current permit cycle as well as meet new needs that will arise in the permit to be issued in 2012. The following sections outline key subcategories of municipal permit support that are envisioned for the Center's Municipal Resource Services in the next 5-7 years. Categories include: information clearinghouse, training, funding assistance and on-call support. Information will be posted on the Center web site, with the information also readily available in other formats for Center staff to share with the business community and municipalities as needed.

NPDES industrial and construction stormwater permit holders are currently in need of compliance assistance directly related to each permit. Ninety-eight percent of the firms in the 50+ industries required to comply with the permit requirements are small business. Assistance such as how to prepare and implement the required Storm Water Pollution Prevention Plans (SWPPPs) and Best Management Practices (BMPs) related requirements will remain a priority for short term and long term delivery.

Technology Assessment Protocol - Ecology (TAPE) program

Ecology's TAPE program reviews and evaluates new and innovative technologies for stormwater treatment and control. The program benefits industrial, construction and municipal stormwater managers alike. Due to budget constraints, the program has been put on hold for the last two years. Under the auspices of the Center, TAPE is in the process of being revised and re-opened for new BMP applications and evaluations. The EMT is actively involved in this effort and is in-tune with the latest developments. In coordination with the Department of Ecology, the Center will serve as an information repository and point of communication for ongoing developments with the TAPE process. Over the long-term, plans include the Center administering the TAPE process; therefore, the necessary framework and staffing will have been identified early in the organizational chart and financial report to support this effort.

Low Impact Development (LID) Center

With a population increase of 1.5 million expected in the region by 2025, there is an immediate challenge to develop new and more effective stormwater management techniques for protecting our fresh and marine water systems. The current structural engineering approach to stormwater management has limitations for fully mitigating the flow and water quality impacts from development and protecting receiving waters. Increasingly, stormwater engineers and designers are exploring and implementing distributed, LID strategies that manage stormwater where it falls and in small contributing areas. Low impact development is a new approach to stormwater management that improves flow control and water quality treatment. LID uses existing natural features and small-scale engineered hydrologic controls to better mimic natural processes allowing water to soak into soils and other pervious surfaces. WSU Puyallup has developed a state-of-the-art LID Center that will provide research answers to many questions about the effectiveness of LID techniques for reducing stormwater flows and cleaning pollutants from stormwater. Information developed at the LID Center will help inform National Pollutant Discharge Elimination System (NPDES) jurisdiction and industrial permit-holders on how best to meet their permit requirements, implement LID in future projects, influence state stormwater policy, and help to meet the goals of the Puget Sound Partnership Action Agenda.

Who Are The Partners?

The Center has a strong coalition backing the mission and vision for stormwater support in Washington State. These partnerships consist of the government, education, environmental organizations, and the private sector which signify and resemble the four pillars needed to drive a successful resource. A brief description of each partner organization representing the EMT is listed below:

Department of Ecology - The Mission of the Department of Ecology is to protect, preserve and enhance Washington's environment, and promote the wise management of our air, land and water for the benefit of current and future generations. In order to fulfill this mission and move Washington forward in a global economy, the Department of Ecology has three goals; prevent pollution, clean up pollution and support sustainable communities and natural resources.

City of Puyallup Stormwater Management – The city department provides technical assistance in environmental engineering to other Public Works and Planning departments. The focus of Stormwater Management is to provide viable information to better serve City departments as well as city of Puyallup citizens. The City has become a leader in LID implementation, working closely with WSU Puyallup. The City's rain garden, 8th Ave NW LID Retrofit and Porous Alley Initiative projects support and inform the LID Center's efforts. Puyallup is also a willing partner in evaluation of stormwater technologies by installing emerging technologies in the City's storm system to assist evaluation.

Washington State University Puyallup Research & Extension Center - The Washington State University Puyallup Research and Extension Center unites a rich past of education and research with a critical and important need: the ability for institutions of higher education to develop sound science, instruction and outreach to meet the needs

of future urban communities and their residents. Washington State University seeks to provide an exemplary teaching, research, and outreach environment that fosters the conservation of natural resources, supports and enhances social responsibility, addresses community and economic development, and follows environmental, social, and economic practices.

The Puyallup Center connects the region to a world of possibilities creating sustainable social, economic, and ecological interdependencies through the community of Washington State University.

University of Washington Tacoma (Center for Urban Waters) - The Center for Urban Waters, a 51,000-square-foot lab and office building, is located on the east side of the Thea Foss Waterway. This City of Tacoma facility houses the City's Environmental Services labs and offices, University of Washington Tacoma research labs, and offices for the Puget Sound Partnership. This collaboration brings together researchers, implementers and policymakers to develop and apply the best possible science to restoring and protecting Puget Sound.

Association of Washington Business Institute - Founded in 2001 as an affiliate of the Association of Washington Business. The AWB Institute focuses on an array of human resource and employment issues, including workforce development and education; workplace safety; environmental compliance; and competitiveness. The Institute develops best practices for Washington employers and members of AWB. The Institute also partners with public sector employment and training systems including public schools to expose the current workforce, students, and educators to the world of work.

Herrera Environmental Consultants - Established in 1980, Herrera Environmental Consultants, Inc. is an interdisciplinary consulting firm providing environmental and engineering services to public and private clients throughout the western United States. This staff of over 120 professionals includes highly qualified engineers, environmental scientists, and planners in locations throughout the Pacific Northwest.

Washington Stormwater Technical Resource Center's History & Milestones

Washington is known nationally for its leadership in stormwater management. Currently, the Center is run by a team of business, local government, and educational institutions. It is directed by a partnership among Washington State University, University of Washington, City of Puyallup, Department of Ecology, Herrera Environmental Consultants and the Association of Washington Business Institute. The Center was created through the passage of House Bill 2222 in the 2009 legislative session. The bill, subsequently codified in RCW 90.48.545, directs Ecology to establish "a storm water technical resource center... to provide tools for storm water management." The RCW includes additional guidance on the potential service areas for the Center stating:

(1) ... The center shall use its authority to support the duties listed in this subsection

through research, development, technology demonstration, technology transfer, education, outreach, recognition, and training programs. The center may:

- (a) Review and evaluate emerging storm water technologies;*
- (b) Research and develop innovative and cost-effective technical solutions to remove pollutants from runoff and to reduce or eliminate storm water discharges;*
- (c) Conduct pilot projects to test technical solutions;*
- (d) Serve as a clearinghouse and outreach center for information on storm water technology;*
- (e) Assist in the development of storm water control methods to better protect water quality, including source control, product substitution, pollution prevention and storm water treatment;*
- (f) Coordinate with federal, state, and local agencies and private organizations in administering programs related to storm water control measures; and*
- (g) Collaborate with existing storm water outreach programs.”*

The Center shall provide a number of statewide services. The focus in the first year is to provide the structure in which solutions to businesses and local governments for cost-effective stormwater management are provided, leading to the, improvement, health and well-being of citizens and natural resources throughout the state. The Center’s staff surveyed stormwater permit holders and the general community to compile the Center service priorities. Working with an advisory committee composed of representatives from state agencies, local governments, the business community, the environmental community, and the building and development industry, four first-year programs were identified and developed. These programs form the main work elements for the first year of the Centers, operation.

- Research and implementation for the Center’s structure and governance
- Information and permit assistance clearinghouse and support for industrial, construction and municipal permit holders
- Funding assistance development for municipal permit holders
- Training and education for industrial, construction and municipal permit holders

Work initiated in each of these first-year programs will help develop technical support for implementation of effective stormwater management and maintenance operations. The work to be performed in the Center’s first year will correlate to the RCW listings and address some of the state’s most pressing needs for stormwater management by providing permittee support. Additional information on a long-term business plan, with a detailed list of services, is available upon request.

Since the founding, the Center has achieved several significant milestones:

- Progress report
 - *Summary of grant work and business accomplishment*
 - *RCW charges Ecology to submit report to legislature*
- Business plan
- Scope of services
- Construction and organizational framework
- Identification of short-term projects with high priority
- Legislative briefing document

- Initiation of multiple pilot projects to produce training aids and provide assistance for stormwater permit compliance

Milestones (Scope of work defined under the grant)

Task 1 - Administration & Management

Administration of the project has proceeded smoothly with the guidance of an eight member Executive Management Team (EMT) and staff. To date, the following sub-tasks to Task 1, Project Administration, have been achieved:

Contracting agreements between the City of Puyallup (Puyallup) and Washington State University (WSU) were signed on June 30, 2010.

Signatures for subcontracts between WSU and University of Washington Tacoma (UWT), Herrera, and the Associated Businesses of Washington Institute (AWBI) are complete.

Regular-scheduled teleconference meetings including EMT members have taken place on a near-weekly basis. Additional communications have included the use of emails, web-based conferences, in-person subcommittee meetings, and coordination on the review and revising of documents and materials.

Task 2 - Establish Advisory Committee and Hire Program Staff

Review of the milestone chart shows that Task 2, Establish Advisory Committee (AC) and Hire Program Staff, has been completed. Empanelling the 13-member Advisory Committee created an open path on which to commence development of the Center. As discussed earlier, the advisory committee's purpose is to:

“aid in the development of the Stormwater Technical Resource Center and the identification of funding strategies.”

The needs of the stormwater community were thoroughly surveyed and have been addressed in the business plan and scope of services for the Center due to the notable, active involvement of the AC. A complete analysis and summary of the needs assessments were conducted. Not only were the immediate needs of the Stormwater Permittees noted, but also long-term needs and potential future needs, based on current proposed permit requirements anticipated from Ecology-based workgroups.

The program staff hired to support the implementation of the grant contract has aided in the development of project deliverables, deployment of early permittee-services and in documentation of progress on the Center's development.

The EMT successfully sub-contracted two private companies with highly-capable staff that have invariably provide project support, research resources, and project deliverables coordination.

Task 3 – Develop Center Framework

As discussed in Market Analysis (see section III, Market Statistics & Trends), Herrera Environmental Consultants was contracted to conduct a survey of existing stormwater technical centers and clearinghouses from other areas for evaluation. This survey provided a basis for decision making in the development of the Center's organizational, funding, services, and corporate structure. The research knowledge

gained in this step of the contract scope of work proved to be invaluable in providing lessons-learned.

To fully encompass all aspects of the planning phase for the Center's structure, a concurrent engineering approach was taken for development of the scope of services, organizational structure, and funding plan. A clear outline of the services needed by stormwater permittees formed the needs assessment, and the scope of services developed and grew to incorporate all aspects of the business plan, including funding sources, staffing, and utilization and management of current resources.

Task 4 - Needs-assessment forums

With the support and guidance of the Center's Advisory Committee, the approach to conducting a needs-assessment of the stormwater permittees shifted from what was initially planned as state-wide forums. Soliciting feedback by the AC members, EMT, and other interested parties was determined to be a more effective and streamlined manner through which to collect data on the needed services to be provided by the Center. In addition a business industry survey was submitted by the Association of Washington Business Institute. Results helped indicate key services and scope of work for the Center for supporting the industrial and construction stormwater permittees.

Task 5 – Produce Supporting Documentation for the Report to Legislature

Coordination and timely completion of each task element provided a sound foundation for development and production of materials for inclusion in Ecology's report to legislature – within which, this business plan will be encompassed. Creating a streamline environment for producing the documents for the legislative report left resources open and available to continue with the mission and charter of the Center:

To protect Washington's waters through improvements in stormwater management."

"serving as the central resource in Washington for integrated NPDES permit assistance; WQ monitoring coordination; and stormwater management research, development, and evaluation."

Task 6 – Development of the Center's Scope of Service

The last task in the Center's grant contract was originally intended to commence after completion of the Center development and report to the legislature. However, given the concurrent engineering approach to developing the Center, the Center's scope of services has been revised and put in a preliminary format. Discussion of the Centers services can be found in the following section. As the course of business ensures, changes will occur in the regulation and requirements for the stormwater permittees. As such, so will the scope of services for the Center change, expand, and evolve to make certain assistance and services are available to help permittees address any problems, roadblocks, or difficulties in permit compliance.

Washington State Stormwater Technical Resource Center's Services

Permit Assistance: (Resource sharing, education and outreach)

Near-term services (July 1, 2010 – June 30, 2011) will:

- Compile and share stormwater outreach materials and efforts for industrial, construction and municipal stormwater permittees
- Establish a small business assistance center within the SWTRC that provides outreach to smaller businesses that are potentially required to comply with one of the permits, and assist those firms required to comply with a permit with information and technical resources to comply with the permit, including preparing model SWPPPs, BMPs, etc.
- Collect and share readily available examples of SWPPPs, Standard Operating Procedures (SOPs), and Quality Assurance Project Plans (QAPPs)
- Collect and share municipal code updates and lessons learned
- Work with existing coordination groups and forums to actively build and facilitate partnerships among municipalities facing similar challenges to facilitate sharing of the information outlined above
- Evaluate the logistics and work to establish and staff a stormwater hotline for quick feedback on technical questions
- Begin providing referrals and recommendations on vendors or consultants for questions beyond the Center's capacity
- Share LID implementation efforts through the Center's web portal

Long-term services (July 1, 2011 and beyond)

Additional long-term services will be prioritized once the next round of NPDES municipal stormwater permits is nearly final, but Center services may:

- Maintain the business assistance center within the SWTRC that provides outreach to small, medium and large businesses that are potentially required to comply with one of the permits, and assist those firms with information and technical resources to comply with the permit, including preparing model SWPPPs, implementing BMPs, etc.
- Establish and maintain a clearinghouse for BMP performance and evaluation information (in conjunction with the "Research, Development, and Evaluation" service category)
- Establish and maintain a database of BMP life cycle cost and performance data
- Develop a menu of BMP options and recommendations for common municipal applications (e.g., low cost source control measures, or recommended BMPs for dissolved metals removal)
- Compile and share lessons learned on BMP design and operation (including costs, installation, general performance, and maintenance issues)
- Collect and share information on BMP vendors, specifications, and design guidance
- Identify, prioritize, and share specific permit compliance efforts performed by municipalities

- Continue working with existing coordination groups and forums to actively build, facilitate, and maintain partnerships among municipalities facing similar challenges to facilitate sharing of some of the information outlined above
- Refine and staff a stormwater hotline for quick feedback on technical questions
- Build an efficient process for providing referrals and recommendations on vendors or consultants for questions beyond the Center's capacity
- Provide support for stormwater management program elements such as illicit discharge identification and elimination (IDDE), education and outreach, monitoring, construction site runoff control, and business-specific stormwater management pollution prevention and site-specific management techniques for parking lots, restaurants, vehicle recyclers, log yards, etc.
- Resource sharing, education and outreach
- Develop educational materials to help reduce and control metals and other toxics in stormwater.

Technology Assessment Protocol – Ecology (TAPE)

Near-term services (July 1, 2010 – June 30, 2011) will:

- Coordinate the development of a revised TAPE process
- Oversee revision and implementation of the TAPE protocol and process for evaluating and approving emerging stormwater treatment technologies
- Re-open the TAPE program, working with Ecology
- Provide assistance to vendors on the TAPE process, recommendations on consultants or institutions to perform the monitoring and verification process, etc.
- Retain a Board of External Reviewers (BER) to provide technical review of the following documents related to the TAPE process: applications; Quality Assurance Project Plans (QAPPs); and Technology Evaluation Reports (TERs)

Long-term services (July 1, 2011 and beyond) will:

- Continue near-term services
- Provide recommendations to Ecology on the appropriate use level designations for stormwater treatment technologies that have been evaluated via the TAPE process

Low Impact Development (LID) Center

Initially, the LID Research Program will focus on two practices: permeable pavement and bio retention. To facilitate performance evaluations of these practices, the largest parking area on campus (impervious asphalt) was removed and replaced with pervious asphalt and concrete. In addition, a 0.24 hectare (0.6 acre) gravel area adjacent to the parking lot was also removed and replaced with 39 bio retention cells. Sixteen of the bio retention cells are conventional rain garden installations in the ground, and twenty of the bio retention cells are deep tanks or “mesocosms” for performing more controlled testing on different bio retention soil mixes of which three are hydrolic cells designed to monitor water movement.

This installation has two unique characteristics. First, the permeable paving and bio retention research plots are full-scale and replicated. This provides a unique opportunity for bio retention research because flow control and water quality treatment performance are largely driven by plant soil interactions and the ecosystem that develops within these systems. These full-scale systems will also operate long-term and thus allow for a more complex ecosystem to develop compared to laboratory scale research. Second, the permeable pavement and bio retention systems can receive stormwater from natural storms delivered by gravity flow; alternatively, synthetic stormwater can be blended and applied from cisterns at specific flow rates, volumes, and pollutant concentrations. This type of research requires significant long-term capital investment and personnel and, as a result, the WSU Puyallup LID Research Center is one of the only facilities with these capabilities in the world.

III. Market Statistics & Trends

With the market need clearly identified by the RCW, the development of the Center began. During the initial background research and development stages of Center, Herrera Environmental Consultants was contracted to conduct a survey of existing stormwater technical centers and clearinghouses from other regions for evaluation. This survey provided a basis for decision making in the development of the Center's organizational, funding, services, and corporate structure. The research knowledge gained through this process proved to be invaluable in providing lessons-learned. Further discussion of this survey can be found in Appendix 4.

To aid in identifying the local region's need for stormwater community and permittee support, the Association of Washington Business Institute with the assistance of the WSTRC Business Advisory Committee implemented a survey to help target the scope of services that will define the operation of the Center. Detailed results to all surveys can be found in Appendix 4, 5 and 6. The following summary defines the delivery method and outcome.

Survey Reviews

With the support of the EMT, Herrera compiled and reviewed survey information collected from key target audiences that are expected to utilize the WSTRC's services. Specifically, the EMT surveyed various municipalities and stormwater professionals in the region to assess the primary stormwater needs and technical challenges in the region; this information has been used to determine the primary focus and roles for the WSTRC. Survey input was received from several groups and municipalities through multiple avenues. A summary of the survey process is below.

As part of the WSTRC's first Advisory Committee (AC) meeting on May 10, 2010, committee members were asked to identify the central issue that each AC member represents related to stormwater, and how the WSTRC can help the AC members address that issue. The input from each AC member was recorded in the meeting minutes and reviewed in this task.

An online survey was made available for all potential Center users by

the City of Puyallup. An email survey was conducted by the Association of Washington Business Institute (AWBI). Nearly 900 surveys were sent out, with 64 of those surveys returned. Several caucuses are represented by members of the AC. These members solicited input from their caucus members and provided that input to the EMT for this survey review. The following caucuses include:

- American Rivers / WA Environmental Council
- Association of Washington Businesses
- Association of Washington Cities
- Building Industry Association of Washington
- Department of Ecology
- Independent Business Association
- Puget Sound Partnership
- Puget Sound Keepers / People for Puget Sound
- Washington State Association of Counties
- Washington State Department of Transportation

As outlined above, the target audiences and methods used for collecting input from survey participants was quite variable. As such, the results of the surveys are broad reaching and range from high-level policy issues, to detailed technical needs, to very specific needs of individuals and individual groups. To help summarize and organize the survey input, two Herrera staff reviewed the surveys independently, identified common themes and trends, and then met to discuss the results of each independent review to identify overlaps and initial consensus on priority areas. The common themes and priorities relating to the regional stormwater needs and implications for the Center's mission and scope of services are outlined below.

Survey Results and Implications

Ten categories of service of regional needs and potential areas of focus for the Center were identified through the survey review. Although efforts were made to identify discrete categories and needs, some of the categories overlap. The list below does not represent a summary of all survey information received, but rather a summary of the common trends and themes. A key element highlighted in the summary review of needs assessments was the somewhat distinct categorization of survey responses related to the source of the comments. Specifically, comments from businesses were somewhat consistent, and also notably different from those from municipalities. These two groups' unique needs were considered when framing the WSTRC's services. The identified categories are consolidated and presented below in our recommended order of priority, based on the frequency of the comments and the relative priority identified in some of the survey responses.

- Coordination and dissemination of technical information (Particular emphases on NPDES permit support)
- Best management practices (BMP) resources and guidance
- On-call technical support
- Education and training
- Outreach and advocacy
- Funding assistance

- Monitoring assistance and TAPE
- Assistance with low impact development (LID)
- Technical research
- Develop educational materials to help reduce and control metals and other toxics in stormwater.

Need for Improved Coordination of R&D in Stormwater

There are several entities conducting ongoing research, development, and evaluation of stormwater best management practices (BMPs) in the Pacific Northwest. For example, there is ongoing research, development, and evaluation occurring through both the Washington State University (WSU) Low Impact Development (LID) Research and Extension Center in Puyallup, and the emerging technology assessment protocol Ecology (TAPE) process that is being revived. Likewise, several jurisdictions are conducting permit required monitoring to evaluate performance of various stormwater BMP approaches.

Based on the user surveys and additional discussions among the EMT, there is a clear regional need for improved coordination of these and other stormwater-related research activities, as well as stormwater BMP development and evaluation. In addition, there is a need for research and information sharing focused specifically on broader effectiveness of various BMPs at the site, jurisdictional, or watershed scale. The intent behind this service category is for the Center to serve as a central repository and/or clearinghouse for information related to these ongoing efforts and future efforts as they emerge. This will substantially improve the efficiency of these efforts and dissemination of the information that is produced.

IV. Customer Analysis

The WSTRC is primarily targeting the following customer segments:

1. *Industrial stormwater permittees:*

Industrial stormwater customers range from mostly small businesses (88% of the likely 6900+ potential customers are small businesses with 1 – 19 employees – 97.8% are small businesses with 1 – 49 employees), to larger businesses. The industrial stormwater permit is a very complex set of requirements that may or may not apply to any specific business. The specialized expertise necessary to understand and implement programs to meet those requirements exceeds the expertise of most potentially affected small businesses to understand and implement. Thus, the WSTRC must provide services and technical assistance to fill this need.

2. *Construction stormwater permittees:*

Construction stormwater customers range from mostly small businesses (92.7% of the likely 17,100 potential construction industry customers are small businesses with 1 – 19 employees), to larger businesses. The construction stormwater permit is a very complex set of requirements that again exceed the expertise found within of most potentially affected small businesses. Thus, the WSTRC must provide services and technical assistance to fill this need.

3. *Municipal stormwater permittee:*

Among the 115 current Municipal Stormwater General Permittees, the need for staffing and informational resources is met with the complex and involved regulatory requirements of the Municipal Stormwater Permits. Many of the smaller Phase II jurisdictions have small or even part time staff to address the permit requirements and some don't have stormwater utilities. With limited funds to dedicate to their municipality's stormwater management programs, many jurisdictions can best be served by providing services such as: an information clearinghouse on stormwater-related materials, guides and data; training; funding assistance; on-call support; and organized collaborative efforts to meet any future permit requirements that may arise. Such collaborative efforts may include managing statewide water quality monitoring requirements expected in the next permit cycle.

4. *Emerging stormwater technologies:*

By revising and re-opening the TAPE program within Washington State, the Center is providing the framework and necessary staffing to serve as the repository and point of communication for ongoing developments with the TAPE process, a function that Ecology has been unable to provide on an on-going basis. The clientele included in this category is not limited to manufacturers and designers of new and emerging stormwater technologies, but also permit holders and members of the stormwater management community that are in need of technologies to meet stormwater permit requirements for pollutant management. Due to Washington's stringent stormwater regulation and permit requirements the TAPE program is being viewed by many on a national level as the standard for assessing new stormwater technologies.

5. *Low Impact Development (LID):*

LID is becoming one of the preferred means of managing stormwater runoff, however the LID technical field is evolving at a rapid pace and stormwater professionals are having difficulty staying up to speed on the latest developments. Through the WSU LID Research Program, the Center will serve as a repository for new research as well as disseminate that information through education and training on LID stormwater treatment and technologies. The Center will help identify and prioritize future LID research needs, and target specific agencies, municipalities, and businesses for targeted LID information sharing and collaboration on research efforts to meet specific permit requirements.

Additional services will be brought online based on the needs of the stormwater community. Through industry-based surveys, acknowledgment of additional support to various stormwater permittee categories has been noted and future projections include expanding into these areas based on demand. Additional information regarding the needs of industrial and construction stormwater permittees can be found in the AWB Institute survey provided to the WSTRC Advisory Committee and the municipality survey provided by the Association of Washington Cities. Please see Appendix items 5 and 6 for details.

V. Stormwater Resource Analysis

Existing Resources

As a first step in the development of the Center's framework, a survey of existing national stormwater centers was conducted for the Center by Herrera. Herrera compiled and screened a list of 16 nonprofit technical resources centers in the United States for stormwater-related information. The EMT selected eight technical resource centers from this list and added a ninth technical resource center (Sacramento State Office of Water Programs) for more detailed surveys. The nine technical resource centers selected for follow-up surveys include:

1. California Stormwater Quality Association (CASQA)
2. Center for Watershed Protection (CWP)
3. Chesapeake Stormwater Network (CSN)
4. Low Impact Development Center
5. National Stormwater Center
6. New Jersey Corporation for Advanced Technology (NJCAT)
7. Sacramento State Office of Water Programs
8. University of New Hampshire Stormwater Center (UNHSC)
9. Villanova Urban Stormwater Partnership (VUSP)

Five of the technical resource centers listed above responded to telephone and e-mail requests for information, but the remaining technical resource centers did not respond to numerous requests for information. Documentation of telephone calls and e-mail requests are summarized in Appendix 3, Survey of National Centers. For the non-responsive technical resource centers, as much information as possible was gathered from the websites for each organization. The five technical resource centers that responded to telephone and e-mail requests for information include:

1. California Stormwater Quality Association (CASQA)
2. Center for Watershed Protection (CWP)
3. Chesapeake Stormwater Network (CSN)
4. Sacramento State Office of Water Programs
5. Villanova Urban Stormwater Partnership (VUSP)

Analysis and results of this survey can be reviewed in the memorandum located in Appendix 4. Overall, this survey provided a basis and foundation for decision making in the development of the Center's organization, funding, services, and corporate structure. The research knowledge gained through this process proved to be invaluable in providing lessons-learned.

VI. Marketing Plan

The Marketing Plan describes the type of brand the Washington State Stormwater Technical Resource Center seeks to create and the organization's planned promotions and pricing strategies.

The Washington State Stormwater Technical Resource Center Brand

The Washington State Stormwater Technical Resource Center brand will focus on the Organization's unique value proposition:

- Providing assistance to Washington State's business community, municipalities and emerging technologies for stormwater.
- Through its unique partnerships the Center will be able to develop programs specifically designed to target small, medium and large businesses in determining if they should assist with the requirements of one of the permits, furthermore offering a comprehensive resource to assist with permit requirements.
- Offering administrative support and oversight for TAPE, education for stormwater industrial, construction and municipal permittees, and providing a myriad of resources related to water quality.
- Providing a resource for the latest developments in the stormwater world (i.e. research findings, new technologies, latest in LID, permit updates, stormwater and water quality related information in the news)

Promotions Strategy

Washington State Stormwater Technical Resource Center will directly serve existing stormwater industrial, construction and municipal stormwater permittees. The Center's promotions strategy to reach these individuals includes:

Initial Developments

Logo design, web development, newsletter from the Center via the Ecology Listserv, social media campaign, data base compilation, roundtables and workshops.

Identify Target Markets

The SWTRC will develop a data base of current and potential businesses that might need to be covered by a stormwater permit.

Direct Mail

The Center will promote with direct mail pieces. These pieces will provide general information on Washington State Stormwater Technical Resource Center, and discusses tools, resources and services designed to support the end user's needs.

Public Relations

Frequent contact with local and area newspapers and television stations will take place to inform them of the unique value brought forward by the Washington State Stormwater Technical Resource Center.

Sponsorship Packages

Washington State Stormwater Technical Resource Center may seek out industry publications to further promote the resources and services provided by the center.

Ongoing Customer Communications (Social Networking)

Washington State Stormwater Technical Resource Center maintains a website and will be working to publish a monthly email newsletter to tell constituents about new events, accomplishments and more. Additional avenues related to the many platforms identified under social networking will be assessed and determined which will best suite communications needs by the Center and its target audience. An Initial website map can be seen in Appendix 3.

VII. Operations Plan

Functional Roles

In order to execute on the Center's business model, the organization needs to perform many functions including the following:

Executive Functions

- General management of the organization
- Meeting with key constituents including local government officials
- Hiring and training staff
- Maintaining the mission and vision of the organization
- Assisting and directing revenue generating efforts

Administrative Functions

- General & administrative functions such as bookkeeping, etc.
- Tactical functions such as legal, marketing

Service Functions

- Website maintenance
- Training activities
- Product improvement
- Research
- Permittee assistance

- TAPE review and administration
- On-call support
- Scheduling for outreach activities (i.e. workshops, webinars, site visits)

Hiring Plan

In addition to our current team, upon successfully acquiring additional funding and further defining the needs of stormwater services in the state of Washington, will we then further define the need for staffing the WSTRC. Current activities are helping define these parameters in the early stages of developing the WSTRC, listed below are some of the potential staffing needs as we move forward in the first year and beyond. These positions are also represented in the organizational chart in Appendix 1;

- Executive Director
- Program Directors
- Administrative staff
- Technical/educational support staff for;
 - Business Stormwater Resource Center
 - Municipalities Stormwater Resource Center
 - TAPE Program
 - LID Center
- IT staff
- Marketing staff
- Accounting staff
- Research staff
- Grant writing staff

VIII. Financial Plan

Funding Strategies

The WSTRC will require multiple strategies for revenue generation. The following list outlines strategies that provide differing levels of funding from core support to short or long term or supplemental funding. These strategies are listed by priority and based on the ability to move forward and pursue activities and projects that will result in revenue generation for the Center. Funding opportunities have been identified in Appendix A7 funding flow chart and identified below in greater detail:

Reimbursement for TAPE services

Strategy - Initial funding under this heading will relate to a fee-for-service for reviews in the TAPE program. Development of the fee structure considered the direct and indirect costs associated with the review process and does not include additional funding to meet general overhead expenses.

Feasibility - Beginning with the official re-start of the TAPE program (anticipated to be in January 2011), the program will be open to taking new applications. Companies submitting new applications will be required to pay the new fee. As of December 2010, Ecology has been contacted by several companies seeking to apply to the TAPE program. A Memorandum of Understanding (MOU) between Ecology and University of Washington Tacoma (UWT) has been established to transfer funds collected for services from Ecology to UWT.

Potential Revenue & Timeline - The Center is establishing a fee structure to reimburse the program for the expenses incurred during the review of applications, Quality Assurance Project Plans, and Technical Evaluation Reports. The \$12,000 fee will be administered in three payments over the multi-year period that encompasses the application and review process. It is anticipated that the TAPE program will review 4 - 6 applications per year.

Summary: \$20,000-\$75,000/year beginning January 2011.

Third party donations/sponsorships

Strategy - This category of funding consists of donations and sponsorships from various organizations such as manufacturers, consultants, and non-profit corporations. Given the legal structure of the Center, these donations will provide donors with a 501(c) 3 tax deduction. In return for their sponsorships, companies will receive recognition on various materials including brochures, newsletters, campaign materials, training course materials and other items/locations to be specified during sponsorship negotiations.

The Center can also develop a scholarship program funded through donations and corporate sponsorships. This program can provide appropriate administrative funding for the Center to organize the program. Scholarships would be designed to cultivate educational programs related to stormwater including fellowships, undergraduate scholarships, and funding of individual K-12 classroom programs or projects.

Feasibility - The ability to receive funds through this revenue source is currently established for the Center through the WSU Foundation. Partners of the Center have been approached by several vendors seeking to establish sponsorships and advertising programs (discussed later) with the Center.

Potential Revenue & Timeline - The Center currently has the ability to accept funds through this strategy. Once a sponsorship package is developed, representatives from the Center can begin actively pursuing contacts. Various sponsorship levels will be created and will range from: \$500 to \$5,000. Donations will be accepted in any amount.

Summary: \$5,000-\$50,000/year beginning February 2011.

Education & Outreach (Training)

Strategy - While a small revenue can be realized by providing classes on stormwater issues, the cost for attendance at these classes will need to be competitive and therefore will provide minimal funding to meet the cost of hosting the course, developing the class and providing a site and instructors. Such courses could include:

- Stormwater Manuals (Western and Eastern Washington)
- Best management practices (BMPs), including LID, source control and pollution prevention practices
- Western Washington Hydrology Model (WWHM)
- Illicit Discharge Detection and Elimination (IDDE)
- Monitoring, developing sampling plans and “how to sample” classes
- Classes for site-specific industries (vehicle recyclers, restaurants, gas stations, etc.)
- SWPPP development, BMP selection, and employee training
- How to conduct and document inspections
- Corrective actions and waivers
- Grant writing for municipal stormwater projects
- How to build a stormwater management program
- Discharging to polluted waters (303 (d) or TMDL listed)
- Record keeping and reporting
- GIS mapping for stormwater systems
- LID
- Regional Conferences
- Construction Certifications Courses
- Outreach and Education BMPs

As an approach to this strategy, the Center would seek to partner with consultants and training groups to jointly host and provide training in currently dominated categories. This will leverage resources and build business relationships within the Stormwater training community.

Feasibility - With a current need for training in various categories, specifically for site-specific industries and in relation to specific Industrial Stormwater General Permit (ISWGP) requirements, this funding strategy will be applied immediately. The current grant partners, staff and corporate partners of the Center have the ability to develop products under this category and can utilize and leverage remaining grant funds and partner resources.

In the future, grants can provide funding for development of training materials which will provide a source of revenue based on administrative functions and staff salaries producing the materials. This will, however, limit the revenue able to be generated from sale of the resulting training products. Grants that will fund projects such as this are accounted for under the grant funding strategy section.

Potential Revenue & Timeline - Currently, a product is in development that addresses industry need in this category. The anticipated completion date of this demonstration video product is January 2011. With this video being the inaugurating product for the Center, it will be distributed to the stormwater community as a free resource. Future products will be offered through the Center as a free resource to members (discussed later) and as a for-fee product to non-members. Cost for individual videos, training materials, and courses will vary depending on the content of the training and will potentially range from \$5-\$1200.

In addition, courses have already been developed that will be hosted by the LID Center department that, while not providing funding for the Center, provide the potential for funding through networking of additional, in-depth courses to be presented on advanced LID topics.

Summary: \$1,000-\$10,000/year beginning December 2011

Grants from individuals, foundations, corporations, federal & state

Strategy - Grants have the ability to provide funding for the Center in the form of salaries, administrative activities, and producing products and programs. While a majority of the products developed through the use of grant funds are limited in ability to charge for these items, funding staff salaries to project manage and produce these products comprises the functions of the Center. General operating fund support can also be sourced through some grant sources.

Feasibility - Grants are a funding mechanism that the Center is currently seeking in partnership with other organizations. The Center is now established as a 501(c)3; all fiscal functions will be in partnership with the WSU Foundation. December 9, 2010 marked the official establishment of the Washington Stormwater Technical Resource Center (the Center) as a university center of Washington State University, based at the Puyallup Research and Extension Center.

Potential Revenue & Timeline - The Center is currently pursuing multiple grants through partnership with other organizations and centers. These grants have an expected funding/fiscal period of July 2011 onward. Additional grants that the Center may pursue would also hold funding dates of July 2011 and later.

Summary: \$500,000-\$1,000,000/year beginning July 2011

Membership program

Strategy - While the Center seeks to provide information and resources to support the general stormwater community, there can be a level of service that is provided for free-access, and an additional level of service that is included with membership. This heightened level of access could include access to online training videos, documents and templates, or a reduced pricing schedule for workshops and conferences. An industry standard membership model could be applied here. This funding strategy will tie closely with advertising by offering heightened visibility within the online Stormwater Directory for member vendors.

Feasibility - The Center is currently creating a database directory of various vendors, consultants, municipalities, state agencies and others to encompass the stormwater community. This directory will create the basis for marketing the membership program.

Potential Revenue & Timeline - Given compilation of the stormwater network directory, the Center will be able to develop a marketing strategy and angle to develop and promote the advantages of holding membership with the Center. Membership levels and pricing will vary depending on the membership type including: vendors, consultants, municipalities or industry businesses and will range from \$250 to \$750.

Summary: \$2,500-\$50,000/year beginning April 2011

Advertising

Strategy - Since the Center is a 501(c)3 organization and is independent from Ecology, it may be possible to accept payment for advertising on the Center's website as a separate function from sponsorship advertising. The Center will need to be careful of the type of advertising that will be located on the site. Sale of naming rights for the Center will not be considered and alignment and endorsement of specific products will be avoided.

Feasibility - With the re-opening of TAPE, new vendors will be emerging with GULD and will want to advertise to this effect. The Center will be a logical place for these vendors to focus advertising dollars. In addition, while the Center is establishing stand-alone training, it will be able to serve as an advertising platform for those consulting or training groups that provide services that the Center is not yet equipped to provide.

Potential Revenue & Timeline - With the website and newsletters as places for advertising, this strategy will lag until the launch of the stand-alone website for the Center. This will provide for an appropriate timeframe to develop an advertising package, similar but distinct from the sponsorship package. Advertising costs will vary depending on the location, duration and visibility of the ad and may range from \$2,500 to \$10,000.

Summary: \$2,500-\$30,000 year beginning April 2011

Special events

Strategy - The Center could host a national stormwater conference in conjunction with another organization (ASCE, WEF, StormCon). Alternatively, the Center could begin holding annual summits that highlight the local stormwater resources and research facilities such as WSU-Puyallup's LID Center and research installation, UWT's Urban Waters building and research center, and the many local LID installations in the city of Puyallup. Sponsorships from local business, in-kind donations, and registration fees will provide a source of revenue. Many non-profit organizations receive the bulk of their annual funding through a single annual conference.

Feasibility - The Puyallup area and the Pacific Northwest weather and landscape hold many attractive resources and research facilities that can be used to leverage the Center's location to host a large national conference. With the Puyallup Fair Grounds, newly constructed hotels and surrounding convention facilities, the feasibility of the local economy's ability to host such an event is strong.

Potential Revenue & Timeline - Many of the national stormwater conferences are scheduled several years in the future. The planning and organization necessary to host such a large event would dictate that this potential revenue is 5+ years in the future.

A local stormwater summit, however, could be made a reality for 2012. While the revenue for an event such as this is incomparable to a national conference, the preparation and organization is accordingly smaller. Based on sponsorships, advertising, registration fees, donations and in-kind support, an event such as this could produce revenue ranging from \$20,000 to \$150,000.

Summary: \$20,000+/ year beginning 2012

Core Support from Dedicated Accounts & Funding Programs

While core funding for the Center is potentially available from a number of accounts within the state government, these sources must be identified as short and long-term strategies based on anticipated economic conditions and success of the Center to position itself as a necessary resource for permit holders striving to abide permit regulations. Base funding is essential to the long term success of the Center. Base funding is intended to provide continuity and stability to the core staff of the Center, allowing retention of highly qualified individuals for the program.

Short-term Funding Strategy - Short-term funding in this category could include fund from the Local Toxics account and the Puget Sound Scientific Research Account (Puget Sound Partnership). The Department of Commerce has three potential programs: Building Communities Fund Account, Community Preservation and Development Authority Account, and the Public Works Assistance Account. In addition, General Administration has a State Facilities Renewal Account and Ecology has a State and Local Improvements Revolving Account.

Feasibility - The Center is being established based on the need of permittees for assistance on state-mandated stormwater permits and the State's realization and acknowledgment of this need. The Center and its partners have facilitated several needs-assessment studies and solicited and gained support from many businesses and organizations that support the Center in its efforts to obtain funding as well.

Potential Revenue & Timeline - Discussion and development of this funding strategy is currently underway between the Co-directors of the Center and necessary persons within the above-mentioned groups. Funding through these avenues would be realized in the upcoming 2011 FY and continue as the Center develops its resources, tools and services based on the needs of permittees and the requirements Ecology puts forward under the NPEDS permit.

Summary: \$650,000-\$1,000,000 year July 2011-June 2013

Long-term Line-item Funding Strategy - Creation of a budget line item for funding from the state and federal agencies could be a source of continued revenue.

Feasibility - In the current economic climate this strategy has little likelihood of succeeding, but may be a potential revenue source in better economic times.

Potential Revenue & Timeline - \$650,000 + beginning July 2013

Stormwater Monitoring Services

Strategy - The upcoming Phase I and Phase II Municipal Stormwater General Permits will likely contain requirements for regional monitoring. Current planning is considering selecting a single entity to oversee the monitoring with the permittees paying into a fund to finance the monitoring. The Center may take on a part of the monitoring and data analysis work as a subcontractor to the primary entity or could be selected to manage the entire program as the entity.

Feasibility - The Stormwater Work Group found few to no entities currently available and suitable for this function. Given the current development timeline for the Center, and its ability to incorporate some of the subcontracted activities that will be associated with implementing the monitoring program into its structure, the Center is positioned to join in these efforts and realize a potentially large funding source.

Potential Revenue & Timeline - The activities that will need to be carried out with the funding obtained through this strategy are significant. Again, as with other funding strategies of the Center, these activities will encompass the intended services of the Center, and will therefore be able to fund the related salaries, project management, and administrative functions associated with the monitoring efforts. If included in the next Municipal Stormwater Permits scheduled for 2012, activities to ramp up for these functions could be funded through Ecology and would begin in 2011.

Summary: \$11,000,000 - 30,000,000 beginning mid- 2011

Endowments

Strategy - The Center could market the stormwater community for donations to build an endowment fund to a level that will provide on-going funding.

Feasibility - The WSU Foundation is currently serving in this capacity for the Center and is poised to collect donations on behalf of the Center at this time. Establishment of an Endowment for the Center independently is not within near or long term feasibility but may be in the far future. Organizations such as the Bill and Melinda Gates Foundation, The Paul G. Allen Family Foundation, The Russell Family Foundation, The Bullitt Foundation and local companies such as Boeing, Amazon, Microsoft, and others might be willing to start an Endowment.

Potential Revenue & Timeline - \$unlimited, beginning 10 years+

Revenue and Cost Drivers

Washington State Stormwater Technical Resource Center's "revenues" will come from tools, products and services provided by the Center in cooperation with its partners. Additional funds will be received in the form of grants from the federal, state, private foundation and local levels. See Appendix 7 regarding the funding flow chart.

Capital Requirements and Use of Funds

Washington State Stormwater Technical Resource Center is currently seeking additional funding to finance the acquisition of new staff that will allow implementation of the full range of proposed services as well as work to expand WSTRC program offerings. Specifically, these funds will be used as follows:

- Salaries & Benefits: reflected in the financial P&L statement (see below for details)
- Operational & travel expenses: lease costs and ongoing overhead
- Infrastructure and resource expenses: in relation to web site and product development

Key Assumptions & Forecasts

Listed in the following, please find the key assumptions that went into the financial forecast, and a summary of the financial projections over the next five years. Please see Appendix A8 (*Accrual Basis P&L Forecast*) for more detailed financial forecasting information.

Key Assumptions & Forecast Table

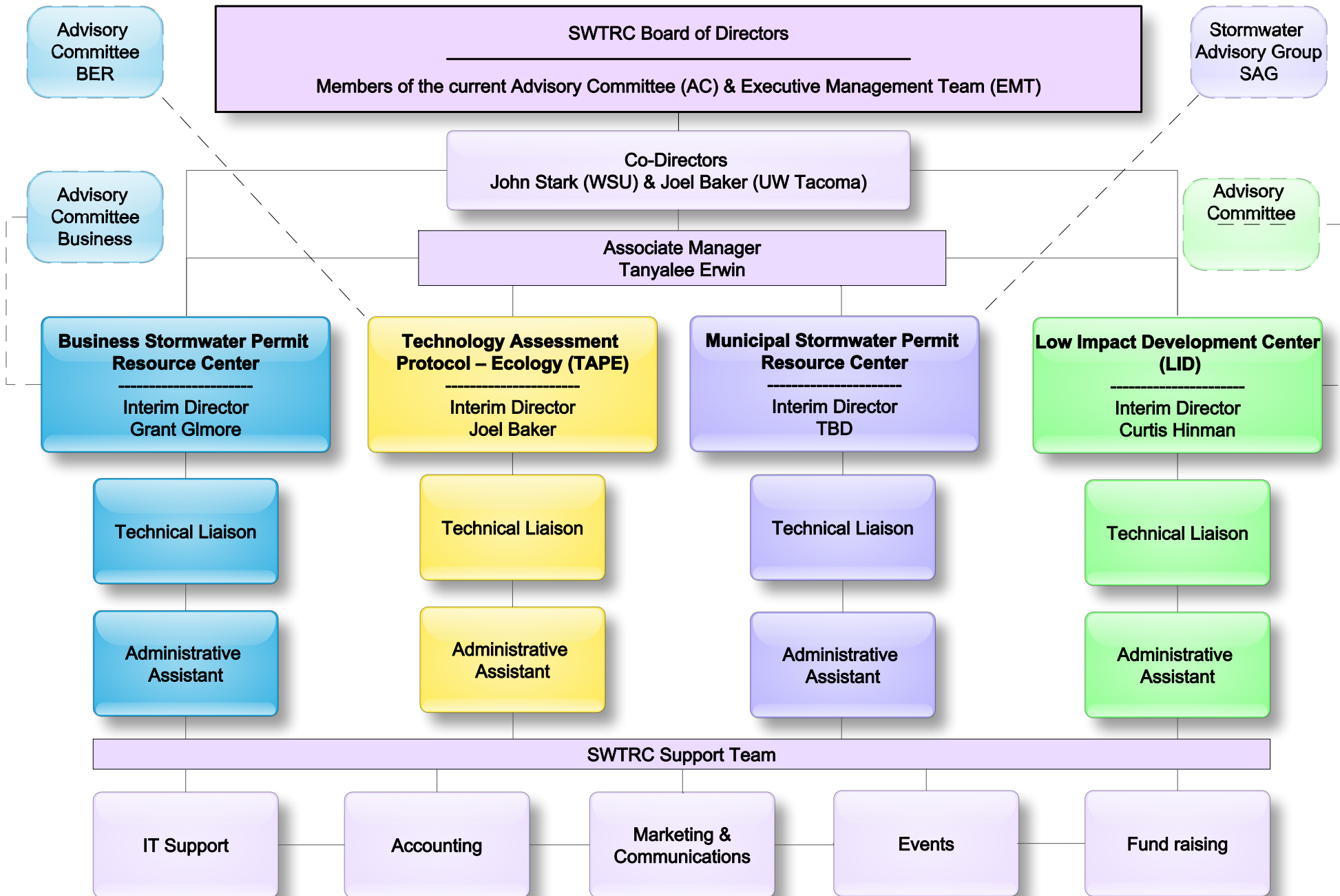
Grants	
Year	Dollars Raised
FY 1	\$600,000
FY 2	\$530,000
FY 3	\$556,500
FY 4	\$584,325
FY 5	\$613,541
Corporate Sponsors	
Year	Dollars Raised
FY 1	\$60,000
FY 2	\$72,000
FY 3	\$86,400
FY 4	\$103,680
FY 5	\$124,416

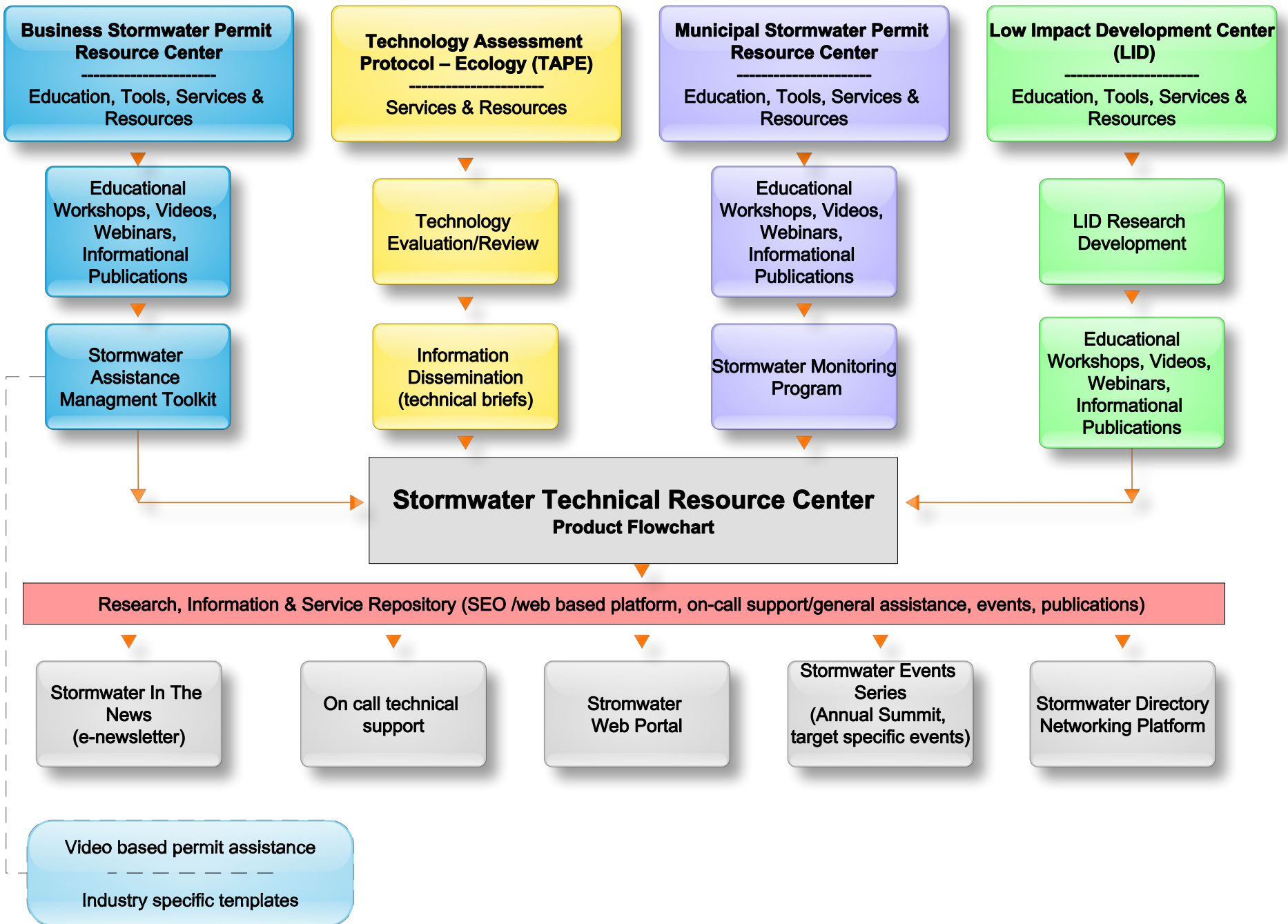
X. Appendix

Please refer to attachments for appendix items 1 - 8:

Appendix 1	Stormwater Technical Resource Center, Organizational Chart
Appendix 2	Stormwater Technical Resource Center, Product Flow Chart
Appendix 3	Stormwater Technical Resource Center, Website Map
Appendix 4	Stormwater Technical Resource Center, Herrera Centers Survey
Appendix 5	Stormwater Technical Resource Center, Herrera User Survey
Appendix 6	Stormwater Technical Resource Center, AWB Institute Survey
Appendix 7	Stormwater Technical Resource Center, Funding Flow Chart
Appendix 8	Stormwater Technical Resource Center, Profit & Loss Forecast

Stormwater Technical Resource Center

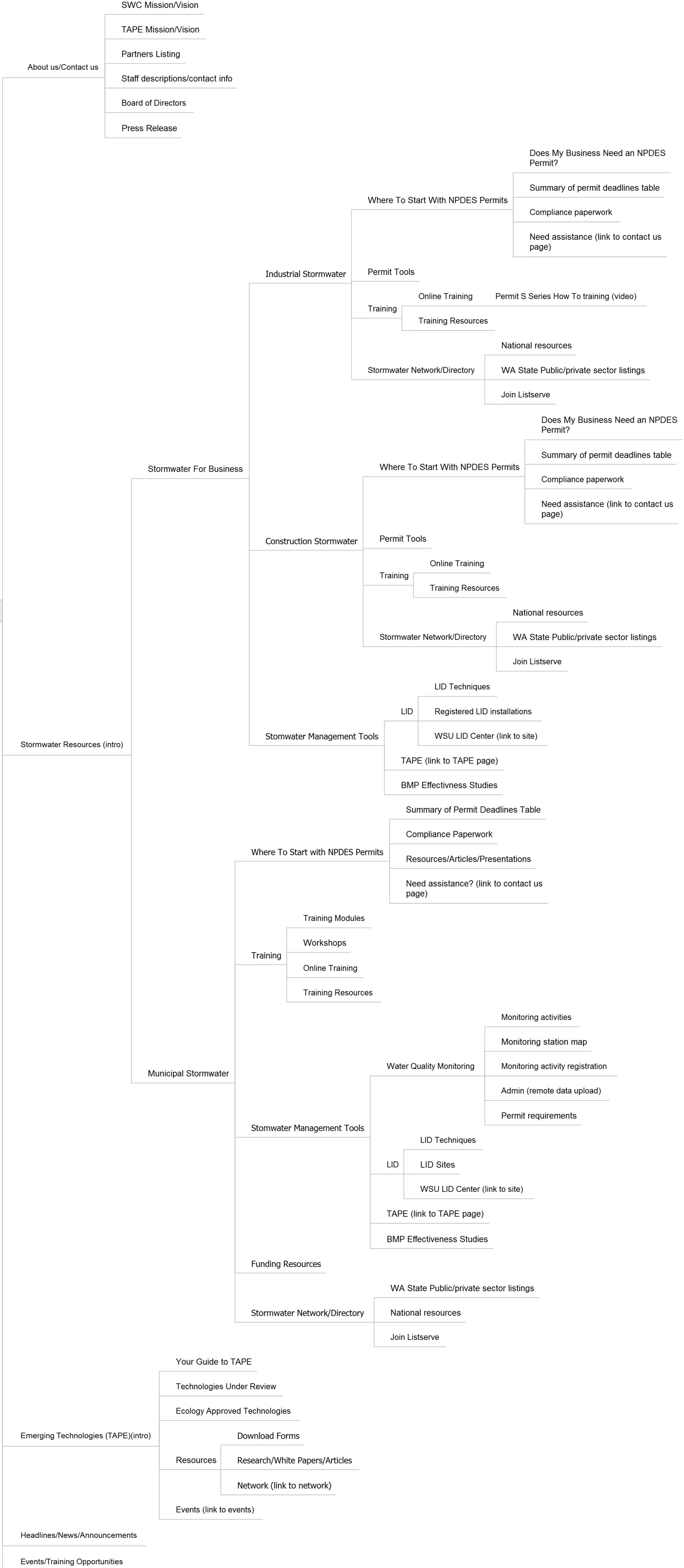




Appendix A2

Stormwater Resource Center Site Map

Home Page



Herrera Environmental Consultants, Inc.

Memorandum

To Tanyalee Erwin, Washington State University

CC Washington Stormwater Technical and Education Center Executive Management Team

From John Lenth, Rebecca Dugopolski, and Elizabeth Woodcock, Herrera Environmental Consultants

Date July 9, 2010

Subject Stormwater Technical Resource Center Survey Results

Herrera Environmental Consultants (Herrera) recently conducted a telephone survey of nine stormwater-related technical resource centers located in the United States. The goal of this survey was to obtain general information on the organization framework of each technical resource center. Information obtained from this survey will be used to develop a framework for the Washington Stormwater Technical and Education Center (WSTEC). This work is being performed to support the Executive Management Team (EMT) for the WSTEC which includes representatives from the following entities: City of Puyallup, University of Washington, Washington State University, and the Washington State Department of Ecology.

As a first step in the survey process, Herrera compiled and screened a list of 16 nonprofit technical resources centers in the United States for stormwater related information. The EMT selected eight technical resource centers from this list and added a ninth technical resource center (Sacramento State Office of Water Programs) for more detailed surveys. The nine technical resource centers selected for follow-up surveys include:

1. California Stormwater Quality Association (CASQA)
2. Center for Watershed Protection (CWP)
3. Chesapeake Stormwater Network (CSN)
4. Low Impact Development Center
5. National Stormwater Center
6. New Jersey Corporation for Advanced Technology (NJCAT)
7. Sacramento State Office of Water Programs
8. University of New Hampshire Stormwater Center (UNHSC)
9. Villanova Urban Stormwater Partnership (VUSP)

Five of the technical resource centers listed above responded to telephone and e-mail requests for information, but the remaining technical resource centers did not respond to numerous requests for information. Documentation of telephone calls and e-mail requests are summarized in Attachment 1. For the non-responsive technical resource centers, as much information as

possible was gathered from the websites for each organization. The five technical resource centers that responded to telephone and e-mail requests for information include:

1. California Stormwater Quality Association (CASQA)
2. Center for Watershed Protection (CWP)
3. Chesapeake Stormwater Network (CSN)
4. Sacramento State Office of Water Programs
5. Villanova Urban Stormwater Partnership (VUSP)

The remainder of this memorandum summarizes the responses received for 10 survey questions in a series of tables:

1. What is your organization's mission statement and/or purpose? (Table 1)
2. By what authority was your organization originally established? (Table 2)
3. What primary services does your organization offer to meet your stated mission and/or purpose? (Table 3)
4. Who are the primary recipients of your organization's services? (Table 4)
5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)? (Table 5)
6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services. (Table 6)
7. Please provide a brief summary of your organization's structure. (Table 7)
8. Do you have any part time or full time staff? If so, how many? (Table 8)
9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources. (Table 9)
10. Where is your office located? How large is your office (i.e., square footage)? (Table 10)

Additional detail collected during the telephone and e-mail surveys that is not summarized in Tables 1 through 10 can be found in Attachment 2. Supplemental information provided by the organizations participating in this survey or obtained from their websites can be found in Attachment 3.

Table 1. Mission statement and/or purpose of technical resource center (survey question 1).

Technical Resource Center Name	Mission Statement and/or Purpose
California Stormwater Quality Association (CASQA)	The specific purpose of CASQA is to assist those entities charged with stormwater quality management responsibilities with the development and implementation of stormwater quality goals and programs.
Center for Watershed Protection (CWP)	The CWP works to protect, restore, and enhance our streams, rivers, lakes, wetlands, and bays. We create viable solutions and partnerships for responsible land and water management so that every community has clean water and healthy natural resources to sustain diverse life.
Chesapeake Stormwater Network (CSN)	<p>The CSN advocates for reform of federal, state and local laws, permits, regulations and design manuals to promote more sustainable stormwater management in the Chesapeake Bay. The interactive network aligns and integrates the efforts of thousands of individuals working on the stormwater problem across the Bay.</p> <p>The CSN seeks to improve on the ground implementation of more sustainable stormwater management and environmental site design practices in each of 1,300 communities and seven states in the Chesapeake Bay Watershed.</p>
Low Impact Development Center	The Low Impact Development Center was established to develop and provide information to individuals and organizations dedicated to protecting the environment and our water resources through proper site design techniques that replicate pre-existing hydrologic site conditions.
National Stormwater Center	Our mission is to provide required training to qualify stormwater inspectors and stormwater personnel, and to provide stormwater permit compliance assistance to industrial, construction and municipal stormwater permittees. We accomplish this with variety of educational programs, services, tools and resources developed by former enforcement officials who were instrumental in the development of the National Pollutant Discharge Elimination System (NPDES) program.
New Jersey Corporation for Advanced Technology (NJCAT)	As a not-for-profit corporation, NJCAT is a leader in environmental and energy technology innovation for a cleaner, sustainable environment, with the related positive economic effects, through the utilization of technology based-products and services. This is achieved through independent technology verification, and education and information on emerging environmental and energy technology fields. NJCAT provides credible and reliable technology information for technology developers, corporations, New Jersey's research universities and government, and functions as a public-private partnership to establish connections between environmental and energy technology solutions and public policy, regulatory and economic initiatives.
Sacramento State Office of Water Programs	To provide cost-effective solutions for protecting and enhancing water resources, public health, and the environment through training, scientific research, and public education.
University of New Hampshire Stormwater Center (UNHSC)	The UNH Stormwater Center is dedicated to the protection of water resources through effective stormwater management. The primary functions of the center are twofold: (i) Research and development of stormwater treatment systems, (ii) To provide resources to the stormwater management community currently facing the design and implementation of Phase II requirements.
Villanova Urban Stormwater Partnership (VUSP)	The mission of the VUSP is to advance the evolving field of sustainable stormwater management and to foster the development of public and private partnerships through research on innovative stormwater Best Management Practices, directed studies, technology transfer and education.

See Attachment 2 for additional information.

The CWP and NJCAT also had vision statements in addition to their mission statements.

Table 2. Establishment of technical resource center (survey question 2).

Technical Resource Center Name	Establishment
California Stormwater Quality Association (CASQA)	Formed in 1989 as the California Stormwater Quality Task Force, a quasi-governmental organization, which advised the State Water Resources Control Board on matters related to developing stormwater regulations. Officially became CASQA in 2002.
Center for Watershed Protection (CWP)	Founded in 1992, the CWP was established with the idea of creating a nonprofit organization dedicated to research and education on various watershed topics.
Chesapeake Stormwater Network (CSN)	The organization was started by private funding (the Keith Campbell Foundation) in 2007 and achieved non-profit status in 2009.
Low Impact Development Center	NA (founded in 1998)
National Stormwater Center	Founded in 1997 by John Whitescarver, a former EPA executive who was instrumental in developing NPDES regulations. The NSC is a Florida not-for-profit, tax deductible corporation organized under section 501(c)(3).
New Jersey Corporation for Advanced Technology (NJCAT)	The New Jersey Legislature enacted the Energy and Environmental Technology Verification (EETV) Act which provides the guidelines for developing the administrative and technical requirements for bringing innovative energy and environmental technologies to the forefront (\$95,000 in 1999).
Sacramento State Office of Water Programs	The OWP was established in 1968 and continues to operate as a nonprofit organization under the authority of California State University, Sacramento. The program remains under the direction of the Civil Engineering Department.
University of New Hampshire Stormwater Center (UNHSC)	NA (founded in 2002 and fully operational in 2004)
Villanova Urban Stormwater Partnership (VUSP)	Founded in 2002 by Dr. Traver after requesting money for a public/private partnership, and receiving money from the state of Pennsylvania.

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website).

Table 3. Primary services of technical resource center (survey question 3).

Technical Resource Center Name	Primary Services	Examples
California Stormwater Quality Association (CASQA)	Training	<ul style="list-style-type: none"> ▪ Workshops/trainings ▪ Handbooks ▪ Annual conferences
Center for Watershed Protection (CWP)	<ul style="list-style-type: none"> ▪ Watershed and Stormwater Services ▪ Research ▪ Training and Education ▪ Professional Membership 	NA
Chesapeake Stormwater Network (CSN)	<ul style="list-style-type: none"> ▪ Training (50%) ▪ Research (30%) ▪ Advocacy (20%) 	Chesapeake Stormwater Training Partnership for designers, engineers, etc. (partnered with National Fish and Wildlife Foundation and CWP)
Low Impact Development Center	<ul style="list-style-type: none"> ▪ Design ▪ Ordinance Development ▪ Outreach ▪ Planning ▪ Training 	NA
National Stormwater Center	<ul style="list-style-type: none"> ▪ Services ▪ Resources ▪ Educational Programs 	<ul style="list-style-type: none"> ▪ Sampling Assistance ▪ Certified Stormwater Inspectors locator ▪ Quarterly newsletter ▪ Certified Stormwater Inspector (CSI) ▪ Advanced Certified Stormwater Inspector (ACSI) ▪ Certified Erosion Inspector (CEI) ▪ Annual Employee Training for Permit Compliance course
New Jersey Corporation for Advanced Technology (NJCAT)	<ul style="list-style-type: none"> ▪ Education ▪ Technology verification ▪ Networking Activities 	NA
Sacramento State Office of Water Programs	<ul style="list-style-type: none"> ▪ Training ▪ Research 	Distance learning, using correspondence, video, or computer-based formats with opportunities for academic credit and continuing education credits.
University of New Hampshire Stormwater Center (UNHSC)	<ul style="list-style-type: none"> ▪ Outreach ▪ Education ▪ Partnering ▪ Research 	<ul style="list-style-type: none"> ▪ Stormwater Technology Demonstration Workshops ▪ Publication of a Biannual Data Report on stormwater system performance ▪ Innovative Stormwater Management Database for the region ▪ Technical Advisory Board provides advice and expertise, and includes academics, state and federal regulators, local government officials, and industry representatives. ▪ Field Facility and Stormwater Control Technologies
Villanova Urban Stormwater Partnership (VUSP)	<ul style="list-style-type: none"> ▪ Outreach and education ▪ Research ▪ Partnership 	NA

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website or additional information was not provided).

Table 4. Primary recipients of technical resource center services (survey question 4).

Technical Resource Center Name	Primary Recipients
California Stormwater Quality Association (CASQA)	<ul style="list-style-type: none"> ▪ Municipal stormwater permit managers ▪ Regulatory community ▪ Practitioners ▪ Two types of members – regular (any entity subject to permitting under an NPDES stormwater permit) and affiliate (interested public or non-public entity not eligible for regular membership) members
Center for Watershed Protection (CWP)	<ul style="list-style-type: none"> ▪ Local Governments ▪ Consulting Firms ▪ Watershed Advocates ▪ State and Federal agencies
Chesapeake Stormwater Network (CSN)	<ul style="list-style-type: none"> ▪ Practitioners ▪ Municipal stormwater permit managers ▪ Research community ▪ Regulatory community ▪ Environmental activist community ▪ Public
Low Impact Development Center	<ul style="list-style-type: none"> ▪ Public ▪ Practitioners ▪ Agencies
National Stormwater Center	<ul style="list-style-type: none"> ▪ Permittees
New Jersey Corporation for Advanced Technology (NJCAT)	<ul style="list-style-type: none"> ▪ Technology developers ▪ Members ▪ Universities ▪ New Jersey businesses ▪ Public
Sacramento State Office of Water Programs	<ul style="list-style-type: none"> ▪ Stormwater/wastewater dischargers (California Department of Transportation, El Dorado County Department of Transportation, Sacramento Regional County Sanitation District, and Sacramento County ▪ Stormwater/wastewater regulators (California State Water Resources Control Board, the California Department of Toxic Substances Control, and the California Integrated Waste Management Board) ▪ CASQA ▪ United States Geological Survey ▪ National Cooperative Highway Research Program ▪ United States Environmental Protection Agency ▪ Water treatment plant and municipal and industrial wastewater treatment plant operators across the United States and Canada
University of New Hampshire Stormwater Center (UNHSC)	<ul style="list-style-type: none"> ▪ Public ▪ Industry ▪ Government officials
Villanova Urban Stormwater Partnership (VUSP)	<ul style="list-style-type: none"> ▪ State of Pennsylvania ▪ Non-technical public ▪ Consultants ▪ Universities

See Attachment 2 for additional information.

Table 5. Primary geographic scope of technical resource center (survey question 5).

Technical Resource Center Name	Geographic Scope
California Stormwater Quality Association (CASQA)	<ul style="list-style-type: none"> ▪ Local – California
Center for Watershed Protection (CWP)	<ul style="list-style-type: none"> ▪ National ▪ Local
Chesapeake Stormwater Network (CSN)	<ul style="list-style-type: none"> ▪ Regional – Chesapeake Bay ▪ Connections are developed between different terrain conditions rather than state/county lines (coastal, karst, ultra urban, etc.)
Low Impact Development Center	<ul style="list-style-type: none"> ▪ Regional ▪ National
National Stormwater Center	<ul style="list-style-type: none"> ▪ Local – Florida
New Jersey Corporation for Advanced Technology (NJCAT)	<ul style="list-style-type: none"> ▪ Local – New Jersey ▪ Regional– Technology Acceptance Reciprocity Partnership (TARP) Protocol (Tier II) endorsed by California, Massachusetts, Maryland, Pennsylvania, and Virginia
Sacramento State Office of Water Programs	<ul style="list-style-type: none"> ▪ Local – California ▪ National (training materials) – United States ▪ International (training materials) – Canada and around the world
University of New Hampshire Stormwater Center (UNHSC)	<ul style="list-style-type: none"> ▪ Local – New Hampshire ▪ Regional – New England
Villanova Urban Stormwater Partnership (VUSP)	<ul style="list-style-type: none"> ▪ Local ▪ International

See Attachment 2 for additional information.

Table 6. Brief history of technical resource center (survey question 6).

Technical Resource Center Name	History
California Stormwater Quality Association (CASQA)	Formed in 1989 as the California Stormwater Quality Task Force, the SWQTF was a quasi-governmental organization, which advised the State Water Resources Control Board on matters related to developing stormwater regulations - more specifically, it was intended to help California comply with the municipal and industrial NPDES stormwater mandates of the federal Clean Water Act. The Task Force officially became CASQA in September 2002, when its formal 501(c)(3) non-profit organization status was approved. Early in 2004, CASQA selected Geoff Brosseau as its first Executive Director. Mr. Brosseau is charged with leading CASQA through its early years as a non-profit corporation and establishing a firm foundation for the organization's educational and scientific mission.
Center for Watershed Protection (CWP)	Founded in 1992, the CWP was established with the idea of creating a nonprofit organization dedicated to research and education on various watershed topics. With a focus on protecting streams, lakes, and estuaries, the organization grew over the years to become a national leader on stormwater management and watershed planning. The CWP has continued to maintain the basic premise that watersheds are a logical focus point for environmental efforts, and our services have expanded to include membership and watershed services along with research and education.
Chesapeake Stormwater Network (CSN)	CSN began in 2007 and has continued to grow with the growth of stormwater awareness in the Chesapeake Bay area. Stormwater is now one of the top two environmental issues in the region.
Low Impact Development Center	NA (founded in 1998)
National Stormwater Center	NA (founded in 1997 by John Whitescarver)
New Jersey Corporation for Advanced Technology (NJCAT)	The New Jersey Legislature enacted the Energy and Environmental Technology Verification (EETV) Act which provides the guidelines for developing the administrative and technical requirements for bringing innovative energy and environmental technologies to the forefront (\$95,000 in 1999).
Sacramento State Office of Water Programs	<p>The OWP Training Group began developing operator training programs in 1968 in response to a request from Sacramento County wastewater treatment plant operators to the California State University – Sacramento (CSUS) Civil Engineering Department for training on treatment plant operations. A successful proposal to the EPA provided funding for the initial correspondence course. Subsequent manuals and courses have been developed, administered, monitored, and kept current by OWP on a financially self-sustaining basis. OWP now offers more than 20 distance learning courses and sells approximately 50,000 manuals and 13,000 courses annually. The Training Group has sold over one million training manuals worldwide.</p> <p>The Research Group was created in 1997 to provide technical expertise and management services to the California Department of Transportation's (Caltrans) Stormwater Program. As stormwater regulations in California became more rigorous and widely spread, the Research Group began providing applied stormwater research services to other stormwater dischargers and regulators. Since its inception, the Research Group has focused mainly on stormwater runoff characterization, stormwater best management practice performance testing, stormwater erosion control, and cost analyses. However, the Research Group continues to expand its services in the area of water resources.</p>
University of New Hampshire Stormwater Center (UNHSC)	The center began in 2002 with the full site operational in August 2004.
Villanova Urban Stormwater Partnership (VUSP)	VUSP started in 2002 by Dr. Robert Traver and a few graduate students. It has since picked up additional faculty and students for a total of approximately six professors and seven graduate students (a mix of PhD and Masters students) from the civil and environmental engineering departments (although branching out into the biology department as well). With the recent downturn of the economy funding has decreased. There has been a reduced level of support from private partners as well as state funding opportunities.

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website or additional information was not provided).

Table 7. Organizational structure of technical resource center (survey question 7).

Technical Resource Center Name	Organization's Structure
California Stormwater Quality Association (CASQA)	The board of directors governs five committees (Awards, Bylaws Review, Executive Program (EPC), Finance, and Membership Committees) and the Executive Director. The EPC guides a series of subcommittees and the CASQA representatives (see Attachment 3 for the organizational structure flow chart).
Center for Watershed Protection (CWP)	The board of directors provides oversight to the Executive Director. There are five program directors that focus on specific service areas and supervision of 21 staff. Employees include administrative staff, engineers, planners, biologists, and other watershed professionals.
Chesapeake Stormwater Network (CSN)	The organization is guided by a seven member board with Tom Schueler as the only staff member. The organization is also guided by a network of other NGOs who are not part of the organization but provide useful information.
Low Impact Development Center	NA
National Stormwater Center	NA
New Jersey Corporation for Advanced Technology (NJCAT)	NA (staff are governed by a board of trustees)
Sacramento State Office of Water Programs	OWP's management structure consists of a Director (who must be a faculty member in the University's Department of Civil Engineering), an Associate Director, an Engineering Manager, a Publications Manager, an IT Manager, and two Administrative Services Managers. The Research Group is composed mostly of professional staff and has a flat organizational structure: the level of responsibility for each individual is mostly project specific. The Training Group is composed of professional staff as well as non-technical hourly staff. Hourly staff are responsible for administering orders for manuals and courses, grading tests, and shipping/receiving.
University of New Hampshire Stormwater Center (UNHSC)	NA
Villanova Urban Stormwater Partnership (VUSP)	The organization is led by Dr. Robert Traver with faculty, a laboratory technician, and students (graduate and undergraduate).

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website or additional information was not provided).

NGOs: non-governmental organizations

Table 8. Staff summary for technical resource center (survey question 8).

Technical Resource Center Name	Staff Summary
California Stormwater Quality Association (CASQA)	<ul style="list-style-type: none"> ▪ No staff ▪ 12 board members ▪ 14 sub-committee chairs/co-chairs ▪ 1 executive director
Center for Watershed Protection (CWP)	<ul style="list-style-type: none"> ▪ 2 part time staff (32 hours) ▪ 19 full time staff
Chesapeake Stormwater Network (CSN)	<ul style="list-style-type: none"> ▪ 1 full time staff ▪ Administrative tasks (accounting, etc.) are outsourced to other NGOs
Low Impact Development Center	<ul style="list-style-type: none"> ▪ 6 staff
National Stormwater Center	<ul style="list-style-type: none"> ▪ 5 staff (instructors) ▪ 1-2 administrative staff (assumption)
New Jersey Corporation for Advanced Technology (NJCAT)	NA
Sacramento State Office of Water Programs	<ul style="list-style-type: none"> ▪ 30 full time staff ▪ 15 part time staff (mostly undergraduate and graduate students)
University of New Hampshire Stormwater Center (UNHSC)	<ul style="list-style-type: none"> ▪ 3 faculty ▪ 2 staff members ▪ 3 graduate students ▪ 15 undergraduate students
Villanova Urban Stormwater Partnership (VUSP)	<ul style="list-style-type: none"> ▪ 6 professors (professors supplement their faculty salaries) ▪ 7 graduate students (PhD and Masters) ▪ 1 full time laboratory technician

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website or additional information was not provided).

Table 9. Funding sources for technical resource center (survey question 9).

Technical Resource Center Name	Funding Sources
California Stormwater Quality Association (CASQA)	NA
Center for Watershed Protection (CWP)	<ul style="list-style-type: none"> ▪ 92 percent - government grants and contracts (federal, state and local) ▪ 5 percent - foundations ▪ < 1 percent - individual donations ▪ < 1 percent - corporate donations
Chesapeake Stormwater Network (CSN)	<ul style="list-style-type: none"> ▪ 50 percent - federal grants ▪ 30 percent - state grants ▪ 20 percent - private foundations ▪ The organization outsources many of the administrative tasks (accounting, etc.) to other NGOs. By outsourcing, >85% of funds can be put towards technical work. ▪ Annual budget of \$350,000
Low Impact Development Center ^a	<ul style="list-style-type: none"> ▪ State and federal grants ▪ Training program is funded through a GSA grant (GS-10F-0084N)
National Stormwater Center ^a	<ul style="list-style-type: none"> ▪ Newsletter ▪ Products ▪ Training fees
New Jersey Corporation for Advanced Technology (NJCAT) ^a	<ul style="list-style-type: none"> ▪ Initial \$95,000 from state ▪ Technology verification fees ▪ Membership fees and in-kind contributions (based on company size)
Sacramento State Office of Water Programs	<ul style="list-style-type: none"> ▪ > 95 percent – State of California ▪ < 5 percent – contracts with public and private sectors ▪ The Training Group is funded completely by the fees collected for the operator training manuals and distance learning courses.
University of New Hampshire Stormwater Center (UNHSC)	<ul style="list-style-type: none"> ▪ Basic, continuing funding: Cooperative Institute for Coastal and Estuarine Environmental Technology and NOAA ▪ Additional funding: <ul style="list-style-type: none"> ○ United States Environmental Protection Agency ○ Maine Department of Transportation ○ New Hampshire Estuaries Project ○ New Hampshire Sea Grant ○ Rhode Island Department of Environmental Management ○ Industry associations (Northern New England Concrete Promotion Association, North East Cement Shippers Association) ○ Manufacturers of the systems tested
Villanova Urban Stormwater Partnership (VUSP)	<ul style="list-style-type: none"> ▪ Initial state funding of \$300,000 over 4 years for setting up partnership ▪ \$60,000/year for 10 years – Section 319 National Monitoring Fund ▪ Pennsylvania Growing Greener (watershed grant) – project-specific funding (declining funds in recent years) ▪ Partners ~ 8-9 corporate memberships (2-\$5,000, 6-\$2,500) ▪ Conference – 2 day conference (~\$200 per person) ▪ Most funding – yearly basis with some multi-year, project focused

^a Assumptions from organization’s website.

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website or additional information was not provided).

GSA: General Services Administration

NOAA: National Oceanic and Atmospheric Administration

Table 10. Office location and size of technical resource center (survey question 10).

Technical Resource Center Name	Office Location and Size
California Stormwater Quality Association (CASQA)	<ul style="list-style-type: none"> ▪ No office – “virtual” ▪ Board and sub-committees live throughout California and meetings are held in different locations.
Center for Watershed Protection (CWP)	<ul style="list-style-type: none"> ▪ Main headquarters in Ellicott City, Maryland ~ 4,000 square feet ▪ Satellite office in Charlottesville, Virginia ▪ Remote employees in Leesburg, Virginia and Ithaca, New York
Chesapeake Stormwater Network (CSN)	First office in Tom Schueler’s home but now located in an office in Ellicott City
Low Impact Development Center	NA (Beltsville, Maryland)
National Stormwater Center	NA (office may exist, yet there is no training center; instructors travel to clients to provide the training)
New Jersey Corporation for Advanced Technology (NJCAT)	NA (Rutgers EcoComplex on the Rutgers’ campus)
Sacramento State Office of Water Programs	On the campus of California State University, Sacramento with 11,250 square feet of office space
University of New Hampshire Stormwater Center (UNHSC)	NA (Gregg Hall of UNH)
Villanova Urban Stormwater Partnership (VUSP)	No office – organization is run out of existing faculty offices

See Attachment 2 for additional information.

NA: not available (organization did not respond to survey and information could not be found on their website or additional information was not provided).

ATTACHMENT 1

Telephone and E-mail Record

Table 1-1. Documentation of telephone calls and e-mail requests for the Stormwater Technical Resource Center survey.

Name	Website	Contact Name	Position	E-mail	Phone	Contact Status
California Stormwater Quality Association (CASQA)	www.casqa.org	NA	NA	info@casqa.org	650-366-1042	VM and email on 6/8; Followed up with email on 6/15. Monica emailed on 6/21 - busy, and unable to complete questionnaire. Recommends using website. Responded to email requesting info on staff and funding, while the rest can be found online.
Center for Watershed Protection (CWP)	www.cwp.org	Hye Yeong Kwon David Hirschman	Executive Director Program Director	djh@cwp.org	434-293-6355	VM on 6/8; David returned call on 6/15 but had not received questionnaire. Re-sent survey via e-mail - he will reply or send on to more knowledgeable staff at CWP. Emailed ED - 6/29. Received completed survey from Kwon on 6/29.
Chesapeake Stormwater Network (CSN)	www.chesapeakestormwater.net	Tom Schueler	Executive Director	watershedguy@hotmail.com	410-608-7117	COMPLETE - 6/8
Low Impact Development Center	www.lowimpactdevelopment.org	Neil Weinstein	Executive Director	info@lowimpactdevelopment.org	301-982-5559	Spoke with Chris Kloss on 6/7 - re-sent survey via e-mail - Chris will ask Neil to respond; Sent follow-up e-mail to Chris on 6/17;
National Stormwater Center	www.npdes.com	John Whitescarver Karen Byldon	Excutive Director Adminstrative Staff	info@npdes.com	888-288-6852	Spoke with Karen on 6/2 - letter sent to wrong address. Re-sent letter/survey via e-mail; Spoke on 6/8 - survey forwarded to Executive Director (ED). Spoke with Karen (6/17) who will remind the ED to return questionnaire by early next week. Spoke with Diane (7/1) - wouldn't answer any questions, needed the ED to answer them.
New Jersey Corporation for Advanced Technology (NJCAT)	http://www.njcat.org/	Sandy Blick (NJDEP) Nancy Belonzi (previously Rhea Weinberg Brekke)	NA	nancy.belonzi@oeg.state.nj.us rwbrekke@njcat.org	609-499-3600 (609-633-7045 - SB)	VM on 6/2; VM and e-mail on 6/9; Called on 6/17 - spoke with operator and Rhea no longer works for NJCAT. Provided additional name and email. Email sent to Nancy Belonzi on 6/17. Called Sandy Blick as recommended by Filterra - VM.
Sacramento State Office of Water Programs	http://www.owp.csus.edu/index.php	Nadine Cross Dr. Ramzi Mahmood	Admin Support -Water Dept Chair & Director	wateroffice@owp.csus.edu	Gen - 916-278-6142 N.C. - 916-278-8100	New to list - letter sent out on 6/4; Left VM for Nadine Cross on 6/10; Spoke with Nadine (6/10) - she will pass to the Director and around the office for input. Sent a reminder e-mail to Nadine (6/17); received completed questionnaire via e-mail on 6/21.
University of New Hampshire Stormwater Center (UNHSC)	www.unh.edu/erg/cstev	Jamie Houle	Outreach Coordinator/Program Manager	james.houle@unh.edu	603-767-7091	VM on 6/2; Spoke with Jaime on 6/9 - he is requesting approval from Director before talking with us (re-sent survey via e-mail). Follow-up e-mail on 6/19.
Villanova Urban Stormwater Partnership (VUSP)	www3.villanova.edu/vusp	Dr. Robert G. Traver	Director	robert.traver@villanova.edu	610-519-7899	COMPLETE - 6/7

NA = not available

VM = voicemail

ATTACHMENT 2

Completed Surveys

Stormwater Technical Resource Center Questionnaire

Organization name	Chesapeake Stormwater Network
Contact name	Tom Schueler
Contact phone number	410-608-7117
Contact e-mail address	watershedguy@hotmail.com

1. What is your organization's mission statement and/or purpose?

The Chesapeake Stormwater Network advocates for reform of federal, state and local laws, permits, regulations and design manuals to promote more sustainable stormwater management in the Chesapeake Bay. The interactive network aligns and integrates the efforts of thousands of individuals working on the stormwater problem across the Bay.

The CSN seeks to improve on the ground implementation of more sustainable stormwater management and environmental site design practices in each of 1300 communities and seven states in the Chesapeake Bay Watershed.

Schueler:

Mission is focused on serving the 6 different sectors (described in #3).

2. By what authority was your organization originally established?

The organization was started by private funding (the Keith Campbell Foundation) in 2007 and achieved non-profit status in 2009.

3. What primary services does your organization offer to meet your stated mission and/or purpose?

50% - Training – Chesapeake Stormwater Training Partnership (supported by large federal grant) for designers, engineers, etc (partnered with National Fish and Wildlife Foundation and CWP)

30% - Research/new stormwater content for local/state agencies (e.g. new design specs)

20% - Advocacy in local/state arenas

4. Who are the primary recipients of your organization's services?

6 different sectors:

- Practitioners
- Municipal SW permit managers
- Research community
- Regulatory community
- Environmental activist community
- Public

Largest focus: local SW managers, design engineers, and plan reviewers

5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)?

The Chesapeake Bay (regional). Connections are developed between different terrain conditions rather than state/county lines (coastal, karst, ultra urban, etc).

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

CSN began in 2007 and has continued to grow with the growth of stormwater awareness in the Chesapeake Bay area. Stormwater is now one of the top two environmental issues in the region.

7. Please provide a brief summary of your organization's structure.

The organization is guided by the seven member board.

Tom Schueler is the only staff member

The network of other NGOs with training and research – not part of the organization but provide useful information to CSN.

8. Do you have any part time or full time staff? If so, how many?

1 full time staff member – Tom Schueler

The organization outsources many of the administrative (accounting, etc) to other NGOs, therefore only has an overhead rate of 5 percent.

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

50% - federal grants

30% - state grants

20% - private foundations

The organization outsources many of the administrative (accounting, etc) to other NGOs.

Annual budget of \$350K. By outsourcing, >85% of funds can go toward technical work. The organization is in contact with Center for Watershed Protection and Alliance for the Chesapeake Bay.

Diversity of funding sources is essential. Federal funding alone is not reliable for stormwater (example – 104(b)(3) EPA funding has disappeared). Many stormwater centers have come and gone. Recommends using state funding or providing services to local government/consulting firm model.

10. Where is your office located? How large is your office (i.e., square footage)?

The office began in his home office but has since moved to an office space in Ellicott City.

Additional Information:

- CSN was started by Tom Schueler who co-founded the Center for Watershed Protection.
- Cautioned working with Universities as the high overhead rates can reduce the funding (CSN has only a 5% overhead rate).
- Recommends the NC State model (Bill Fund and Greg Jennings) as an effective model and training with state. Acts as an extension role – good connection with local government.
- Structural recommendation: Create an external advisory board that includes progressive municipal environmental managers and designers for funding and to keep the university community focused on practical application of practices/training needs/etc.
- Recommends Robert Traver's (VUSP) approach of regularly sending out emails to 150+ corporate partners, etc.

- Need to share practical information and prevent the disconnect of the research community from the practical needs. Need a vehicle for the research community and a strong extension component. Recommends outsourcing to other NGOs.

- Currently CSN shares information via emails, meetings, and website to its 400-500 members. Collaborative approach to devise solutions rather than manuals developed by consulting firms. This is done in a technical bulletin which is written with peers in the community and reviewed by the experts in the field. He believed that participation is usually absent in state guidance.

Stormwater Technical Resource Center Questionnaire

Organization name	California Stormwater Quality Association
Contact name	Monica R. Espinoza
Contact phone number	650-366-1042
Contact e-mail address	info@casqa.org

1. What is your organization's mission statement and/or purpose?

The specific purpose of CASQA is to assist those entities charged with stormwater quality management responsibilities with the development and implementation of stormwater quality goals and programs.

To fulfill this mission, CASQA makes recommendations for stormwater discharge control programs that:

1. Are technically and economically feasible,
2. Provide significant environmental benefits and protect designated beneficial uses of water,
3. Promote the advancement of stormwater management, science, and technology, and
4. Effect compliance with federal and state stormwater laws and regulations.

CASQA's primary goals and objectives are to:

1. Promote the development and application of appropriate water quality standards for
2. discharges from storm drainage systems;
3. Develop better understanding of the effectiveness of best management practices (BMPs) and appropriate BMP performance standards;
4. Increase awareness and knowledge of stormwater management issues and foster broad participation in the Association;
5. Promote consistent implementation of the stormwater programs including technical and financial resourcing;
6. Advance the understanding of pollutants of concern, their sources, transport, and fate;
7. Promote the application of the maximum extent practicable (MEP) standard in a flexible manner that takes into account cost considerations and water quality effects;
8. Promote the development and implementation of water quality attainment strategies (e.g., 303(d) listings, total maximum daily loads (TMDLs)) that provide real solutions to real problems; and
9. Promote the development of a statewide stormwater policy that establishes a proactive and progressive approach for stormwater programs and ensures the protection of water quality and beneficial uses.

2. By what authority was your organization originally established?

Formed in 1989 as the California Stormwater Quality Task Force, the SWQTF was a quasi-governmental organization, which advised the State Water Resources Control Board on matters related to developing stormwater regulations (see history question).

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Training – workshops/trainings, handbooks, annual conferences

4. Who are the primary recipients of your organization’s services?

Municipal SW permit managers
Regulatory community
Practitioners
Two types of members – regular members (Any entity subject to permitting under an NPDES stormwater permit) and affiliate members (interested public or non-public entity not eligible for regular membership)

5. What is the primary geographic scope of your organization’s services (i.e., local, regional, national)?

California

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

[From website] Formed in 1989 as the California Stormwater Quality Task Force, the SWQTF was a quasi-governmental organization, which advised the State Water Resources Control Board on matters related to developing stormwater regulations - more specifically, it was intended to help California comply with the municipal and industrial National Pollutant Discharge Elimination System (NPDES) stormwater mandates of the federal Clean Water Act. The Task Force officially became CASQA in September 2002, when its formal 501(c)(3) non-profit organization status was approved. Early in 2004, CASQA selected Geoff Brosseau as its first Executive Director. Mr. Brosseau is charged with leading CASQA through its early years as a non-profit corporation and establishing a firm foundation for the organization's educational and scientific mission. He serves as a leader with a vision for the future and growth of CASQA.

7. Please provide a brief summary of your organization's structure.

See flow chart in Attachment 3.

8. Do you have any part time or full time staff? If so, how many?

No staff. 12 board members, 14 sub-committee chairs/co-chairs. Geoff Brosseau is the Executive Director.

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

Unable to find funding information

10. Where is your office located? How large is your office (i.e., square footage)?

No office – “virtual”. Board and sub-committees live throughout California and meetings are held in different locations.

Information for this questionnaire was gathered from the website and assistance from administrative staff.

Stormwater Technical Resource Center Questionnaire

Organization name	Center for Watershed Protection
Contact name	Hye Yeong Kwon
Contact phone number	410-461-8323 ext 212
Contact e-mail address	hyk15@hotmail.com

1. What is your organization's mission statement and/or purpose?

MISSION

The Center for Watershed Protection works to protect, restore, and enhance our streams, rivers, lakes, wetlands, and bays. We create viable solutions and partnerships for responsible land and water management so that every community has clean water and healthy natural resources to sustain diverse life.

VISION

The Center for Watershed Protection's vision is a nation that has significantly improved the ecological and hydrologic condition of its degraded water bodies and has stemmed further degradation of clean water and healthy watersheds. We believe clean water and healthy natural resources are essential to life on earth.

We envision:

- A network of watershed practitioners building a national movement towards a watershed approach
- Communities investing in infrastructure changes that are reflective of the environmental, economic, and social benefits of watershed protection, restoration, and enhancement
- Land development occurring with minimal impacts to water resources
- Individuals taking tangible steps to improve their local watersheds so that every community has clean drinking water, and fishable, swimmable waters that support diverse life.

Our vision is built upon our unique ability to advance, synthesize and widely disseminate watershed science by translating this knowledge into practical tools and techniques. Through our collaborative spirit and ability to integrate multiple disciplines, jurisdictions, and issues into a comprehensive watershed approach we endeavor to lead the nation in the development and implementation of the most effective stormwater and watershed management practices.

2. By what authority was your organization originally established?

I'm not sure what the question is here. We are a 501(c)(3) incorporated in the state of Virginia and as a foreign corporation in the state of Maryland.

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Watershed and Stormwater Services
Research
Training and Education
Professional Membership

4. Who are the primary recipients of your organization's services?

Local Governments
Consulting Firms
Watershed Advocates
State and Federal agencies

5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)?

National combined with lots of local work.

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

Founded in 1992, the Center for Watershed Protection was established with the idea of creating a nonprofit organization dedicated to research and education on various watershed topics. With a focus on protecting streams, lakes, and estuaries, the organization grew over the years to become a national leader on stormwater management and watershed planning.

The Center has continued to maintain the basic premise that watersheds are a logical focus point for environmental efforts, and our services have expanded to include membership and watershed services along with research and education.

Our **organizational goals** include:

- furthering application of the watershed approach
- inspiring and empowering others to take action

- continually testing and refining our practices
- working to ensure regulations are effective
- long-term economic and environmental sustainability of the organization (maybe this one is just internal)

Our audiences include our members, local governments, and other stakeholders throughout the country that are interested in developing and applying solutions for cleaner water and healthier natural resources.

With our headquarters located in Ellicott City, Maryland, additional offices are located in Charlottesville, Virginia and Ithaca, New York.

7. Please provide a brief summary of your organization's structure.

The Board of Directors provides oversight to the Executive Director. There are five program directors that focus on specific service areas and supervision of 21 staff. Employees are composed of administrative staff, engineers, planners, biologists, and other watershed professionals.

8. Do you have any part time or full time staff? If so, how many?

We have two part time staff (32 hours) and the remaining 19 are full time staff.

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

Our organization is funded through federal, state and local government grants and contracts (92%) as well as foundations (5%), individual donations (<1%), corporate donations (<1%).

10. Where is your office located? How large is your office (i.e., square footage)?

Our main headquarters is in Ellicott City, Maryland. We also have a satellite office in Charlottesville, Virginia and remote employees in Leesburg, Virginia and Ithaca, New York. In Ellicott City, we have about 4,000 square feet of space.

Stormwater Technical Resource Center Questionnaire

Organization name	Low Impact Development Center, Inc.
Contact name	Neil Weinstein
Contact phone number	301-982-5559
Contact e-mail address	NA

1. What is your organization's mission statement and/or purpose?

The Low Impact Development Center was established to develop and provide information to individuals and organizations dedicated to protecting the environment and our water resources through proper site design techniques that replicate pre-existing hydrologic site conditions.

Balancing growth and environmental integrity, The Low Impact Development Center (LID), Inc. is a non-profit 501(c)(3) organization dedicated to research, development, and training for water resource and natural resource protection issues. The Center focuses on furthering the advancement of Low Impact Development technology. Low Impact Development is a new comprehensive land planning and engineering design approach with a goal of maintaining and enhancing the pre-development hydrologic regime of urban and developing watersheds. This design approach incorporates strategic planning with micro-management techniques to achieve superior environmental protection, while allowing for development or infrastructure rehabilitation to occur. This innovative approach can be used to help meet a wide range of Wet Weather Flow (WWF) control and community development goals.

2. By what authority was your organization originally established?

Founded in 1998.

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Design
Ordinance Development
Outreach
Planning
Training

4. Who are the primary recipients of your organization's services?

Public
Practitioners
Agencies

5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)?

Regional, yet work with clients nationally (including Milwaukee, Puget Sound, etc.)

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

Unable to determine.

7. Please provide a brief summary of your organization's structure.

Unable to determine.

8. Do you have any part time or full time staff? If so, how many?

6 staff

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

Most projects are funded through state and federal grants
\$1,250,000 from a GSA grant (GS-10F-0084N) to provide training

10. Where is your office located? How large is your office (i.e., square footage)?

Beltsville, Maryland 20705

Unable to receive completed questionnaire from LIDC – survey was completed using information gathered from the organization's website.

Stormwater Technical Resource Center Questionnaire

Organization name	NJCAT (NJ Corporation for Advanced Technology)
Contact name	NA
Contact phone number	NA
Contact e-mail address	NA

1. What is your organization's mission statement and/or purpose?

Mission: As a not-for-profit corporation, NJCAT is a leader in environmental and energy technology innovation for a cleaner, sustainable environment, with the related positive economic effects, through the utilization of technology based-products and services. This is achieved through independent technology verification, and education and information on emerging environmental and energy technology fields. NJCAT provides credible and reliable technology information for technology developers, corporations, New Jersey's research universities and government, and functions as a public-private partnership to establish connections between environmental and energy technology solutions and public policy, regulatory and economic initiatives.

Vision: NJCAT will be recognized as the accelerator of new environmental and energy technologies into the marketplace for the purpose of protecting and preserving the State's natural resources and economic viability. NJCAT's environmental/energy technology program integrates education and training, develops testing protocols and verifies the performance of innovative technologies that improve protection of human health and the environment.

NJCAT was created to promote the retention and growth of technology-based businesses in emerging environmental and energy fields in New Jersey. NJCAT provides innovators with the regulatory, commercial, technological, and financial assistance required to bring their ideas to market successfully. Specifically, NJCAT functions to:

- Advance policy strategies and regulatory mechanisms to promote technology commercialization,
- Identify, evaluate, and recommend specific technologies for which the regulatory and commercialization process should be facilitated,
- Establish relationships/alliances to bring new technologies to market and new business to the state, and
- Assist in the identification of markets and applications for commercialized technologies.

2. By what authority was your organization originally established?

The New Jersey Legislature enacted the Energy and Environmental Technology Verification (EETV) Act which provides the guidelines for developing the administrative and technical requirements for bringing innovative energy and environmental technologies to the forefront (\$95K in 1999).

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Education – trainings, etc.
Technology verification
Networking Activities

4. Who are the primary recipients of your organization’s services?

NJCAT not only assists participants, but provides opportunities for its members as well. Members benefit from early, focused exposure to new technologies and have the opportunity to form strategic alliances with other members, participants and universities to collaborate on the development of these technologies. NJCAT also offers support services for research and commercialization, as well as investment opportunities.

New Jersey's businesses and citizens will benefit through a healthier economy and environment; new higher-paying, high-tech jobs; the more efficient use of research dollars; better coordination between industry, universities and government; and the availability of new technologies to address our emerging needs.

NJCAT can provide assistance to technology developers in a number of ways. The corporation focuses on a capital investment in possibilities for a particular technology system and identifies sources of federal grants or creates collaborative opportunities with member companies or other parties interested in underwriting research and development costs. Essentially, NJCAT is a partnership that provides a forum linking the inventor-entrepreneur with established corporations, research facilities, and inventors to catalyze business development.

5. What is the primary geographic scope of your organization’s services (i.e., local, regional, national)?

New Jersey
Technology Acceptance Reciprocity Partnership (TARP) Protocol (Tier II) for Stormwater Best Management Practice Demonstrations endorsed by California, Massachusetts, Maryland, New Jersey, Pennsylvania, and Virginia.

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

The New Jersey Legislature enacted the Energy and Environmental Technology Verification (EETV) Act which provides the guidelines for developing the administrative and technical requirements for bringing innovative energy and environmental technologies to the forefront (\$95K in 1999).

7. Please provide a brief summary of your organization's structure.

The staff are governed by a board of trustees.

8. Do you have any part time or full time staff? If so, how many?

Unable to determine (employees from the Science and Technology Commission or NJDEP)

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

Initial \$95,000 from state
Technology verification fees
Membership fees and in-kind contributions (determined by company size)

10. Where is your office located? How large is your office (i.e., square footage)?

Rutgers EcoComplex on the Rutgers' campus

Unable to contact this organization – all information was collected from the NJCAT website.

Stormwater Technical Resource Center Questionnaire

Organization name	National Stormwater Center
Contact name	John Whitescarver
Contact phone number	888-288-6852
Contact e-mail address	NA

1. What is your organization’s mission statement and/or purpose?

Our mission is to provide required training to qualify stormwater inspectors and stormwater personnel, and to provide stormwater permit compliance assistance to industrial, construction and municipal stormwater permittees. We accomplish this with variety of educational programs, services, tools and resources developed by former enforcement officials who were instrumental in the development of the National Pollutant Discharge Elimination System (NPDES) program.

2. By what authority was your organization originally established?

John Whitescarver – former EPA executive who was instrumental in developing NPDES regulations. National Stormwater Center® is a Florida not-for-profit, tax deductible corporation organized under section 501(c)(3).

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Services – permit requirements
Resources – Sampling Assistance, Subject Matter Experts, Certified Stormwater Inspectors locator, quarterly newsletter
Educational Programs – Certified Stormwater Inspector™ (CSI), Advanced Certified Stormwater Inspector™ (ACSI), Certified Erosion Inspector™ (CEI), Annual Employee Training for Permit Compliance course.

4. Who are the primary recipients of your organization’s services?

Permittees (assumption from website)

- 5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)?**

Florida – local (assumption from website)

- 6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.**

NSC was started in 1997 John Whitescarver.

- 7. Please provide a brief summary of your organization's structure.**

Unable to determine.

- 8. Do you have any part time or full time staff? If so, how many?**

5 Instructors

1-2 Administrative staff (assumption from website)

- 9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.**

Funded through newsletter (\$59.95 per year), products (e.g., SWPPP Template and Compliance Plan at \$495), training fees, etc. (assumption from website)

- 10. Where is your office located? How large is your office (i.e., square footage)?**

Mailing Address P.O. Box 686 Stuart 34995

No training center – travel to clients to provide the training.

Unable to contact this organization – all information was collected from the NSC website.

Stormwater Technical Resource Center Questionnaire

Organization name	California State University, Sacramento, Office of Water Programs (OWP)
Contact name	Nadine Cross
Contact phone number	916-278-8100
Contact e-mail address	nadine.cross@owp.csus.edu

1. What is your organization’s mission statement and/or purpose?

To provide cost-effective solutions for protecting and enhancing water resources, public health, and the environment through training, scientific research, and public education.

2. By what authority was your organization originally established?

OWP was established in 1968 and continues to operate as a nonprofit organization under the authority of California State University, Sacramento. The program remains under the direction of the University’s Civil Engineering Department.

3. What primary services does your organization offer to meet your stated mission and/or purpose?

The OWP Training Group develops and implements training programs and publishes training manuals for operators of water treatment plants, water distribution systems, wastewater collection systems, and municipal and industrial wastewater treatment and reclamation facilities. OWP also offers programs and materials for pretreatment facility inspectors, environmental compliance inspectors, stormwater dischargers, and utility managers. All training is offered as distance learning, using correspondence, video, or computer-based formats with opportunities for academic credit and continuing education and contact hours for operators, supervisors, managers, and administrators.

The OWP Research Group provides technical expertise and research management services for water and wastewater treatment, stormwater policy, and watershed planning issues. OWP research engineers and scientists provide assessments for improving water and wastewater treatment processes; plan, manage, and execute investigations to develop and test the most effective and economical methods for controlling stormwater quality; and provide technical oversight for water quality monitoring and modeling, data assessment, and cost analysis. Specific areas of expertise include:

- Water quality monitoring and evaluation
- Best Management Practices
- Water and wastewater treatment
- Soil science and erosion control
- Cost analyses
- Geographic Information Systems (GIS)
- Water quality modeling
- Technical training
- Development of manuals and brochures

4. Who are the primary recipients of your organization's services?

The primary recipients of research services have been stormwater/wastewater dischargers and regulators. Dischargers include the California Department of Transportation, El Dorado County Department of Transportation, Sacramento Regional County Sanitation District, and Sacramento County. Regulators include the California State Water Resources Control Board, the California Department of Toxic Substances Control, and the California Integrated Waste Management Board. Other recipients include the California Stormwater Quality Association, the United States Geological Survey, the National Cooperative Highway Research Program, and the United States Environmental Protection Agency.

Water treatment plant and municipal and industrial wastewater treatment plant operators across the United States and Canada are the primary recipients of the operator training manuals and distance learning courses. Since its inception, the OWP has sold over 1,000,000 operator training manuals and currently sells approximately 50,000 operator training manuals and 13,000 distance learning courses every year.

5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)?

OWP research engineers work on stormwater research projects throughout the state of California.

Over 95 percent of the operator training manuals and distance learning courses are sold throughout the United States and Canada. The remaining are sold across the globe.

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

The OWP Training Group began developing operator training programs in 1968 in response to a request from Sacramento County wastewater treatment plant operators to the CSUS Civil Engineering Department for training on treatment plant operations. A successful proposal to the

EPA provided funding for the initial correspondence course. Subsequent manuals and courses have been developed, administered, monitored, and kept current by OWP on a financially self-sustaining basis. OWP now offers more than 20 distance learning courses and sells approximately 50,000 manuals and 13,000 courses annually. The Training Group has sold over one million training manuals worldwide.

The Research Group was created in 1997 to provide technical expertise and management services to the California Department of Transportation's (Caltrans) Stormwater Program. As stormwater regulations in California became more rigorous and widely spread, the Research Group began providing applied stormwater research services to other stormwater dischargers and regulators. Since its inception, the Research Group has focused mainly on stormwater runoff characterization, stormwater best management practice performance testing, stormwater erosion control, and cost analyses. However, the Research Group continues to expand its services in the area of water resources.

In collaboration with the California Stormwater Quality Association, OWP is now offering 3 stormwater best management practice (BMP) distance learning courses: New Development and Redevelopment BMPs; Municipal BMPs; and Construction BMPs. An additional course on Industrial and Commercial BMPs will be offered soon.

7. Please provide a brief summary of your organization's structure.

OWP's management structure consists of a Director, who must be a faculty member in the university's Department of Civil Engineering; an Associate Director; an Engineering Manager; a Publications Manager; an IT Manager; and two Administrative Services Managers.

The Research Group is composed mostly of professional staff and has a flat organizational structure: the level of responsibility for each individual is mostly project specific.

The Training Group is composed of professional staff as well as non-technical hourly staff. Hourly staff are responsible for administering orders for manuals and courses, grading tests, and shipping/receiving.

8. Do you have any part time or full time staff? If so, how many?

The OWP has approximately 30 full-time and 15 part-time staff. The professional staff includes ten civil/environmental engineers, a geologist, a hydrologist, four technical editors, three information technologists, one instructional technologist, one graphic design artist, an archivist, and two administrative support managers. The part-time staff consists mostly of undergraduate and graduate students.

- 9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.**

The Research Group is funded completely by contracts with both the public and private sector. Over 95% of the contract authority is with the State of California.

The Training Group is funded completely by the fees collected for the operator training manuals and distance learning courses.

- 10. Where is your office located? How large is your office (i.e., square footage)?**

The Office of Water Programs is located on the campus of California State University, Sacramento, in Sacramento, California. It has approximately 11,250 square feet of office space.

Stormwater Technical Resource Center Questionnaire

Organization name	University of New Hampshire – Stormwater Center
Contact name	Jamie Houle
Contact phone number	603-767-7091
Contact e-mail address	james.houle@unh.edu

1. What is your organization’s mission statement and/or purpose?

The UNH Stormwater Center is dedicated to the protection of water resources through effective stormwater management. The primary functions of the center are twofold: (i) Research and development of stormwater treatment systems, (ii) To provide resources to the stormwater management community currently facing the design and implementation of Phase II requirements.

Description of Center: The UNH Stormwater Center designed, constructed, and runs a facility that provides the controlled testing of stormwater management designs and devices. The primary mission of the Center is the protection of water resources through effective stormwater management. Currently the Center is acting as a unique technical resource for stormwater practitioners by studying a range of issues for specific stormwater management strategies including design, water quality and quantity, cost, maintenance, and operations. The field research facility serves as a site for testing stormwater treatment processes, for technology demonstrations and workshops. The testing results and technology demonstrations are meant to assist in the planning, design, and implementation of effective stormwater management strategies for resource managers.

2. By what authority was your organization originally established?

Unable to determine.

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Outreach – Stormwater Technology Demonstration Workshops

Education – publication of a Biannual Data Report on stormwater system performances, presentations at regional and national venues, website resources, an Innovative Stormwater Management Database for the region, and publications in refereed journals.

Partnering – partners with a variety of public and private participants. Our Technical Advisory Board provides advice and expertise, and includes academics, state and federal regulators, local government officials, and industry representatives.

Research – Field Facility & Stormwater Control Technologies

4. Who are the primary recipients of your organization’s services?

Public
Industry
Government officials
(assumptions from website)

5. What is the primary geographic scope of your organization’s services (i.e., local, regional, national)?

Local – NH, and regional – New England

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

The center began in 2002, and full site operation began in August 2004.

7. Please provide a brief summary of your organization’s structure.

Unable to determine.

8. Do you have any part time or full time staff? If so, how many?

3 Faculty
2 Staff members
3 Graduate students
15 undergraduate students

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

Basic, continuing funding is provided by the Cooperative Institute for Coastal and Estuarine Environmental Technology and the National Oceanic and Atmospheric Administration. Other specific funding has been provided by the United States Environmental Protection Agency, the Maine Department of Transportation, the New Hampshire Estuaries Project, New Hampshire Sea Grant, the Rhode Island Department of Environmental Management, and industry associations (Northern New England Concrete Promotion Association, North East Cement Shippers Association). Funding has also been provided for testing from manufacturers of the various systems tested.

10. Where is your office located? How large is your office (i.e., square footage)?

Office is located in Gregg Hall.

Organization was unable to complete survey. All information was gathered from the organization's website.

Stormwater Technical Resource Center Questionnaire

Organization name	Villanova Urban Stormwater Partnership (VUSP)
Contact name	Dr. Robert G. Traver
Contact phone number	610-519-7899
Contact e-mail address	robert.traver@villanova.edu

1. What is your organization's mission statement and/or purpose?

From website:

The mission of the VUSP is to advance the evolving field of sustainable stormwater management and to foster the development of public and private partnerships through research on innovative stormwater Best Management Practices, directed studies, technology transfer and education.

- Research and directed studies will emphasize sustainable watershed stormwater management planning, implementation, and evaluation.
- Technology transfer will provide tools, guidance and education for the professional.
- Partnership goal is to promote cooperation amongst the private, public and academic sectors.

Initial mission statement was more advocacy focused.

2. By what authority was your organization originally established?

After requesting money for a public/private partnership, Dr. Traver received money from the state of Pennsylvania.

3. What primary services does your organization offer to meet your stated mission and/or purpose?

Outreach & Education, Research, Partnership (website)

Dr. Traver interview:

- 1 – Provide an introduction to the profession by showing how the BMPs work.
- 2 – Develop a technical understanding of these BMPs by collecting long term data

4. Who are the primary recipients of your organization's services?

The main recipients of the services are the state and the profession. The organization reaches out to a broad spectrum of participants from the non-technical to technical consultants/universities.

5. What is the primary geographic scope of your organization's services (i.e., local, regional, national)?

All research is done locally on campus, however their research extends internationally.

6. Please provide a brief history of your organization since inception, including growth or decline in reach and/or scope of services.

Began in 2002 by Dr. Robert Traver and a few grad students. It has since picked up additional faculty and students for a total of approximately six professors and seven graduate students (a mix of Ph.D. and Masters students) from the civil and environmental engineering departments (although are branching out into the biology department as well). With the recent downturn of the economy funding has decreased. There has been a reduced level of support from private partners as well as state funding reductions.

7. Please provide a brief summary of your organization's structure.

Led by Dr. Robert Traver with faculty, lab tech, and students (mainly graduate with some undergraduate as well).

8. Do you have any part time or full time staff? If so, how many?

A total of approximately six professors and seven graduate students (a mix of Ph.D. and Masters students). The professors supplement their faculty salaries as well as supporting seven students. There is one full time lab tech (mainly funded by the William Penn Foundation grant).

9. How is your organization funded (i.e., government grants, individual donations, foundations, corporate donations)? Please provide information on the distribution of funding (i.e., percent of total funding) between each of these sources.

Funding sources (largest to smallest):

- Initial state funding of \$300K over 4 years for setting up partnership
- 60K/year for 10yrs – Section 319 National Monitoring Fund

- PA Growing Greener – a watershed grant system – project specific funding (declining funds in recent years)
- Partners - ~8-9 corporate memberships – 2- \$5K, 6 - \$2.5K
- Conference – 2 day conference with full price fees of a few hundred dollars, with a reduced fee for partners and state employees

Most funding is on a yearly basis with some multi-year. Most funding is project focused. William Penn Foundation supports the one lab tech staff member.

10. Where is your office located? How large is your office (i.e., square footage)?

No real office exists. The organization is run out of the existing faculty offices, especially Dr. Traver.

Final Comments:

Recommendations for the development of the WA Stormwater Center:

1. Develop a logo for the organization – essential to bring attention to the organization.
2. Build demonstration sites that are accessible for the public. This is crucial for developing future support and funding from the community.
3. Hold a conference to share knowledge. One conference every 2 years is recommended.

Additional Partnerships:

VUSP works also with two other research efforts, the TVSSI and LID-MARC.

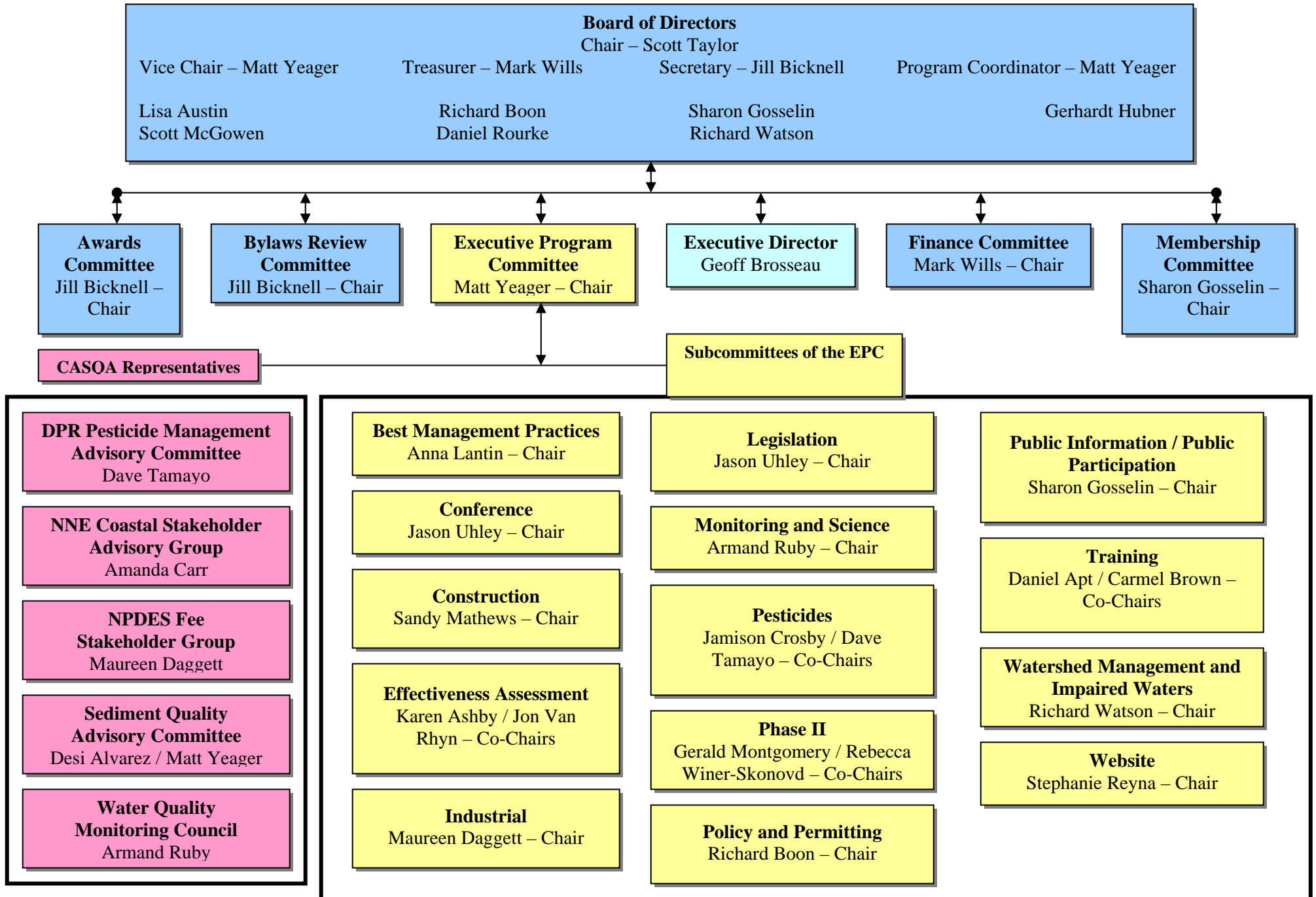
- **LID-MARC:** A partnership with UMD and NC State to share and compare research. Funded by CICEET (Corporative Institute for Coastal and Estuarine Environmental Technology).
- **TVSSI:** Temple-Villanova Sustainable Stormwater Initiative - a partnership for joint research to encourage more public acceptance of BMPs (less engineering focus).

ATTACHMENT 3

Supplemental Information

California Stormwater Quality Association (CASQA) 2010 Organizational Structure

March 2010





CASQA HAS 14 SUBCOMMITTEES, FOCUSING ON DIFFERENT AREAS OF STORMWATER MANAGEMENT, UNDER THE AUSPICES OF THE EXECUTIVE PROGRAM COMMITTEE. CASQA MEMBERS ARE ENCOURAGED TO PARTICIPATE IN SUBCOMMITTEES AND SHOULD CONTACT THE CHAIR TO GET INVOLVED.



(continued from inside)

Training

Co-Chairs: Carmel Brown (ckbconsulting@comcast.net) / Daniel Apt (dapt@rbf.com)

The Training Subcommittee oversees the development and implementation of a long-term and sustainable training program that meets the needs of California stormwater practitioners, as identified by the CASQA members. Current efforts include research and preparation of a strategic plan and development and implementation of pilot training.

Watershed Management and Impaired Waters

Chair: Richard Watson (rwatson@rwplanning.com)

The Watershed Management and Impaired Waters Subcommittee promotes the development and application of appropriate water quality standards and application of the maximum extent practicable (MEP) standard in a manner that considers both cost and water quality effects. The Subcommittee tracks and prepares comments, where applicable, on: watershed management initiatives; 303(d) listing policy, guidance, and list development; and, development and implementation of Total Maximum Daily Loads (TMDLs) statewide. Current efforts also include facilitating source control and providing guidance on hydromodification.

Website

Chair: Stephanie Reyna (Stephanie.Reyna@ci.tracy.ca.us)

The Website Subcommittee assists with the coordination, design, and maintenance of both the CASQA and the CASQA Conference websites. Its tasks are to ensure that the websites remain an informative and up-to-date tool for both members and non-members to use in the management of their stormwater programs. The Subcommittee is also charged with assisting in the installation and maintenance of various projects and programs developed by other CASQA subcommittees including the Resource Directory, which was developed in conjunction with CalEPA, the State Water Resource Control Board and the PI/PP Subcommittee.

California Stormwater Quality Association

SUBCOMMITTEES

www.casqa.org



Best Management Practices

Chair: Anna Lantin (alantin@rbf.com)

The Best Management Practices (BMPs) Subcommittee provides information on BMPs, primarily through the CASQA Stormwater BMP Handbooks. The Subcommittee also reviews regulatory initiatives as they pertain to BMPs, serves as a resource for the State and Regional Water Boards, comments on technical aspects of MS4 permits and statewide General Permits such as BMP performance and numeric sizing criteria, and works to provide web-based tools for BMP sizing, selection, assessment, and implementation.

Conference

2008 Chair: Daniel Rourke (Danielr@fresnofloodcontrol.org)

2009 Chair: Jason Uhley (juhley@co.riverside.ca.us)

The Conference Subcommittee serves to increase awareness and knowledge of stormwater quality management issues through the development of an annual conference and associated workshops. This event assists CASQA members learn about timely management issues and compliance with the various aspects of NPDES permit requirements.

Construction

Chair: Sandy Mathews (Sandym@lwa.com)

The Construction Subcommittee addresses the issues and concerns of CASQA's regulated construction stormwater discharger membership. The Subcommittee identifies emerging stormwater quality construction issues and proactively tracks technical and regulatory trends and possible solutions to ever evolving requirements associated with construction stormwater management

Effectiveness Assessment

Co-Chairs: Jon Van Rhyn (jon.vanrhyn@sdcounty.ca.gov) / Daniel Rourke (Danielr@fresnofloodcontrol.org)

The Effectiveness Assessment Subcommittee provides input and guidance on stormwater program effectiveness assessment issues and is developing a standardized conceptual approach to evaluating municipal program elements. Completed documents include a white paper entitled "An Introduction to Stormwater Program Effectiveness Assessment" and the recently released manual entitled "Municipal Stormwater Program Effectiveness Guidance."

Industrial

Chair: Maureen Daggett (maureen@ecms.com)

The Industrial Subcommittee ensures that the issues and concerns of CASQA's industrial stormwater discharger membership are represented in emerging stormwater quality management policies and regulations, including stormwater permitting, numeric effluent limits, and permit fees. The Subcommittee monitors trends in industrial stormwater quality management and tracks pending and proposed stormwater regulations that will affect industrial discharger members.

Legislation

Chair: Jason Uhley (juhley@co.riverside.ca.us)

The Legislation Subcommittee tracks stormwater-related state and federal legislation and prepares quarterly legislative summaries for CASQA members. These summaries describe the current location and content of proposed legislation and identify potential implications for CASQA members. The Subcommittee also prepares concise fact sheets on key legislation that can be used by CASQA members to educate their organizations about the potential impacts of the proposed legislation.

Monitoring and Science

Chair: Armand Ruby (armand@armandrubyconsulting.com)

The Monitoring and Science Subcommittee strives to improve the scientific and technical basis of stormwater management programs. It does this by developing priorities for research and monitoring activities, identifying research projects that would benefit CASQA membership, commenting on proposals where agencies and researchers want to partner with CASQA, and seeking collaborators, partnerships, and grant funding. The Subcommittee meets on an ad-hoc basis.

Pesticides

Co-Chairs: Dave Tamayo (tamayod@saccounty.net) / Kelly Moran (kmoran@tdcenvironmental.com)

The Pesticides Subcommittee addresses pesticide uses that impact stormwater discharges. The Subcommittee focuses on providing input to USEPA and the California Department of Pesticide Regulation (DPR) to improve implementation

of pesticide regulations so that they more fully protect water quality, and are better aligned with the Clean Water Act and California Water Code. The Subcommittee also compiles relevant information, assists members with development of compliance strategies, and coordinates its activities with other agencies statewide through the Urban Pesticide Committee.

Phase II

Chair: Kelye McKinney (kmckinney@roseville.ca.us)

The Phase II Subcommittee seeks to educate and engage Phase II programs (smaller cities, educational institutions, etc.) in stormwater management issues as well as to provide a forum for information exchange. The Subcommittee also provides input to other CASQA subcommittees from a Phase II perspective and provides comments on rules and permits that affect Phase II programs, such as the Phase II General Permit.

Policy and Permitting

Chair: Richard Boon (Richard.Boon@rdmd.ocgov.com)

The Policy and Permitting Subcommittee develops and coordinates the preparation of comments and testimony on State Water Board, United States Environmental Protection Agency, and precedent setting Regional Water Board policy and permitting initiatives. The Subcommittee is also promoting and actively participating in the development of a statewide policy for stormwater.

Public Information / Public Participation

Chair: Sharon Gosselin (sharon@acpwa.org)

The Public Information/Public Participation Subcommittee (PI/PP) is comprised of stormwater professionals throughout California, involved with outreach in their communities about various stormwater issues. The PI/PP meets quarterly to share information, materials, experiences, ideas, and opportunities to coordinate efforts. Meeting locations alternate between Southern and Northern California.

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New Jersey Corporation for Advanced Technology



A Public-Private Partnership for the Promotion of Energy and
Environmental Technology

A Report on the NJCAT Programs

March 2006

New Jersey Corporation for Advance Technology
At the New Jersey EcoComplex
1200 Florence Columbus Road
Bordentown, NJ 08505
www.njcat.org

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Executive Summary

NJCAT was created to promote the retention and growth of technology-based businesses in emerging environmental and energy fields in New Jersey. NJCAT provides innovators with the regulatory, commercial, technological, and financial assistance required to bring their ideas to market successfully. Specifically, NJCAT functions to:

- advance policy strategies and regulatory mechanisms to promote technology commercialization,
- identify, evaluate, and recommend specific technologies for which the regulatory and commercialization process should be facilitated,
- establish relationships/alliances to bring new technologies to market and new business to the state, and
- assist in the identification of markets and applications for commercialized technologies.

Operating as a public-private partnership is the cornerstone of the NJCAT programs; in this manner, the commercial marketplace has direct input to the technology development and commercialization process, and the public sector gains confidence in technology solutions through reliance on an independent, “honest broker” examination of technology.

Vision

NJCAT will be recognized as the accelerator of new environmental and energy technologies into the marketplace for the purpose of protecting and preserving the state’s natural resources and economic viability. NJCAT’s environmental/energy technology program integrates education and training, develops testing protocols and verifies the performance of innovative technologies that improve protection of human health and the environment.

Mission

As a not-for-profit corporation, NJCAT is a leader in environmental and energy technology innovation for a cleaner, sustainable environment, with the related positive economic effects, through the utilization of technology based-products and services. This is achieved through independent technology verification, and education and information on emerging environmental and energy technology fields. NJCAT provides credible and reliable technology information for technology developers, corporations, New Jersey’s research universities and government, and functions as a public-private partnership to establish connections between environmental and energy technology solutions and public policy, regulatory and economic initiatives.

State Initiative

The New Jersey Legislature enacted the Energy and Environmental Technology Verification (EETV) Act which provides the guidelines for developing the administrative

**Energy and Environmental
Technology
Verification Act (EETV
Act)
NJSA 13:1D-134 et seq**

**Fully integrates NJCAT’s
multi-media environmental
and energy technology
verification program with
the state’s regulatory
programs**

and technical requirements for bringing innovative energy and environmental technologies to the forefront.

2005 NJCAT Board Membership

NJCAT is governed by a diverse board of trustees elected by the membership. Members are drawn from leading New Jersey companies with significant interests in energy and environmental technologies, the investment and academic communities, and utilities. Membership requirements include payment of a membership fee, provision of in-kind resources for development of targeted technologies and staffing for corporate committees.

Member

The Honorable James J. Florio
Chairman and CEO
XSPAND
35 Airport Road
Suite 150
Morristown, NJ 07960

Harold Raveché, President
Stevens Institute of Technology
Castle Point on Hudson
Hoboken, NJ 07030

Stan LaBruna, Vice President,
Environment, Health and Safety
PSEG Services Corporation
80 Park Plaza T17A
Newark, NJ 07102

Robert A. Altenkirch, President
NJ Institute of Technology
Dr. Martin Luther King Jr.
University Heights
Newark, NJ 07102

John Cusack, President
Gifford Park Associates
91 Middle Rd
Eastchester NY 10709

Tracy Straka, Vice President
Creamer Environmental

Alternate

Jim Lanard
XSPAND
35 Airport Road
Suite 150
Morristown, NJ 07960

Christos Christodulatos, Director
Stevens Institute of Technology
Center for Environmental
Systems
Hoboken, NJ 07030

Dan Watts, Executive Director
York Center, NJIT
323 Dr Martin Luther King Jr. Blvd
University Heights
Newark, NJ 07102

101 East Broadway
Hackensack, NJ 07601

Russ Sattler, President
United Retek
21 Trotter Dr.
Medway, MA 02053

Mr. Scott Weiner, Director
Center for Energy, Economic and
Environmental Policy
The Bloustein School
Rutgers University
33 Livingston Avenue · Suite 300
New Brunswick, NJ 08901-1981

Keith Cooper, Executive Director
Cook College
Rutgers University
88 Lipman Drive
New Brunswick, NJ 08505

Robert F. Irwin IV, Vice Chairman
and Chief Operating Officer
Environmental H2O Technologies
5 Erlington Dr
Cinnaminson, NJ 08077

John Ferrante, Vice President
Tetra Tech EM Inc.
Rockaway 80 Corporate Center
100 Enterprise Drive, Suite 150
Rockaway, NJ 07866

Ex-Officio

Commissioner NJDEP

NJ Commerce Commission

Science and Technology Commission

Staff

Rhea Weinberg Brekke, Executive Director
Richard S. Magee, Technical Director
Jane Massey Licata, Of Counsel

NJDEP Staff

Marybeth Brenner, Director, Office of Constituent Relations & Customer Service

Martin Rosen, Chief, Bureau of Sustainable Communities and Innovative
Technologies

Introduction

The New Jersey Corporation for Advanced Technology (NJCAT; Corporation) operates as a collaboration of academic, government and industry organizations looking to advance the development of novel technologies for the improvement of environmental protection in the 21st century. NJCAT products and services, in the form of technology evaluation, verification and education are used to bolster the integration and effectiveness of environmental and energy policy.

NJCAT is a non-profit membership organization. It is not an agency of the state or the federal government, but rather is incorporated under the laws of New Jersey as a private corporation. This form affords NJCAT and the state several unique advantages, including flexibility in membership and governance, and independence. While completely separate from the state government, NJCAT is designed to effectively coordinate with existing state and federal regulatory and economic agencies and commissions so as to maximize the effectiveness of the technology commercialization process. The Commissioner of the New Jersey Department of Environmental Protection serves as an *ex-officio* board member to provide input to the Corporation ensuring smooth and efficient technology identification, permitting, development, implementation, and compatibility with existing state programs.

NJCAT implements the energy and environmental technology verification program for the selection, promotion and commercialization of innovative energy and environmental technologies that have significant environmental benefit for the state. The program combines the resources of the New Jersey Corporation for Advanced Technology (NJCAT), in conjunction with the New Jersey Department of Environmental Protection, to foster scientifically credible technology solutions for a better environment and growing economy.

Acceptance of new technology often requires a shift in mindset toward shared innovation and opportunity. NJCAT is the only organization in the state to provide networking activities, education programs and technology evaluation and verification to support energy and environmental technology development and implementation opportunities.

Technology Evaluation and Verification

- ❖ NJCAT serves as a technology enabler by providing scientifically-based independent information that supports public policy on environmental management, sustainability, domestic security, transportation, and energy efficiency and renewable energy decisions.
- ❖ NJCAT is a conduit for verifiable technology performance, providing credible information to the entities responsible for the achievement of environmental quality, energy sustainability, and security. The science and technology core of the NJCAT program provides on-going opportunities in support of the interaction between technology and societal interests and infrastructure.

- ❖ NJCAT's core competence in technology evaluation and validation supports the information base needed when making energy/environmental use decisions so that sustainable technology development will lead to more practical options for energy generation with less greenhouse gas emissions and more efficient use of natural resources.
- ❖ NJCAT's environmental and energy technology programs support both the opportunities and challenges presented as New Jersey strives to protect, restore and enhance the state's environment and natural resources. NJCAT specifically addresses water quality and supply, site remediation, land use, Brownfields' redevelopment alternatives, and renewable energy and energy efficiency.

Networking Activities

- ❖ NJCAT seeks to establish mutually beneficial relationships between its member companies, vendors, users, and regulators of technology. One of the functions of NJCAT is to match these promising technologies with environmental needs in order to facilitate and encourage the use of scientifically sound technology solutions.
- ❖ NJCAT also provides a mechanism for interchange and collaboration between New Jersey universities, R&D laboratories, members, participants and investors; such collaboration helps to coordinate commercial/economic activity and planning with research and development efforts, such that issues of priority to the state's environment and economy can be more readily advanced.
- ❖ The effective use of technology stimulates growth and environmental preservation by:
 - Creating a business environment where technical innovation can flourish and where investment is attracted to new technologies.
 - Using technology to allow appropriate growth while preserving and protecting precious natural resources.
 - Ensuring the coordinated management of environmental/energy technology application across the various levels of government.
 - Strengthening New Jersey's environmental/energy industrial competitiveness.

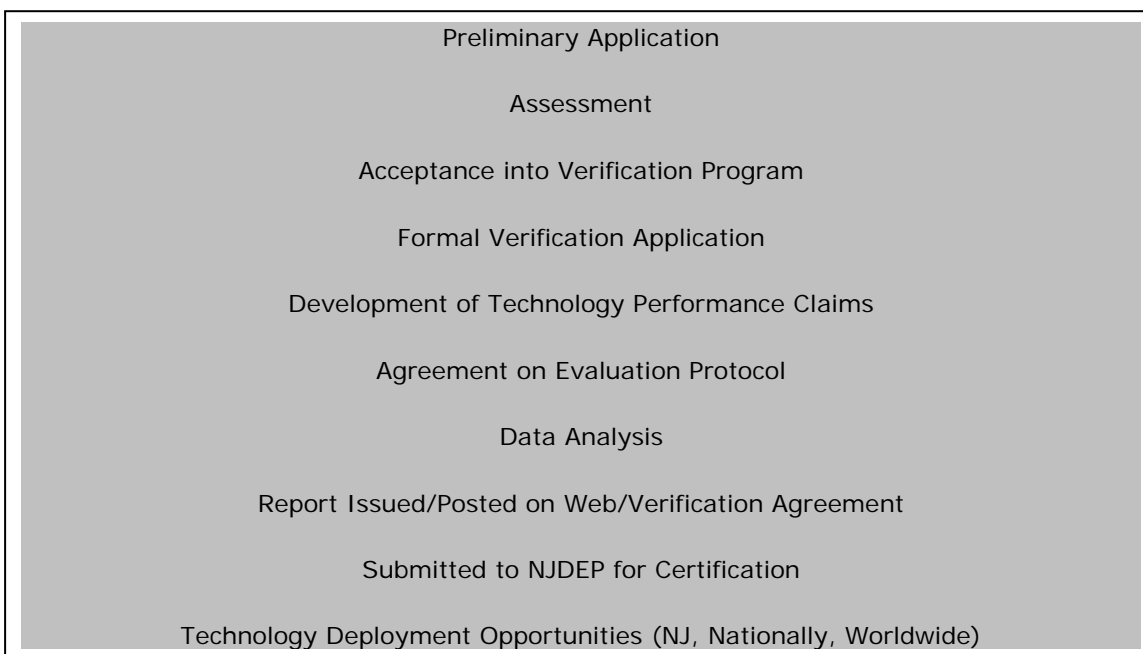
Education

- ❖ NJCAT's education programs are a reliable source of information among users of technology alternatives. The commitment to basic science, the foundation on which technical progress is ultimately built, is shared during the training and education seminars with the decision-makers and users of the technology.
- ❖ Critical public policy issues are intimately connected with advances in science and technology. Public policy can be executed through the integration of numerous factors, including accepted scientific knowledge and technology innovation.

Environmental Technology Verification Program

NJCAT offers a reliable assessment process for verifying the environmental and energy performance claims associated with projects and programs, as well as technologies and technological processes. NJCAT verification provides the regulators and the marketplace with the assurance that environmental performance claims are valid, credible and supported by quality independent test data and information.

How the NJCAT Technology Verification Program Works



Technology vendors apply to the NJCAT Program for verification of performance claims made concerning the performance of their respective technologies. If the claim(s) is verified, the company is issued three documents: a *Verification Agreement*, a *Technology Fact Sheet* and a *Final Verification Report*; the vendor is also entitled to use the NJCAT logo (on the specified documentation) to market their technology. Suppliers of equipment-based environmental/energy services (where performance can be verified) are also eligible to apply for verification.

NJCAT provides regulators and technology users with an assurance that the technology vendor's claims regarding the environmental performance for a technology are valid, credible and supported by suitable demonstration test results.

The Technology Verification Program specifically encourages collaboration between vendors and users of technology. Through this program, teams of academic and business professionals form to implement a comprehensive evaluation of vendor-specific performance claims. The result of successfully completing this program is documentation of independent third-party confirmation of claims that provides valuable information to business and governmental decision-makers.

Relationship to NJDEP

The January 2000 Energy and Environmental Technology Verification Act (EETV) directs the Department of Environmental Protection (DEP), through a performance agreement with the New Jersey Corporation for Advanced Technology, to establish an energy and environmental technology verification program for the selection, promotion and commercialization of innovative energy and environmental technologies that have significant environmental benefit for the state. The program is designed to empower innovation for the environmental technology industry, better equipping vendors, users and regulators of technology to implement creative solutions to environmental problems and stimulate that sector of the economy.

- ❖ The level of environmental risk reduction that occurs in the real world is directly related to the level of performance and effectiveness of technologies employed.
- ❖ Private sector technology developers produce almost all of the new technology purchased in the United States and around the world.
- ❖ Purchasers and permittees of environmental technology need an independent, objective and high quality source of performance information in order to make informed decisions.
- ❖ Vendors with innovative, better, faster, cheaper technologies need independent evaluation to penetrate a conservative, risk-avoiding environmental marketplace.
- ❖ Private sector environmental technologies have been verified in such areas as drinking water systems for small communities, stormwater pollution control technologies, remediation technologies, energy efficiency technologies, and innovative monitoring technologies.

The EETV Act identifies NJCAT as the third-party verification entity to evaluate innovative energy and environmental technologies. The verification of an innovative technology must attest to the claims made to satisfy the regulatory requirements of the respective NJDEP programs. In addition, the development and evaluation of the technologies must be verified to satisfy acceptable scientific/engineering principles and protocols, and offer an overall net beneficial effect to human health and the environment.

Throughout the verification process the NJDEP is included in the dialogue with technology verification applicants to ensure responsiveness to regulatory issues. After NJCAT verification, the technology verification report is submitted to NJDEP, Bureau of Sustainable Communities and Innovative Technologies (BSCIT) for certification. Certification ensures that NJCAT verification findings have direct and meaningful utility to NJDEP's regulatory programs and policies. The certification is provided once BSCIT determines that regulatory requirements have been satisfied, and the technology has been shown qualitatively and quantitatively to provide a net beneficial effect to human health and the environment. NJDEP certification enables the regulatory programs issuing permits to rely on the verification process to establish contract provisions, protocols, policies, principles and/or technical guidance to develop expedited or more efficient timeframes for review and decision-making of

permits or approvals associated with the verified innovative energy or environmental technology. The certification also includes a provision for the innovative energy or environmental technology to be incorporated in appropriate State bid specifications.

A Comprehensive Approach to Stormwater Treatment Technology Verification

The New Jersey Stormwater rules (35 N.J.R. 154) clearly establish that manufactured stormwater treatment devices may be used to meet regulatory requirements provided the pollutant removal rates are **verified** by NJCAT and **certified** by NJDEP. In a more focused way, the stormwater rules exemplify that NJCAT verification of an innovative technology must attest to the claims made in order to satisfy the regulatory requirements of the respective NJDEP programs, in this case the Division of Watershed Management.

NJCAT's extensive involvement and activities over the past three years in identifying and evaluating a number of pre-manufactured stormwater treatment devices has created the knowledge and experience base necessary to effectively and confidently assess anticipated field removal performance.

A two step verification/certification process has been implemented specifically for stormwater treatment technologies:

1. Verification based on laboratory data leading to interim certification.
2. Verification (Tier II field testing) leading to final certification.

Verified and certified stormwater management technologies are incorporated in planning and design strategies throughout the state. Upon completion of Technology Acceptance Reciprocity Partnership (TARP) Protocol (Tier II) for Stormwater Best Management Practice Field Demonstrations and final verification/certification, these stormwater technologies may be endorsed by the states of California, Massachusetts, Maryland, Pennsylvania, and Virginia, who along with New Jersey are signatures to the protocol.

Verified Technologies

BRICE ENVIRONMENTAL SERVICES Water-based soil washing process for remediation of Small Arms Firing Ranges (SAFRs).

BY-PRODUCT SYNERGY (BPS) Process Facilitated interactive process to assist industry in the discovery of new uses for waste streams.

ENVIRONMENTAL H2O INC. Electrolytic process for generating dissolved oxygen *in-situ* in groundwater.

HYDROGLOBE LLC Removal of arsenic and heavy metals from drinking and groundwater

INFICON INC. An on-line, real-time monitoring technology for measuring VOC's in water at relevant detection levels.

MARCAL PAPER INC. Evaluation of the human health and environmental impact of Kaobed™, an animal bedding made from short recycled paper fibers, for a beneficial reuse determination.

REGENESIS BIOREMEDIATION Controlled release of hydrogen for enhanced *in-situ* anaerobic bioremediation of chlorinated compounds.

UNITED RETEK OF AMERICA, LLC Petroleum contaminated soil solidification and stabilization technology.

BAYSAVER A combination gravity separation and flow control system to capture and retain pollutants from stormwater.

CDS TECHNOLOGIES Continuous Deflective Separation (CDS) indirect screening technique designed to remove pollutants from stormwater.

HYDRO INTERNATIONAL An advanced hydrodynamic vortex separator used for the control of pollutants in stormwater

AQUA SHIELD Stormwater filtration system that uses a “treatment train” approach which includes an Aqua-Swirl Concentrator designed for gross contaminant removal to pre-treat stormwater before entering the filtration chamber. The Aqua-Swirl Concentrator is also supplied as a stand alone stormwater treatment system.

STORMCEPTOR, INC. The system is a vertically oriented structure designed to remove hydrocarbons and fine sediment from stormwater.

STORMWATER MANAGEMENT, INC. The StormFilter is comprised of a vault that houses rechargeable, media-filled filter cartridges that remove pollutants from stormwater.

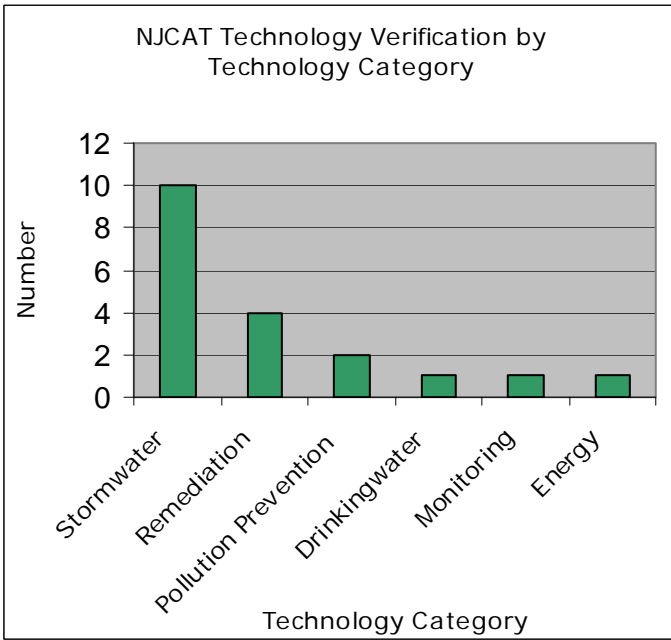
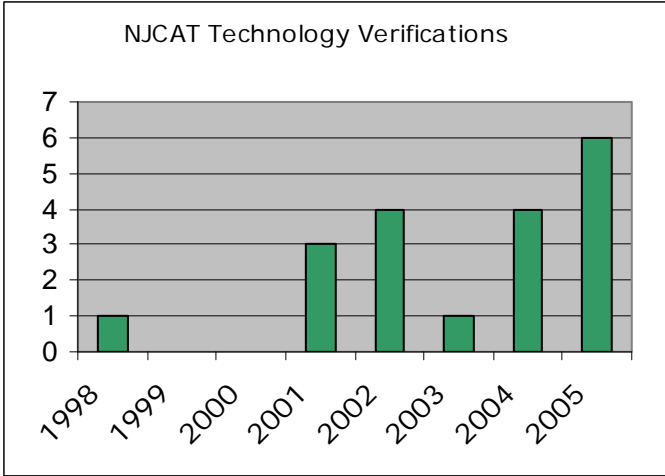
VORTECHNICS, INC. The VortSentry is a hydrodynamic separator designed to enhance gravitational separation of floating and settling materials from stormwater.

VORTECHNICS, INC. The VortFilter System consists of a precast concrete structure with filtration cartridges to capture and retain stormwater pollutants.

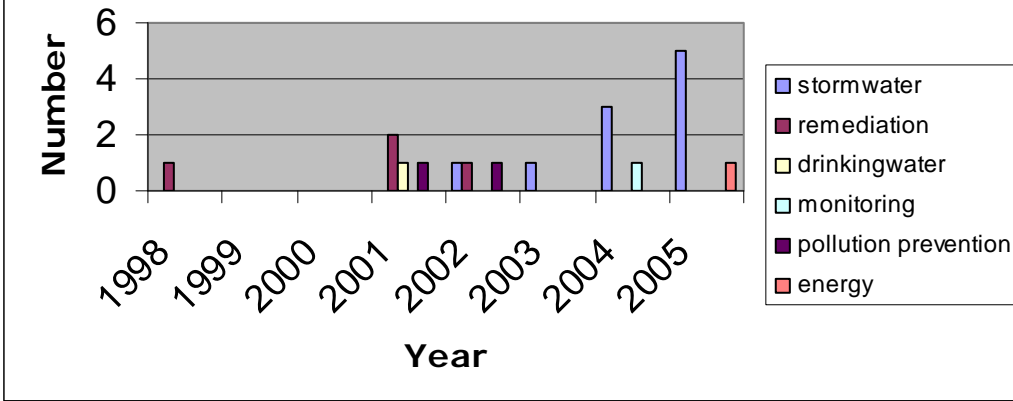
STORMWATER 360 The VortSentry® Stormwater Treatment System is a hydrodynamic separator designed to enhance gravitational separation of floating and settling materials in stormwater flows.

The Stormvault Mitigation System by CON/SPAN A below grade detention and sedimentation vault designed to produce stormwater effluent quality comparable to surface extended detention basins and retention ponds.

LONGLITE QL-3 Microchip technology that acts as a power controller to regulate voltage to a light bulb, extending the life of the bulb and reducing energy usage.



NJCAT Verified Technologies by Type over Time



Technologies under Evaluation

Stormwater Technologies

- ADS
- HANDCOR
- Filterra
- Terre Hill
- CDS
- Chrystal Stream Technologies
- Stormwater 360
 - Tier II Field Verification of Storm Filter

Other Technologies

- Soils and Sediment Solutions, LLC
- North American Bio Fuels
- Graver
- Envirem

Harmonization with other States/Countries

NJCAT is also augmenting efforts to support the harmonization of assessment protocols and test methods, building on the established NJCAT Generic Test Protocol and other related decision-support tools. The principal elements of this strategy are:

- sharing of protocols and test methods,
- mutual recognition or accreditation of verification entities, and
- state-to-state reciprocity, where practical.

Research Initiatives

Arsenic

NJCAT managed the execution of a feasibility study utilizing existing literature on selected arsenic removal technologies, specifically for New Jersey drinking water systems for NJDEP. The assessment focused on arsenic removal technologies specific to NJ conditions. Through this work and NJCAT's arsenic technology verification, the NJDEP, with the availability of a proven technology, felt confident in lowering the NJ arsenic drinking water standard to 5 ppb (federal standard remains at below 10 ppb).

Synthetic Organic Contaminants

NJCAT is overseeing an evaluation and assessment of unregulated synthetic organic contaminant removal technologies for New Jersey drinking water. The study is looking at viable alternative drinking water treatment technologies to remove unregulated synthetic organic contaminants from both groundwater and surface water. NJDEP expects to use this information to generate several small and large-scale demonstration projects to field test different treatment technologies in New Jersey.

Chromium -Remediation of COPR Sites

Chromite Ore Processing Residue (COPR) is an industrial refuse that was used as fill material at various sites in the US. It was produced during the extraction of chromium from chromite ore using the high lime process. This COPR is highly alkaline and it contains unreacted chromite ore and un-extracted chromate. The COPR material that was deposited at various locations in Hudson County was discovered not to be as benign as initially thought; yellow chromate solution was observed to leach from locations where COPR was deposited, and structures built on sites where COPR was used as fill experienced catastrophic failures due to heave and uncontrolled expansion of the COPR material. The COPR minerals, which were formed at high temperature, are not stable under normal atmospheric conditions. These minerals undergo compositional changes due to their interaction with water. This compositional change manifests in Cr(VI) leaching and COPR swelling. Most remediation methods involve the chemical reduction of Cr(VI) to Cr(III) and adjustment of the pH to precipitate Cr(III) as Cr(OH)₃. A survey of the reducing agents used includes elemental iron, pyrite, ferrous, sulfites, sulfides, and organic compounds. The remediation of the COPR material is complicated by the high alkaline content of the COPR matrix, the slow release of chromium and alkalinity from the COPR minerals, and the potential swell of COPR pre- and post-treatment. Chromium in the COPR material may be sequestered in small nodules formed during the clinker formation process. The reaction between chromium and the chemical reagents is inhibited by the slow release of chromium and alkalinity bound in the COPR minerals. In addition, the delayed alkalinity release may prove detrimental to the remediation process due to the potential for future swell of the treated COPR material. COPR site remediation is extremely challenging.

Remediation of COPR sites has been partially successful at best due to the complexity of the COPR matrix. Initial treatment successes were frequently followed by the reappearance of high Cr(VI) concentrations in the treated samples at a later date. The reappearance of Cr(VI) has been attributed to the re-oxidation of Cr(III).

However, there is strong evidence that the initial apparently satisfactory treatment results were an artifact of EPA regulatory tests such as the Toxicity Characteristic Leaching Procedure (TCLP) EPA Method 1311, Alkaline Digestion EPA Method 3060, and Colorimetric EPA Method 7196.

COPR treatment is controlled by two main factors: 1) the kinetic rate of the release of Cr(VI) from Cr(VI) bearing minerals and 2) the rate of scavenging of the treatment reductants. COPR treatment can occur during curing and/or during regulatory compliance testing. Initially, most of the reductant is intact and upon regulatory testing, whether alkaline digestion or TCLP, there is enough residual reductant to treat any Cr(VI) leached during the test. Consequently, the test results indicate a successful treatment. However, upon aging, the reductant can transform into a less soluble phase or it can be consumed by competing reactions due to the COPR matrix or dissolved oxygen. Hence, any Cr(VI) released in the future remains untreated.

Analytical Challenges

As mentioned above, there is strong evidence that the initial apparently successful treatment results for chemical reductant technologies are an artifact of the regulatory testing. There is an urgent need to develop an analytical method(s) that will accurately assess the Cr(VI) treatment efficacy. NJDEP and principal responsible parties (PRPs) can not wait for years to find out whether or not a treatment approach was successful.

Remediation Approaches

NJCAT can work with researchers within and without the state to facilitate the development and validation of these methods. NJCAT is also well positioned and qualified to assess proposed COPR treatment technologies and approaches, once the analytical methods have been developed.

Outreach Activities

Networking/ Tech Transfer

Using our extensive network, NJCAT links technology providers and government regulators, to promote the utilization of innovative environmental and energy technologies. These programs include partnerships with industry and academia, as well as other government agencies, including the Environmental Protection Agency, Corps of Engineers, Army Environmental Center and the New Jersey Department of Environmental Protection. A partnership formed through Stevens Institute of Technology with Picatinny Arsenal has allowed NJCAT to work with industry, academia and the government on innovative products, methodologies and technologies used on Picatinny's 175 Superfund Sites. Through this effort Picatinny is used as an environmental technology laboratory. The goal is not only to field test emerging technologies, but also to lower operating costs and maximize the impact of available site cleanup resources.

NJCAT is currently working with a technology that will target hazardous metal contamination of soil and groundwater for demonstration. To accomplish this NJCAT will look at laboratory, pilot and field tests of emerging technologies with the goal of maximizing the value of available site cleanup resources.

Education/Training

As an organization promoting the development and use of innovative technology, information sharing, outreach and education are key components of the overall program. As such NJCAT also sponsors educational opportunities, for examples, conferences, seminars and workshops, to examine critical environmental and energy issues, such as:

- Stormwater Symposium
- Triad Seminar
- Remediation Technologies Seminar Series
- Beyond Drought Program
- NJDEP Brown Bag Technology Discussion Groups
- Drinking Water
- International Technology Expos
- Energy Business Summit
- Flood No More Symposium
- Innovative Environmental Technology Conference

Environmental Excellence Program

NJCAT has been a prime sponsor of the New Jersey Environmental Excellence Awards Program established by the New Jersey Department of Environmental Protection to recognize outstanding environmental performance, programs and projects in the state. 2006 will be the seventh year of the Environmental Excellence Awards Program and planning for this year's competition is already underway. In addition to the New Jersey Department of Environmental Protection and the New Jersey Corporation for Advanced Technology, the State League of Municipalities has been a co-sponsor of this program. Award categories include Clean Air; Innovative Technology, Environmental Stewardship; Health Ecosystems; Environmental Leadership; Land Conservation; Environmental Education; Clean and Plentiful Water; and Safe and Healthy Communities. 2005 brought a record number of award applications with 56 nominees judged.

Web

NJCAT hosts a website providing current information on all organizational programs, email notifications, a database of technologies in the verification process, and links to other useful sites. Comprehensive digests of technologies successfully completing the verification process are also posted.

Renewable Energy Technology Assessment Program (under development)

The Renewable Energy Technology Assessment (RETA) program is a natural outgrowth of the NJCAT Technology Verification Program. The RETA program will be an extension of the technology verification program designed to build a stronger link to the New Jersey Board of Public Utilities (NJBPU) serving needs of the State's energy regulating community for sound scientific information to be used in their decision making processes.

The projects envisioned for energy assessment will be looked at on the basis of the following criteria:

- ❖ strong commercialization potential;
- ❖ contribution to the wider development and diversification of New Jersey's renewable energy industry; and
- ❖ reduction of greenhouse gas emissions.

The program is anticipated to cover different forms of renewable energy technologies, including photovoltaics, enabling technologies, wind, ocean and biomass energy, and their constituent components. The projects may offer the State benefits including diversity of energy resources, cleaner energy alternatives, moving the State away from fossil fuels, greenhouse gas abatement, regional development, salinity amelioration, waste reduction and export potential.

Working closely with NJBPU, the program will be designed to provide the State with a level of assurance that investment and support of these technologies is worth the risk given the technology's potential for success. Assessment of renewable energy technologies will provide independent third party review and analysis of a specific technology. This assessment process will be closely aligned with the needs of the State and the resulting assessment will be a credible resource document which the State may utilize when making determinations to pilot or demonstrate a particular technology. Modeled in accordance with the NJCAT relationship with the NJDEP, a cohesive tie between NJCAT and the NJBPU will allow the RETA program to strategically align the growth of renewable energy technologies with the State's best interests.

This renewable energy technology assessment program will assist the NJBPU in decisions regarding funding programs that provides support to strategically important renewable energy technology initiatives that have strong commercial potential. NJCAT expertise on technology assessment seeks to better understand the dynamics and determinants of technological claims and explore the potential role that new, promising technologies may play in the State's renewable energy program.

The mission of the NJCAT Renewable Energy Technology Assessment (RETA) program is:

To ensure that a technology does what it purports to do and to empower decision makers and regulators with the information that they can use to increase the viability and deployment of these renewable energy technologies.

The energy technology assessment program will evaluate the technology based on performance claims which respond to the informational needs of the NJBPU in their decisions to provide pilot testing and demonstration opportunities for these technologies.

What is the RETA program?

RETA will evaluate the performance claims of energy technologies relevant to decision making by other public agencies. It does this by asking five fundamental questions:

1. Does the technology do what it purports to do?
2. For whom?
3. At what cost?
4. How does it compare with the alternatives?
5. What is the net environmental effect?

How the Program works

The NJCAT Energy Technology Assessment program will operate through four key functions:

- Identifying possible technology sectors for energy technology assessment
- Prioritizing these based on the State's renewable energy policy
- Conducting evaluations/assessments to meet the State's priorities
- Communicating openly about the processes and publishing products of the program.

Identifying technology sectors and questions

NJCAT works closely with NJBPU to identify sectors and candidate companies for the RETA program through:

- On-going technology research initiatives from the state's universities.
- Targeted consultations with NJBPU, NJDEP, other state agencies, and NGO organizations and regional programs such as the Regional Greenhouse Gas Initiative (RGGI).
- An electronic suggestion from the NJCAT website.

The assessment process

The NJCAT Board will oversee this process, which aims to ensure that assessments are well-designed, capable of being competently executed, uses cost effective protocols, and answers identified technology needs. Expert peer reviewers will assist in ensuring the integrity of the verification/assessment reports. NJCAT's unique structure comprised of government, industry and academics enables the organization to draw upon the collaborative expertise that exists within the state's university system. Pooling the best talent and resources from among the state's universities elevates the integrity of the program. State government involvement early on in the review process allows for clearer regulatory pathways and responsiveness to regulatory concerns. Outreach and informational programs will assist in positioning these technologies in the market place with credible performance documentation.



UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER

Dedicated to the protection of water resources through effective stormwater management.



UNHSC
Gregg Hall
35 Colovos Road
Univ. of New Hampshire
Durham, NH 03824

603.862.3957 *fax*

Thomas Ballesterio, Ph.D.
Principal Investigator
tom.ballesterio@unh.edu
603.862.1405

Robert Roseen, Ph.D.
UNHSC Director
robert.roseen@unh.edu
603.862.4024

James Houle
Outreach Coordinator/
Program Manager
james.houle@unh.edu
603.767.7091

The UNH Stormwater Center studies stormwater-related water quality and quantity issues. A unique facet of the program is the field facilities that are used to evaluate the performance of stormwater management technologies. Over 20 different management systems have been or are currently undergoing side-by-side comparison testing under strictly controlled conditions. The close proximity of the field testing facility to UNH enables the Center to offer technology demonstrations and workshops, as well as specialized training opportunities.

Under the Clean Water Act Phase II rules, the Environmental Protection Agency requires local governments to develop stormwater programs. In response, many organizations have or are now developing plans and actions to achieve desirable water quality and storm volume reduction. Although many of the stormwater management strategies are based on sound theory, there is no requirement that they undergo independent, third-party scientific testing. A three-year study of nine seacoast sites in New Hampshire clearly showed that traditional stormwater technologies failed in reducing at least one water quality parameter two-thirds of the time.

MISSION

The UNH Stormwater Center is dedicated to the protection of water resources through effective stormwater management. The primary functions of the center are twofold: (i) Research and development of stormwater treatment systems, (ii) To provide resources to the stormwater management community currently facing the design and implementation of Phase II requirements.

OUTREACH, EDUCATION & PARTNERING

Outreach efforts include routine Stormwater Technology Demonstration Workshops and hosting annual meetings for professional associations, government agencies, and others. Educational activities include publication of a Biannual Data Report on stormwater system performances, presentations at regional and national venues, website resources, an Innovative Stormwater Management Database for the region, and publications in refereed journals. The Stormwater Center partners with a variety of public and private participants. Our Technical Advisory Board provides advice and expertise, and includes academics, state and federal regulators, local government officials, and industry representatives.

FIELD FACILITY & STORMWATER CONTROL TECHNOLOGIES

The Center is comprised of various sites on the UNH Durham campus: the Primary Field Facility, a pervious concrete parking lot, and a porous asphalt parking lot. Future testing sites include a green roof and pervious pavers. Stormwater controls that have been or are currently being tested include: 6 Conventional BMPs (a stone-lined swale, vegetated swale, filter berm swale, retention pond, a detention basin, and a deep sump catch basin), 8 Low Impact Development Devices (a surface sand filter, 3 bioretention systems, a subsurface gravel wetland, a street tree, porous asphalt, and pervious concrete), and 11 Manufactured Devices (5 Hydrodynamic separators (AquaSwirl, VortSentry, V2B1, CDS, Downstream Defender), 4 filter systems (AquaFilter, AquaFilter Pathex, Stormtech Isolator Row, UpFlo Filter), 1 large volume infiltration device (ADS subsurface infiltration/filtration system), 1 sedimentation device (ADS Water Quality Unit)).

PROJECT TIMELINE

Full site operation began in August 2004. Low Impact Development Technologies are continuously studied to understand maintenance concerns. Interested vendors should submit a letter indicating Request for Proposal for Product Testing. Testing rounds begin in September with installations in the preceding summer. Letters for RFP or for more information regarding product testing contact the Center Director.

FUNDING

Basic, continuing funding is provided by the Cooperative Institute for Coastal and Estuarine Environmental Technology and the National Oceanic and Atmospheric Administration. Other specific funding has been provided by the United States Environmental Protection Agency, the Maine Department of Transportation, the New Hampshire Estuaries Project, New Hampshire Sea Grant, the Rhode Island Department of Environmental Management, and industry associations (Northern New England Concrete Promotion Association, North East Cement Shippers Association). Funding has also been provided for testing from manufacturers of the various systems tested.



Please visit our website, www.unh.edu/erg/cstev

Herrera Environmental Consultants, Inc.

Memorandum

To Tanyalee Erwin, Washington State University
CC Washington Stormwater Technical Center Executive Management Team
From Craig Doberstein, Elizabeth Woodcock, and John Lenth, Herrera Environmental Consultants
Date July 6, 2010
Subject Compilation of WSTEC surveys

On June 25, 2010, Washington State University (WSU) and the Washington Stormwater Technical and Education Center (WSTEC) Executive Management Team (EMT) solicited support from Herrera Environmental Consultants (Herrera) during their ongoing efforts to develop a business plan for the WSTEC. The WSTEC was created through the passage of House Bill 2222 in the 2009 legislative session. The bill, subsequently codified in RCW 90.48.545, directs Ecology to establish “a storm water technical resource center... to provide tools for storm water management.” The RCW includes additional guidance on the potential service areas for the WSTEC stating:

“(1) ... The center shall use its authority to support the duties listed in this subsection through research, development, technology demonstration, technology transfer, education, outreach, recognition, and training programs. The center may:

- (a) Review and evaluate emerging storm water technologies;*
- (b) Research and develop innovative and cost-effective technical solutions to remove pollutants from runoff and to reduce or eliminate storm water discharges;*
- (c) Conduct pilot projects to test technical solutions;*
- (d) Serve as a clearinghouse and outreach center for information on storm water technology;*
- (e) Assist in the development of storm water control methods to better protect water quality, including source control, product substitution, pollution prevention, and storm water treatment;*
- (f) Coordinate with federal, state, and local agencies and private organizations in administering programs related to storm water control measures; and*
- (g) Collaborate with existing storm water outreach programs.”*

To help further define the WSTEC scope of services, the EMT requested Herrera’s assistance with review of survey materials collected in the previous months regarding the potential mission,

purpose, and services of the WSTEC; coordination and preparation of an approach for discussing those surveys; and facilitation of a workshop focused on review of the surveys and development of a “skeleton” for the business plan. This memorandum summarizes the results of the review of survey materials; this information will then be used to facilitate a subsequent workshop for the EMT to begin defining some elements of the business plan.

Survey Reviews

With the support of the EMT, Herrera compiled and reviewed survey information collected from key target audiences that are expected to utilize the WSTEC’s services. Specifically, the EMT surveyed various municipalities and stormwater professionals in the region to assess the primary stormwater needs and technical challenges in the region; this information will be used to determine the primary focus and roles for the WSTEC. Survey input was received from several groups and municipalities through multiple avenues. A summary of the survey process is below.

- As part of the WSTEC’s first Advisory Committee (AC) meeting on May 10, 2010, committee members were asked to identify the central issue that each AC member represents related to stormwater, and how the WSTEC can help the AC members address that issue. The input from each AC member was recorded in the meeting minutes and reviewed in this task.
- An online survey was made available for all potential WSTEC users by the City of Puyallup.
- An email survey was conducted by the Association of Washington Business Institute (AWBI). Nearly 900 surveys were sent out, with 80 of those surveys returned.
- Several caucuses are represented by members of the AC. These members solicited input from their caucus members and provided that input to the EMT for this survey review. The caucuses include:
 - American Rivers / WA Environmental Council
 - Association of Washington Businesses
 - Association of Washington Cities
 - Building Industry Association of Washington
 - Department of Ecology
 - Independent Business Association
 - Puget Sound Partnership
 - Puget SoundKeepers / People for Puget Sound
 - Washington State Association of Counties
 - Washington State Department of Transportation.

As outlined above, the target audiences and methods used for collecting input from survey participants was quite variable. As such, the results of the surveys are broad reaching and range from high-level policy issues, to detailed technical needs, to very specific needs of individuals

and individual groups. To help summarize and organize the survey input, two Herrera staff reviewed the surveys independently, identified common themes and trends, and then met to discuss the results of each independent review to identify overlaps and initial consensus on priority areas. The common themes and priorities relating to the regional stormwater needs and implications for the WSTEC mission and scope of services are outlined below.

Survey Results and Implications

Nine specific categories of service were identified to capture common themes on regional needs and potential areas of focus for the WSTEC, as identified through the survey review. Although efforts were made to identify discrete categories and needs, some of the categories overlap to some degree. This list also does not represent a summary of all survey information received, but rather a summary of the common trends and themes. Given the broad range of suggestions and the many detailed needs identified by the survey participants, the categories presented in this memorandum are high-level and intended to help shape the WSTEC's structure and approach. Efforts to address individual needs and comments will presumably follow, once the priority WSTEC services are established.

That said, one related note that should be highlighted in this summary is the somewhat distinct categorization of survey responses depending on the source of the comments. Specifically, comments from businesses were somewhat consistent, and also notably different from those from municipalities. These two groups' unique needs must be considered when framing the WSTEC's services. Likewise, comments from eastern Washington survey participants reflected some common themes, and were slightly different from those from western Washington participants. Neither of these distinctions are unexpected, but it is important to recognize the different potential WSTEC users as the WSTEC services and structure is developed.

The nine identified categories are presented below in recommended order of priority, based on the frequency of the comments and the relative priority identified in some of the survey responses. Note that this is only an initial assessment and further discussion will occur at the scheduled EMT workshop and through development of the WSTEC business plan. Additional details associated with the needs identified in each category, including which survey participants were most vocal on a given topic and some of the specific needs identified under each category, are briefly explained in the sections that follow. Categories of survey input and requests are as follows:

1. Coordination and dissemination of technical information (with particular emphasis on NPDES permit support)
2. Funding assistance
3. Best management practices (BMP) resources and guidance
4. On-call technical support
5. Training
6. Education, outreach, and advocacy

7. Monitoring assistance and TAPE
8. Assistance with low impact development (LID)
9. Technical research

1) Coordination and dissemination of technical information

A common theme throughout many of the survey responses focused on the need for the WSTEC to act as a clearinghouse for stormwater-related information, and specifically for the WSTEC to take an active role in sharing regional knowledge and lessons learned on a variety of topics. There is a sense that many businesses and municipalities are struggling with common stormwater issues (particularly with regards to NPDES permit compliance) and that there is a need to better coordinate those groups to share knowledge and efficiencies. This need was identified by most participant groups, including businesses, municipalities, interest groups (e.g., Puget SoundKeepers / People for Puget Sound) and agencies. A majority of the suggestions were focused on NPDES permit support for both municipal and industrial permits. This category could just as easily be named “NPDES permit support,” however there were a few non-NPDES suggestions that also fit into this category.

Examples of specific needs and suggestions identified in the surveys in this category include but are not limited to:

- Collecting and sharing example stormwater pollution prevention plans (SWPPPs), standard operating procedures (SOPs), and quality assurance project plans (QAPPs)
- Sharing municipal codes
- Identifying and sharing specific permit compliance efforts done by municipalities and businesses
- Actively building and facilitating partnerships among municipalities and businesses facing similar challenges
- Sharing recommendations and reviews of vendors for various products and services
- Sharing outreach materials and efforts
- Sharing LID implementation efforts.

Should the EMT elect to focus the WSTEC on this need, work could begin almost immediately to collect and disseminate some of this information.

2) Funding assistance

Not surprisingly, funding was a common need identified in the survey responses. The need was most commonly identified by municipalities and government agencies, but some businesses also commented on the need for financial support in meeting stormwater challenges. The main suggestions made by participants in this category included:

- Assistance with researching, identifying, prioritizing, and applying for grants
- Recommendations on formation and use of stormwater utilities.

Additional support could be provided in identifying the allocation of staff and resources used successfully by businesses and municipalities to serve their stormwater needs. Should the EMT elect to focus the WSTEC on this need, work could begin immediately.

3) *Best management practices (BMP) resources and guidance*

Several municipalities, businesses, interest groups, and agency representatives commented on the strong need for better information on BMP performance and application. Given the wide range of stormwater BMPs available in the region, and the relative level of complexity in terms of design and performance of some BMPs, a common theme reflected in the survey responses was the need for better information on the best performing BMPs for various applications, as well as the pros and cons among different BMPs. Example suggestions for the WSTEC included but were not limited to:

- Acting as a clearinghouse for BMP performance and evaluation information
- Establishing a database of BMP performance data
- Developing a menu of BMP options and recommendations for common municipal and business applications (e.g., low cost source control measures, or recommended BMPs for dissolved metals removal)
- Providing lessons learned on BMP design and operation (including costs, installation, and general performance)
- Performing research on BMP performance (literature, and on-the-ground research)
- Providing a venue to share BMP vendors, specifications, and design guidance.

Overall this could be a relatively large and complex task for the WSTEC to undertake, however some of the highest priority elements (e.g., most immediate needs, or most common requests) could be started early to begin building the WSTEC BMP resource service.

4) *On-call technical support*

Municipal and business representatives alike identified a specific need for quick access to informed stormwater technical support on an on-call basis. This is more of an organizational service to be worked into the WSTEC operation, rather than a distinct technical service, but it was a commonly identified need nonetheless. Survey participants envision the WSTEC providing third-party technical input as needed based on phone and/or email requests from WSTEC users. This could include services such as:

- Staffing a stormwater hotline for quick feedback on technical questions such as NPDES permit compliance on municipal or business requirements

- Ability to make site visits to provide on-the-ground technical suggestions
- Providing third-party review of stormwater designs, approaches, etc.
- Providing referrals and recommendations on vendors or consultants for questions the WSTEC can't resolve internally.

The scope of these services may be broad and hard to anticipate, but the concept is that the WSTEC should be a point of contact for stormwater questions and could help the users identify the best ways to resolve their stormwater needs – either with WSTEC support or support from another qualified professional. Theoretically, this service could begin relatively soon after the WSTEC is created. However it will take time for the WSTEC to establish the necessary technical skills needed in-house and/or to establish a list of approved qualified contacts to refer users to for additional assistance. Nonetheless, because this is somewhat of a catch-all service that will integrate with other WSTEC services, the structure for providing this specific on-call support service should be established early.

5) Training

The surveys confirm that there is a large need for ongoing training in a range of stormwater subjects for a range of target audiences. Training can provide high impact for relatively low cost, and the WSTEC's mission would be supported by increased stormwater training coordination and attendance around the region. There are various training efforts already ongoing across the region, and other training needs that are somewhat underserved. As such, several survey participants identified a need for the WSTEC to at least act as a central reference point for identifying and recommending training opportunities, and to provide or coordinate training as needed. This would help everyone that is in need of training (knowingly or unknowingly) become aware of the opportunities (or in NPDES permit situations, the requirements) for stormwater training. The WSTEC could take a more active role in packaging and delivering training if it makes sense, but at a minimum the surveys identified the need for better training coordination and communication. Specific suggestions offered by some survey participants included:

- Hosting training with WSTEC or third-party trainers
- Identifying, coordinating, and promoting third-party trainings
- Maintaining email list serves to encourage and prioritize training opportunities.

Should the EMT elect to focus the WSTEC on this need, work could begin almost immediately.

6) Education, outreach, and advocacy

Similar to the on-call technical support service identified previously, several survey participants identified the need for the WSTEC to proactively educate and inform regional stakeholders on a range of stormwater issues. This category is presented slightly lower in the priority list because several of the priority education and outreach needs are already highlighted under previous headings. For example – the need to educate businesses and municipalities on permit

requirement and successful compliance efforts, and the need to facilitate coordination and information sharing of outreach efforts already in place – are already identified above. In addition, other needs identified in this category are being provided through various other avenues (e.g., Ecology, PSP, special interest groups) and may or may not make sense as a priority for the WSTEC.

Nonetheless, other educational and outreach needs that were identified under this category include:

- Helping to increase the public’s general awareness of stormwater issues and raising the societal value of stormwater and water resources
- Acting as an advocate for stormwater to the public and legislature
- Providing input on educational programs and methods used by businesses and municipalities regionally
- Acting as the key point of contact communicating with other similar stormwater centers in other states and regions.

Elements of this WSTEC service area could begin almost immediately, but the overall service seemingly would grow in coverage and influence over time as the WSTEC becomes more established and informed on regional stormwater issues.

7) Monitoring assistance and TAPE

Some survey input identified an interest in the WSTEC taking on a role in coordinating and/or managing regional water quality monitoring efforts, and several related discussions are already underway in the region. While monitoring itself is by no means a low priority for the region, there are many ongoing discussions at various levels about revising Washington State’s monitoring practices and what role the WSTEC could play in regional monitoring. These discussions include reworking the TAPE process, as well as developing a regional monitoring approach. Because AC and EMT members are actively involved in those discussions, this memorandum will not focus on summarizing regional water quality monitoring issues. Rather, this section summarizes a few of the survey suggestions related to WSTEC and monitoring. In short, several comments focused on having the WSTEC provide management and oversight of regional water quality monitoring efforts, including providing data management and dissemination. Several survey comments also focused on the need to revisit the TAPE process.

8) Assistance with low impact development (LID)

In relation to the previous BMP resource category, several survey participants specifically identified a need for information specific to LID approaches. This is indicative of the regional and national emphasis (technical and regulatory) on LID as a preferred stormwater solution. Many survey responses reflected an understanding of the need to explore and implement LID, with some comments also noting that LID can’t be applied in all situations, thus the need for the WSTEC to help clarify opportunities and constraints. Common needs identified in the surveys included:

- Training
- Design support
- Database of installed facilities
- Code development and implementation
- Design and construction costs
- Operations and maintenance needs
- Construction procedures.

Although the need for LID support is significant and the comment was made frequently in the survey responses, at this time we have identified this as a lower priority need because increasing LID support is being provided through other avenues. For example, WSU and UW have ongoing training and education programs, WSU has extensive research and monitoring in place and planned for the future, WSU is updating the regional LID technical guidance manual, the PSP has been performing LID support for many years, and the Department of Ecology is in the process of developing regulatory requirements and guidance related to LID. Therefore, the role of the WSTEC in assisting with LID application could be focused on coordination and dissemination of information and less on detailed technical and programmatic support.

9) *Technical research*

In relation to the BMP resources and guidance service discussed previously in this memorandum, several municipal and agency surveys commented on the need for the WSTEC to perform active research on new BMP technologies. Specific comments were focused on:

- Testing BMPs in different climates (e.g., eastern and western Washington)
- Targeting specific pollutants (e.g., metals, and fecal coliform bacteria)
- Monitoring LID facilities specifically.

Similar to the monitoring support service discussed previously, although technical research itself is not a low priority need for the region, there are several past, ongoing, and future research efforts that could meet some of the perceived needs identified in the surveys. Examples include TAPE approvals, permit-required monitoring, and WSU's expansive BMP monitoring plans. If the WSTEC focuses on sharing information obtained from past and future research activities (i.e., through other WSTEC services outlined above), this perceived research need may be a lower priority. However, it is worth noting that RCW 90.48.545 does clearly include several line items suggesting the WSTEC may support review, evaluation, pilot testing, and research of stormwater technologies. The RCW does not direct the WSTEC to conduct research, but nonetheless that direction should be considered relative to this research service area.

Appendix A4

Stormwater Technical Resource Center Survey Summary

The target audience in this survey is represented by industrial and construction stormwater permittees. Individuals and company names have been removed for confidentiality purposes. For more information regarding this survey and the results please contact Grant Gilmore with the Association of Washington Business Institute or Grant Nelson at the Association of Washington Business.

<p style="text-align: center;"><u>Estimated surveys sent</u></p> <ul style="list-style-type: none"> ✓ Water Quality Committee – 270 emails sent on 6/3/2010 ✓ Members & non-members w/email addresses WITH Active Water Quality permits – 116 email sent on 6/4/2010 ✓ Members w/o email addresses (emails found by Mary) WITH Active Water Quality permits – 56 emails sent on 6/10/2010 ✓ Non Members w/o email addresses (emails to be found by Mary) WITH Active Water Quality permits – 34 emails to be sent on 6/14/2010 ✓ Ecology Listserv - 420 emails sent on 6/14/2010 ✓ Unknown additional listserv emails sent by Ecology 	896	
# of Returned Surveys	64	7%

Section 1 - About your business

Are you aware if your business must comply with any state stormwater permit?

YES	64	100%
NO	0	

Are you engaged in any of the following business activities?

Construction	9	14%
Agriculture	2	3%
Manufacturing	44	44%
Equipment or facilities service or repair?	14	14%
NO	1	2%
No Answer	3	5%
✓ Land Development	1	2%

Please note: 7 respondents (11%) selected more than one business activity.

Do you have any of the following activities at your business?

Build, or create things outside of your buildings	16	25%
Assemble repair or service equipment or machinery outside of your buildings	21	33%
Store any inventory, equipment or other materials outside of your buildings	49	77%
NO	1	2%
No answer	8	13%

Please note: 23 respondents (36%) selected more than one business activity.

✓ **No. Our business is that of land development/home building**

We HAVE DO NOT Have any place on our business property where storm water runs off the property into a creek, lake, street or, ditch maintained by the city, county or state, or into a catch basin that discharges off your property or into a ditch a creek, lake, street, ditch or stormwater system maintained by the city, county or state.

HAVE	46	72%
DO NOT HAVE	15	23%
No answer	3	5%

Section 2 - Your experience with a state stormwater permit

We **HAVE** **HAVE NOT** completed an Application for Coverage under the state's stormwater permit.

HAVE	62	97%
DO NOT HAVE	1	2%
No answer	1	2%

We **HAVE** **HAVE NOT** tried to comply with the following state stormwater permit:

HAVE	61	95%
HAVE NOT	1	2%
No Answer	2	3%

We **HAVE** **HAVE NOT** tried to comply with the following state stormwater permit:

Construction SW Gen Permit	15	23%
Industrial SW Gen Permit	59	92%
None checked	1	2%

Please note: 11 respondents (17%) selected more than one permit type.

We **HAVE** **HAVE NOT** prepared a Stormwater Pollution Prevention Plan (SWPPP). If not, please check or explain why you have not yet prepared a SWPPP for your business:

HAVE	62	97%
HAVE NOT	1	2%
No Answer	1	2%

Didn't know we needed to prepare a SWPPP for our business	
Don't understand how to do it	
Requirements are too complex	

Don't know what best management practice to select	
Please add any other explanation below:	1

- ✓ *I am in the process of writing the SWPPP. The SWPPP must be finished by 7/1/2010. It is 85% complete*
- ✓ *Have two sites that need updates*
- ✓ *We have applied for and received a no exposure exemption – thus longer have a permit. We are required to reapply for a no exposure every 5 years*
- ✓ *We are exempted. We don't have a permit and are not required to be covered under the general permit*

We ARE ARE NOT taking stormwater samples as required by the state's stormwater permit. If not, please explain why you have not taken stormwater samples

ARE	62	97%
ARE NOT	1	2%
No Answer	1	2%

We don't understand how to take a sample	
We don't understand how to test a sample	1
We don't know how to complete a Discharge Monitoring Report (DMR)	

- ✓ *Have not had a property with runoff (14 respondents)*

We HAVE HAVE NOT selected Best Management Practices (BMPs for our business. If not, please explain why you have not selected BMPs for your business:

HAVE	61	95%
HAVE NOT	2	3%
No Answer	1	2%

We don't know which BMPs are appropriate for our business	2
We don't know how to select BMPs	1
We don't know how to operate or maintain the various BMPs	
Please add any other explanation below:	

We DO DO NOT know if we discharge to a 303(d) water-body

DO	48	75%
DO NOT	12	19%
No runoff	1	2%
No answer	3	5%

✓ *No runoff (14 respondents)*

We DO DO NOT know if we are affected by Effluent Limitation Guidelines

DO	50	78%
DO NOT	10	16%
No answer	3	5%

What are (select one or more) the best ways for you to receive the latest technical information and assistance about how to comply with the Washington State stormwater permit. Please rank each of the following on a scale of (1low priority to 10 high priority)

	Ckd Only	1	2	3	4	5	6	7	8	9	10
Via the Internet	19	6	0	2	2	3	1	3	3	4	15
Via a printed guidance manual prepared for my type of businesses	5	1	2	3	1	5	4	2	6	4	9
Printed information sent to me	7	2	3	3	4	7	3	3	6	2	2
Via a video on a CD that shows me what to do	3	6	3	2	2	3	4	4	6	2	1
Via an on-site visit by an expert that understands my type of business - without any fear of citations or fines	6	0	1	3	1	4	3	4	8	3	9
Having access to information and advice via the telephone from an expert that understands my type of business	6	1	3	1	3	5	5	5	5	3	5

Below please add any additional thoughts, suggestions or comments you may have about State of Washington setting up a Stormwater Technical Resource Center to help smaller and mid size businesses comply with the state’s stormwater permit. Constructive suggestions are encouraged:

- ✓ *A big issue that I don’t understand well is when you hit a Level 3 Response & need to do Engineering Approval. Who/where do I get that?*
- ✓ *I am in the process of writing the SWPPP. I had bids from \$ 5,000 - \$ 12,000 for two locations. Anyway to have some do. The template from Ecology was helpful but still complicated. I know they did the one size fits all approach. It was better than nothing.*

Cont. >

- ✓ *This is a great idea. I am the GM of a Moving & Storage Co., We no longer do maintenance on site. I believe we should not be required to comply with the stormwater permit requirements. I need assistance to get out of the program.*
- ✓ *Yes, I think it is a great idea to provide low cost guidance to small and medium businesses.*
- ✓ *Our company is a mid-size land developer/homebuilder and we hire professionals to assist with all of our stormwater permitting, monitoring and reporting requirements. For those companies who can't afford this expense, I would think a resource center would be very beneficial in helping them understand and comply with all phases of the permit requirements.*
- ✓ *Provide links to products useful in treatment of stormwater runoff or product substitution, such as zinc-free forklift tires.*
- ✓ *Having someone available to talk with that has kept current with the states changes.*
- ✓ *We are a "large size business", thus we maintain internal environmental resources capable of addressing nearly all of our sites' routine stormwater discharge permit issues. Although we understand the focus on small and medium size businesses, it would be helpful for all businesses if the Technical Resources Center could also address higher level policy issues that could result in simplification and streamlining of future permits. The permits are too complicated and restrictive to promote pervasive compliance for most businesses.*
- ✓ *It would be helpful to discuss BMP options with a person with such expertise besides a vendor! There are so many options, all of which are expensive, but hard to select the correct one without spending a lot of money, perhaps needlessly.*
- ✓ *Understanding the details regarding action plans is very challenging. It would be helpful to have an expert provide advice regarding these action plans and selecting BMPs to implement.*
- ✓ *Yes, I think it is a great idea to provide low cost guidance to small and medium businesses.*
- ✓ *The permits are too specific and focus attention on details that are not germane to water quality – the focus should be H2O Quality.*

Cont. >

- ✓ *Copper and Zinc are constantly high and we are almost out of ideas to bring them into compliance. Would like technical service person set up to discuss possible sources and abatement ideas.*
- ✓ *It would help for major manufacturing SIC codes, like aerospace, pulp and paper, lumber manufacture etc. INDUSTRY specific PMB's and guidance so we don't have to guess or interpolate between the lines of general guidance.*
- ✓ *Special instances which are not addressed by permit: Our business, with permit required, shares site with non-permitted business (type of business does not require permit coverage, according to Dept of Ecology), non-permitted business has exposed galvanized industrial equipment located in alley, which is shared with our business. Sampling of these sites most always results in high zinc and copper levels, which the best practices (BMPs) in our plan (SWPPP) are powerless to prevent. I would assume this situation is not unprecedented and would like to learn about potential alternatives.*
- ✓ *Stormwater regulations place more of a financial burden on the smaller companies. Smaller businesses without access to expertise need help with correct sampling methods, the appropriate instruments for reading turbidity and pH, SWPPP development and implementation, how to implement appropriate BMPs. Small and mid-sized businesses need access to affordable CESCL certification classes.*
- ✓ *Smaller businesses often times need help in interpreting regulatory language. The language in the most recent Industrial Stormwater General Permit is an improvement over previous versions. However, most small business owners are not in the business of interpreting regulatory language even when improved. The Construction Stormwater Permit is unclear in areas and again, giving small business owners access to clear interpretation is needed.*
- ✓ *The state has full time people that only work on environmental issues. They love to create acronyms, abbreviations, and language that is unclear and confusing. If they were to make rules that were simple and to the point and give us simple rules to follow, more companies would be in compliance. Most small businesses do not have the recourses to commit a full time person to environmental issues. We try to stay in compliance by assigning people within our ranks. When the rules are cumbersome and the record keeping is extensive it makes it difficult to commit the manpower needed to stay compliant. If storm water testing was the only requirement of the state it would be fairly simple, but the state requires many other programs such as other environmental, safety, inspections, DOT and others.*

Cont. >

- ✓ *We are a small machine shop (around 25 employees) in southwest Washington. We do machining, some fabrication, and assembly. We do have a storm water permit, and take samples every quarter. We have one discharge point which discharges into state natural water way filter area. We normally do not have problems staying below our benchmarks with the exception of zinc, which we are continuing to work on. I perform the maintenance for our company including all machines, rolling stock, facilities, and hoists. In addition to these responsibilities I am responsible for all environmental, safety, and other state requirements. Anything that can be done to simplify the requirements would be helpful.*
- ✓ *Downloadable Stormwater Management Manual – or request a CD of the book. (This may be there and I've missed it.)*
- ✓ *Infiltration sites – when are we in, when are we out.*
- ✓ *Consistent compliance – how to keep this over multiple permits to lessen cost of compliance.*
- ✓ *I really appreciate the templates on the website – monthly inspection, SWPPP templates, those kind of things.*
- ✓ *How to get E-DMR to work for everybody – I see it but can't get to it!!*
- ✓ *There needs to be a way to help satisfy some limits that are difficult to obtain. Not exactly cost feasible to powder coat our galvanized fencing used for plant security (required by another government agency) Zinc and copper limits? Need to have more user friendly information available to all businesses. We see how a lot of businesses do not even try to be in compliance and nothing is said to them. On the other hand, we can warned (?) over simple things that the compliance officer didn't understand.*
- ✓ *I could use help understanding which BMPs are now mandatory. Also when or ensuring S6-any special requirements.*
- ✓ *It is always helpful to be able to speak with someone who understands our type of business. Since industries vary so much it can be difficult to understand what applies to our type of business. There seems to be a lot of grey areas in the stormwater permit which raises a lot of issues and questions for us, and it can be difficult to find resolutions and answers.*
- ✓ *Clearinghouse of ideas about dissolved metal removal; which methods work the best.*

Cont. >

- ✓ *Obtain determination or clarification from the agency on permit requirements, especially the new mandatory BMP's. They can be in the form of case studies, a FAQ webpage or interpretation letters. Difficulty to comply or difficulty to understand?*
- ✓ *The permit and the STATE resource are so convoluted they are very difficult to understand. Five people will give you six different answers.*
- ✓ *The benchmark limits appear to be arbitrary – Just to see if they can be met with no real scientific basis. The term “water bodies of the state” is poorly defined. Some of the manual provided by the state seems to contain contradictions. It would be very useful to have an on-site visit by an expert not connected to the state in an official capacity. A list of “approved” testing labs in our area would be useful! How to deal with run-off from neighboring properties. An annual seminar in our local area on stormwater issues.*
- ✓ *To their credit, much info we needed we were able to get off of inter site, though some of it took digging – such as impaired water bodies & effluent limits info. Also, a stormwater meeting was held in our area & was heavily attended and was useful. But we were not left feeling positive about it – mostly a sense of more requirements to com. This needs to be kept simple for there to be full cooperation by all, with requirements that can actually be met by businesses with limited resources.*

What aspects of complying with your stormwater permit caused you problems in understanding or complying?

- 1) *Lack of definitions*
- 2) *Low benchmark levels*

What mechanism would provide you the most help in overcoming these problems?

- 1) *Guidance*

What new or updated best management practices do you need in the Stormwater technical manual?

1) BMPs to control specific constituents of concerns (e.g. low level metals)

Suggestions:

- 1) One on one visits from subject matter experts to provide assistance*
- 2) Guidance for how to comply with permit required reporting (i.e. SWPPP< DMRs, Inspections)*
- 3) Guidance for interpreting BMPs*

What aspects of complying with your stormwater permit caused you problems in understanding or complying?

The lack of support from DOE. (There were local individuals with DOE that were very helpful – to the extent of their knowledge.) They wanted us to create programs but at that time they had no idea of what the program should look like.

What mechanism would provide you the most help in overcoming these problems?

Just tell me clear and concise what you want – give me the boilerplate and I'll fill in the blanks. It's ridiculous for all of us to be reinventing the wheel every time a bureaucrat gets another great idea.

What new or updated best management practices do you need in the Stormwater technical manual?

- ✓ How about telling me what the new or updated best management practices are. We are a small business like most businesses in the state. It's a full time job trying to find out what you are supposed to be in compliance on and trying to be in compliance when there is constantly layer after of layer of compliance added and we have to read about it in the newspaper because the state doesn't share that information with those of us trying like crazy to be in compliance.*
- ✓ We are currently switching from an environmental consulting company to doing the reporting. It would be helpful if assistance of sub-bodies (?) could be provided for training in sampling and filling out PMRs.*
- ✓ Try to provide solutions that can work. Provide simple instructions on our responsibilities if/when we have an exceeded benchmarks*

Cont. >

- ✓ *Note from AWB Member representative: permits for sand gravel/pits/ready mix. They are separate permit and this group niche has specific issues. Something to consider when creating the STR Center. Very interested.*
- ✓ *It seems that Ecology already has technical assistance available. What is the need for a “new state service” and where is the funding coming from during this economic crisis?*
- ✓ *Include information on Individual Permits and VIC Regulations interpretation and clarification. (Boeing 2)*
- ✓ *This should be very helpful. Under the previous permit we did not test for some of the required parameters. Our reports were viewed by a 3rd party who then sued us for being out of compliance. If the state had alerted us that we were missing some data, we could have made the changes sooner and added the missing tests. These 3rd party lawsuits affected a number of companies we understand. It appears it is income generating for these groups. We never heard of the money going to environmental causes. It would be helpful to have information on how “remove” pollutants from stormwater before it is discharged. Several years ago we had elevated levels of zinc. No one at the State DOE could tell us how to clean it up. We remove d the sheet metal on our roof and the numbers went way down. Simple solution to fix big problems. Just one example. (Green Garden)*
- ✓ *Technical on site workshops would be very helpful. As an example when we first got our permit in 2005 it was difficult to interpret what made a sampling event. A hands-on approach to this would have helped a lot. DOE has traveling operators like Carl Jones that helps to achieve these things. (COPA)*
- ✓ *Yes, I think it is a great idea to provide low cost guidance to small and medium businesses. (King Co So Plant)*
- ✓ *I think it would be very helpful to create a database – available on the internet – from the decisions of the Pollution Control Hearings Board and any cases that went through further appeals. This would include all the various NPDES Permits. Many of those decisions are not really reflected by the language in the Permits since they are often fine points of implementation. (WS DOT)*
- ✓ *Any help with meeting turbidity reqs would be appreciated. The Chitosan/Sand Filtrations option is a joke. We (my company) may curtail ops in WA partially due to the costly nature of compliance and almost is possible to meet turbidity limits.*

(In reference to the chart below) 10 – Going thru a billion pages of mandatory BMPs (or deciding which are N/A or we currently have equivalent for). 10 – Turbidity. 10 – Deciding if an area that includes road fun on is appropriate to sample. (Unimin)

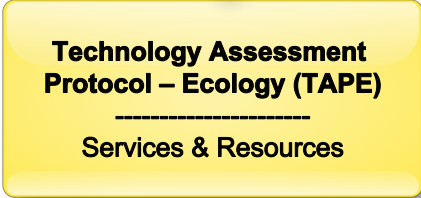
On the following chart, please rank from (1 least difficult to 10 very difficult) the difficulty you are having the various elements of the stormwater permit

Permit	Page	Required Actions	1	2	3	4	5	6	7	8	9	10	N/A
S1	6	PERMIT COVERAGE: Do I need a stormwater permit?	44	3	2	1	7			1		2	
S2	11	APPLICATION FOR COVERAGE: How do I apply?	36	8	4	4	2	2		2		1	1
S3	13	STORMWATER POLLUTION PREVENTION PLAN (SWPPP) requirements to create and implement	11	4	5	2	14	6	4	6	4	4	
S4	21	GENERAL SAMPLING REQUIREMENTS: sample for what, when and report how?	17	8	6	5	11	3	2	5		1	
S5	24	BENCHMARKS, EFFLUENT LIMITATIONS AND SPECIFIC SAMPLING REQUIREMENTS	10	4	7	5	12	4	4	5	2	6	1
S5A	25	How do I read the benchmark tables to know what I need to do?	17	7	12	5	5	6	2	3		1	2
S5B	27	Am I affected by an "Effluent Limitation Guidelines?"	16	6	6	3	4	5	7	4	2	4	3
S5C	28	What can I discharge to storm drains other than rain/snow melt?	19	7	7	1	10	3	6	3		3	1
S6	30	Why do I have to worry about DISCHARGES TO 303(d)-LISTED OR TMDL WATERS:	19	6	9	4	8	1	2	2	5	4	1
S7	33	INSPECTIONS: How does this differ from sampling? When and how?	15	9	5	7	11	2		5	1	5	
S8A	34	CORRECTIVE ACTIONS: What triggers?	6	10	7	5	11	3	2	12	1	3	
S8B	34	What actions must I take?	7	4	5	5	13	2	5	10	3	6	
S9	37	REPORTING AND RECORDKEEPING: What, how and when for reports.	12	12	3	5	5	4	7	9		3	
S11	40	PERMIT FEES: How much will this cost me?	16	10	7	6	9	2	2	6		3	
G1-G25	42	General Permit Conditions- Do I need to pay any attention to these?	9	8	4	5	7	5	6	10	2	4	
App-2	51	DEFINITIONS; Use of Best Professional Judgment	7	4	4	2	10	7	6	10	6	4	
		Information unknown or No answer - 4											

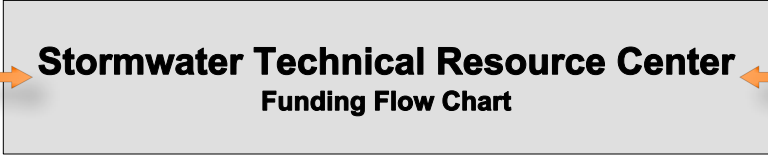
✓ S5/24 – 10 Copper App2/51 – 9 Ambiguous



Program Directors will work with the SWTRC Executive Team to help coordinate and seek out core funding & overhead expense fees (i.e. Administrative, research, education, support, technical assistance, marketing, events,)



Percent goes to the SWTRC core funding & overhead expense fees for leveraging and coordinated efforts (i.e. administrative, marketing, events, partnership development, research)



SWTRC Over-arching Funding Components
(Center Executive Team and support staff will work with program directors to develop and implement sustainability plans)



Accrual Basis

Stormwater Technical Resource Center

Ordinary Income/Expense	Base/start up year	Inc %	FY1	Inc %	FY2	Inc %	FY3	Inc %	FY4	Inc %	FY5
Profit Loss											
Income											
Unrestricted											
Grants (Core funding)	\$ 500,000	20%	\$ 600,000	5%	\$ 530,000	5%	\$ 556,500	5%	\$ 584,325	5%	\$ 613,541
Sponsorships	\$ -		\$ 60,000	20%	\$ 72,000	20%	\$ 86,400	20%	\$ 103,680	20%	\$ 124,416
Product Line	\$ -		\$ 20,000	15%	\$ 23,000	15%	\$ 26,450	15%	\$ 30,418	15%	\$ 34,980
Contracts	\$ -		\$ 20,000	5%	\$ 21,000	5%	\$ 22,050	5%	\$ 23,153	5%	\$ 24,310
Total Unrestricted	\$ 500,000		\$ 700,000		\$ 646,000		\$ 691,400		\$ 741,575		\$ 797,248
Restricted											
TAPE Program (30K Core + Applicant Fees)	\$ 500,000	0%	\$ 50,000	0%	\$ 58,000	0%	\$ 74,000	0%	\$ 76,000	0%	\$ 66,000
LID Center (Core)	\$ -	0%	\$ 135,000	5%	\$ 141,750	5%	\$ 148,838	5%	\$ 156,279	5%	\$ 164,093
Municipal Monitoring (Core, TBD Fee Struct)	\$ -		\$ -		\$ 280,000	5%	\$ 294,000	5%	\$ 308,700	5%	\$ 324,135
Total Restricted	\$ 500,000		\$ 185,000		\$ 479,750		\$ 516,838		\$ 540,979		\$ 554,228
Events											
Events	\$ -		\$ 20,000	50%	\$ 30,000	20%	\$ 36,000	20%	\$ 43,200	20%	\$ 51,840
Total Events	\$ -		\$ 20,000		\$ 30,000		\$ 36,000		\$ 43,200		\$ 51,840
Total Income	\$ 1,000,000		\$ 905,000		\$ 1,155,750		\$ 1,244,238		\$ 1,325,754		\$ 1,403,316

Accrual Basis

Expense	Base/start up year	Inc %	FY1	Inc %	Stormwater Technical Resource Center		Inc %	FY4	Inc %	FY5		
					FY2	Profit Loss	FY3					
						FY1-FY5						
Salaries												
SWTRC Exec Director	\$		100,000	3%	\$	103,000	3%	\$	106,090	3%	\$	112,551
Executive Admin Assist	\$		40,524	3%	\$	41,740	3%	\$	42,992	3%	\$	45,610
Total Exec Salaries	\$		140,524		\$	144,740		\$	149,082		\$	158,161
SWTRC Bus Program Director	\$		75,000	3%	\$	77,250	3%	\$	79,568	3%	\$	84,413
TAPE Program Director	\$		75,000	3%	\$	77,250	3%	\$	79,568	3%	\$	84,413
LID Program Director	\$		75,000	3%	\$	77,250	3%	\$	79,568	3%	\$	84,413
Municipalities Program Director	\$		75,000	3%	\$	77,250	3%	\$	79,568	3%	\$	84,413
Total Program Director Salaries	\$		300,000		\$	309,000		\$	318,270		\$	327,818
Technical / Specialist												
Business Program	\$		60,000	3%	\$	61,800	3%	\$	63,654	3%	\$	65,564
TAPE Program	\$		60,000	3%	\$	61,800	3%	\$	63,654	3%	\$	65,564
LID Center	\$		60,000	3%	\$	61,800	3%	\$	63,654	3%	\$	65,564
Municipalities Program	\$		-	3%	\$	60,000	3%	\$	63,654	3%	\$	65,564
Total Technical Specialist	\$		180,000		\$	245,400		\$	252,762		\$	260,345
Admin Assistant												
Business Program	\$		35,000	3%	\$	36,050	3%	\$	37,132	3%	\$	38,245
TAPE Program	\$		35,000	3%	\$	36,050	3%	\$	37,132	3%	\$	38,245
LID Center	\$		-	3%	\$	35,000	3%	\$	36,050	3%	\$	37,132
Municipalities Program	\$		-	3%	\$	35,000	3%	\$	36,050	3%	\$	37,132
Total Admin Assistant	\$		70,000		\$	142,100		\$	146,363		\$	150,754
Total Salaries	\$		690,524		\$	841,240		\$	866,477		\$	892,471
Benefits @ 30.6 % increase												
SWTRC Exec Director	\$		30,600		\$	31,518		\$	32,464		\$	33,437
Executive Admin Assist	\$		12,400		\$	12,772		\$	13,156		\$	13,550
Total Exec Benefits	\$		43,000		\$	44,290		\$	45,619		\$	46,988
SWTRC Bus Program Director	\$		22,950		\$	23,639		\$	24,348		\$	25,078
TAPE Program Director	\$		22,950		\$	23,639		\$	24,348		\$	25,078
LID Program Director	\$		-		\$	22,950		\$	23,639		\$	24,348
Municipalities Program Director	\$		-		\$	22,950		\$	23,639		\$	24,348
Total Program Director Benefits	\$		45,900		\$	93,177		\$	95,973		\$	100,357
Technical / Specialist												
Business Program	\$		18,360		\$	18,911		\$	19,478		\$	20,062
TAPE Program	\$		18,360		\$	18,911		\$	19,478		\$	20,062
LID Center	\$		18,360		\$	18,911		\$	19,478		\$	20,062
Municipalities Program	\$		-		\$	18,360		\$	18,911		\$	19,478
Total Technical / Specialists Benefits	\$		55,080		\$	75,092		\$	77,345		\$	82,055
Admin Assistant												
Business Program	\$		10,710		\$	11,031		\$	11,362		\$	11,703
TAPE Program	\$		10,710		\$	11,031		\$	11,362		\$	11,703
LID Center	\$		-		\$	10,710		\$	11,031		\$	11,362
Municipalities Program	\$		-		\$	10,710		\$	11,031		\$	11,362
Total Admin Assistant Benefits	\$		21,420		\$	43,483		\$	44,787		\$	46,131
Total Benefits	\$		165,400		\$	256,042		\$	263,725		\$	271,636

Accrual Basis

Stormwater Technical Resource Center

Profit Loss

FY1-FY5

	Base/start up year	Inc %	FY1	Inc %	FY2	Inc %	FY3	Inc %	FY4	Inc %	FY5
Operations											
Office Expenses											
Business Program	\$		2,500	5%	\$		2,756	5%	\$		3,039
TAPE Program	\$		2,500	5%	\$		2,756	5%	\$		3,039
LID Center	\$		2,500	5%	\$		2,756	5%	\$		3,039
Municipalities Program	\$		2,500	5%	\$		2,625	5%	\$		2,894
Total Office Expenses	\$		10,000		\$		10,375		\$		12,010
Office Rent											
Business Program	\$		4,200	5%	\$		4,631	5%	\$		5,105
TAPE Program	\$		4,200	5%	\$		4,631	5%	\$		5,105
LID Center	\$		4,200	5%	\$		4,631	5%	\$		5,105
Municipalities Program	\$		4,200	5%	\$		4,631	5%	\$		5,105
Total Office Rent	\$		16,800		\$		17,640		\$		20,421
Equipment / Support											
Business Program	\$		2,000	0%	\$		1,050	5%	\$		1,158
TAPE Program	\$		2,000	0%	\$		1,050	5%	\$		1,158
LID Center	\$		2,000	0%	\$		1,050	5%	\$		1,158
Municipalities Program	\$		2,000	0%	\$		1,050	5%	\$		1,158
Total Equipment / Support	\$		8,000		\$		4,200		\$		4,631
Total Operations	\$		34,800		\$		32,015		\$		37,061
Travel											
Per Diem											
Business Program	\$		500	5%	\$		551	5%	\$		608
TAPE Program	\$		500	5%	\$		551	5%	\$		608
LID Center	\$		500	5%	\$		551	5%	\$		608
Municipalities Program	\$		500	5%	\$		551	5%	\$		608
Total Per Diem	\$		2,000		\$		2,100		\$		2,431
Conferences / Events											
Business Program	\$		1,000	5%	\$		1,103	5%	\$		1,216
TAPE Program	\$		1,000	5%	\$		1,103	5%	\$		1,216
LID Center	\$		1,000	5%	\$		1,103	5%	\$		1,216
Municipalities Program	\$		1,000	5%	\$		1,103	5%	\$		1,216
Total Conferences / Events	\$		4,000		\$		4,200		\$		4,862
Total Travel	\$		6,000		\$		6,300		\$		7,293
Consulting Expense											
Business Program	\$		10,000	5%	\$		11,025	5%	\$		12,155
TAPE Program	\$		10,000	5%	\$		11,025	5%	\$		12,155
LID Center	\$		-	5%	\$		-	5%	\$		-
Municipalities Program	\$		10,000	5%	\$		11,025	5%	\$		12,155
Total Consulting Expense	\$		30,000		\$		31,500		\$		36,465
Total Consulting Expense	\$		30,000		\$		31,500		\$		36,465
TOTAL EXPENSES	\$		926,724		\$		1,167,097		\$		1,278,389
TOTAL PROFIT / LOSS	\$		(21,724)		\$		(11,347)		\$		84,676