



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**Washington State  
Department of Ecology  
Quality Report to Management,  
July 2009 through June 2012**

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**Quality System Structure, Activities,  
and Assessment**

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**Quality System Structure, Activities,  
and Assessment**

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# Table of Contents

	<u>Page</u>
Purpose of This Document.....	5
The Quality System at Ecology .....	7
Managing Quality Assurance (QA) at Ecology .....	7
Previous System Audits: Issues and Responses.....	7
Quality-Related Initiatives and Projects .....	9
National Estuary Program – QA oversight .....	9
Standard Operating Procedures (SOP) Project .....	12
Quality Assurance Website.....	13
Quality Assurance Glossary.....	13
QA Issues, Recommendations, and Resolutions.....	15
2012 EPA Audit Recommendations .....	15
Completion of QAPPs Before Project Field Work Begins.....	15
Reporting Arrangement for Ecology’s QA Officer .....	16
Semi-permeable Membrane Devices (SPMDs) – QA Issues .....	16
Microbial Source Tracking (MST) – QA Criteria Development.....	17
Padilla Bay Accreditation .....	17
Quality System Implementation Across Ecology Programs.....	17
EPA QAPP Guidance Revisions.....	17
“Supervisor Approval and First Sampling Date” Form Misuse .....	17
2010 Quality Management Plan (QMP) – Major Changes.....	18
Water Quality QA Issues .....	18
Ecology Program Quality System Reports .....	19
1. Air Quality Program .....	20
2. Environmental Assessment Program – General .....	22
3. Environmental Assessment Program – Laboratory Accreditation Unit .....	25
4. Environmental Assessment Program – Manchester Laboratory.....	28
5. Hazardous Waste and Toxics Reduction Program.....	33
6. Nuclear Waste Program .....	37
7. Waste 2 Resources Program .....	39
8. Shorelands and Environmental Assistance (SEA) Program .....	42
9. Spills Program.....	43
10. Toxics Cleanup Program.....	46
11. Water Quality Program .....	50
12. Water Resources Program.....	53
References.....	55
Appendices.....	57
Appendix A. Acronyms and Abbreviations.....	59
Appendix B. Agency Quality Staff.....	61

Appendix C. Current Ecology SOPs.....	62
Appendix D. Ecology Internal Laboratory Audits.....	71
Appendix E. Ecology QA Timeline.....	72
Appendix F. EPA Audit of Ecology’s Quality System - 2012 .....	77
Appendix G. 2011 Quality Management Plan Addendum .....	85

## Purpose of This Document

The Washington State Department of Ecology (Ecology) is required to produce this quality system report, as specified in Ecology's *Quality Management Plan*. The Plan requires periodic reporting to Ecology management evaluating Ecology's quality system, identifying quality system issues, and presenting recommendations for quality system improvements.

The "quality system" is a structured and documented management system that provides the framework for (1) planning, implementing, documenting, and assessing environmental data operations, and (2) carrying out required quality assurance and quality control activities.

The quality system encompasses both management and technical activities. This report documents these activities from July 2009 through June 2012.

This report contains information on several aspects of the quality system, including:

- Developing and approving Quality Assurance Project Plans.
- Documenting standard operating procedures.
- Quality system initiatives undertaken by Ecology.
- Issues encountered while implementing the *Quality Management Plan*.
- Recommendations for changes in the quality system and *Quality Management Plan*.
- Reports on current quality system activities from all Ecology environmental programs.

The intended audience for this report is Ecology's director and deputy director, Ecology's executive management team, and other interested parties.

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# The Quality System at Ecology

## Managing Quality Assurance (QA) at Ecology

Ecology's quality system is defined in the agency's *Quality Management Plan* (Ecology, 2010) and is formally established in Ecology Policy 22-01 (Ecology, 2006). The *Quality Management Plan* is based largely on requirements set out by the U.S. Environmental Protection Agency (EPA) in their internal QA system guidance (EPA, 2006a).

The Ecology QA Officer, who is designated by Ecology's Director, coordinates QA activities throughout the agency. The QA Officer also is the chief QA liaison for extra-agency QA activities. The QA Officer is based in the Environmental Assessment (EA) Program.

All Ecology programs have designated one or more QA Coordinators, who have a commitment of 0.25 FTE/program for quality-related activities.

Manchester Environmental Laboratory (MEL) has an integral role in the quality system at Ecology. MEL is the in-house Ecology laboratory and provides lab services for general chemistry, metals, organic chemistry, and microbiology. Laboratory QA practices are discussed in Ecology's *Quality Management Plan* and are formally described in the MEL QA Manual (Ecology, 2012).

Ecology's Laboratory Accreditation Unit (LAU) provides accreditation services to help establish and document laboratory proficiency for the reporting of data to Ecology. Accreditation requirements for data produced by and submitted to Ecology are detailed in Ecology Policy 22-02 (Ecology, 2008a). The LAU maintains a procedural manual (Ecology, 2010a) and several standard operating procedures (SOPs) (Ecology 2007b, 2007c, 2008b) documenting the QA practices and procedures of the unit.

## Previous System Audits: Issues and Responses

Ecology has resolved several of the outstanding issues identified in the 2003 and 2006 Quality System Reviews and the *Quality Report to Management, 2006 - 2009*. The resolved issues include:

- **MEL audit process** – This has been incorporated into the quality system activities as a routine occurrence. Currently MEL is periodically audited by the LAU. Recent audits by LAU have indicted acceptable quality performance by MEL. The next MEL audit by LAU will occur in late 2012.
- **Field, field analytical, and accreditation SOPs** – An EA Program policy on SOPs was developed and implemented in Fiscal Year (FY) 2006. The EA Program now has over 75 field-related and accreditation SOPs. This is in addition to over 125 SOPs at MEL. The Air Quality Program, Spills Program, and Nuclear Waste Program also have SOPs to support program activities.

- **Guidelines for writing Quality Assurance Project Plans (QAPPs)** – The last major revision of this document occurred in FY 2004 (Lombard and Kirchmer, 2004). Additionally, The EAP Program QAPP procedures were revised and updated in 2012

Other historical QA issues still requiring work include:

- **QA training resources** – This is an issue for the agency. Ecology continues to need a full-time equivalent (FTE) for an EA Program QA/Training Coordinator/Auditor.

# Quality-Related Initiatives and Projects

## National Estuary Program – QA oversight

This section describes the quality system that Ecology has implemented for projects funded by EPA's National Estuary Program.

### Background

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Congress recently appropriated substantial federal dollars to help protect and restore the Puget Sound ecosystem.<sup>2</sup> EPA will receive this funding and ensure that it is used in a manner consistent with the Puget Sound Partnership's Action Agenda and recommended Near-Term Actions. EPA's National Estuary Program (NEP) will pass most of the funding to lead organizations (LOs) in Washington State that will use their expertise to address different priorities of the Action Agenda:

- The departments of Fish and Wildlife and Natural Resources (WDFW and WDNR) are the LOs for *Marine and Nearshore Protection and Restoration*.
- The departments of Ecology and Commerce are the LOs for *Watershed Protection and Restoration*.
- Ecology is the LO for *Toxics and Nutrients Prevention, Reduction and Control*.
- The departments of Health (DOH) and Ecology are the LOs for *Pathogen Prevention, Reduction and Control*.
- The Puget Sound Partnership (PSP) is the LO for *Managing Action Agenda Implementation and Outreach and Stewardship*.
- The Northwest Indian Fisheries Commission (NWIFC) is the LO for *Tribal Capacity and Implementation*.

All LOs will develop and maintain multi-year strategies supporting the Action Agenda, choose projects that need funding, and further distribute funding by means of competitive grants, direct awards, and interagency agreements.

### Ecology's roles and responsibilities

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This influx of NEP funding is supporting many Puget Sound-related projects that collect new environmental data, analyze existing environmental data, or model the environment. EPA requires these activities to have Quality Assurance Project Plans (QAPPs) approved before work begins (EPA, 2001a; excerpt #1). QAPPs, in turn, must be approved by EPA or an entity that has an EPA-approved *Quality Management Plan* or QMP (EPA, 2001b; excerpt #2).

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<sup>2</sup> Funding over six years may exceed \$190 million.

The only LO with an EPA-approved QMP and a *mature* quality system in place is Ecology so it has agreed to be responsible for quality oversight, including QAPP review, for all new NEP-funded projects administered by the State LOs (Ecology, 2010; Ecology 2011). Tom Gries and Bill Kammin, Ecology's new NEP Quality Coordinator (NEPQC) and Quality Assurance Officer, respectively, provide this oversight.<sup>3</sup>

The NEPQC is responsible for:

- Providing early guidance on QA requirements likely applicable to individual projects [based on draft Scopes of Work (SOWs)].
- Determining final QA requirements applicable to each NEP-funded project.<sup>4</sup>
- Developing a process and documentation for waiving QAPP requirements.
- Reviewing waiver requests.
- Providing technical support to LOs and project managers preparing QAPPs by:
  - Developing and conducting quality system training.
  - Developing QAPP templates and checklists.
  - Identifying model QAPPs relevant to specific types of projects
- Reviewing draft QAPPs for compliance with EPA requirements.<sup>5</sup>
- Recommending approval of waivers, QAPPs, and final project reports.
- Performing audits and reviewing draft reports associated with projects to assess consistency with approved QAPPs.
- Maintaining an NEP QA web site with information useful to LOs and project managers.
- Reviewing, verifying, and validating NEP-funded project data as necessary and appropriate.
- Other NEP-related duties as assigned.

The Ecology QA Officer is responsible for:

- Reviewing and approving waivers, QAPPs, and final project reports.
- Troubleshooting the overall quality program for NEP projects.

Ecology retains this authority to approve QAPPs for NEP-funded projects until LOs demonstrate *mature* quality systems as evidenced by (1) an EPA-approved QMP, (2) a functioning as-built quality system, (3) the designation of an agency quality manager with appropriate experience in quality assurance, and (4) the concurrence of the EPA Region 10 Quality Manager.

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<sup>3</sup> The State LOs jointly fund the NEP Quality Coordinator position.

<sup>4</sup> EPA promotes a graded approach to project planning: the level of detail provided in quality documentation should correspond to the complexity and import of each project (see footnote #3).

<sup>5</sup> The NEPQC may coordinate with subject experts when reviewing QAPPs for NEP-funded projects and reports, but he is not responsible for providing peer review.

## Accomplishments

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From mid-October 2011 through June 2012 (approximately 9 months) the NEPQC has:

- Identified and communicated with key NEP contacts (e.g., managers and technical staff within LOs and focus groups).
- Provided quality training via:
  - The NEP QA web site.
  - One training session on quality requirements for WDFW grant recipients.
- Met or consulted by phone with project managers preparing waivers and QAPPs.
- Became familiar with and/or reviewed > 90 projects receiving Rounds 1 and 2 funding.
- Recommended waivers for 32 projects to be approved (31 were approved).
- Recommended approval of 13 QAPPs (13 approved).
- Developed an audit form and conducted field audits on two projects.

## Challenges

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The following are some of the challenges encountered while providing quality oversight of NEP-funded projects related to the protection and restoration of Puget Sound:

- Determining whether a QAPP is needed can be difficult for certain projects.
- Determining the level of detail appropriate for certain QAPPs can be difficult.
- Negotiating QAPP approval for a University of Washington Department of Civil and Environmental Engineering project without requiring the laboratory to become fully accredited (accepting instead an equivalent demonstration of competency).
- Coordinating and recording final agreements between Ecology and EPA regarding QA requirements for Microbial Source Tracking (MST) projects.
- Negotiating agreements related to projects proceeding without approved QAPPs, and preparing a model corrective action form for two such projects.
- Requiring NEP-funded U.S. Geological Survey (USGS) projects to prepare EPA-equivalent quality documentation.

## *Planned NEP QA activities*

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Activities that will be important to initiate or continue include:

- Providing important updates to the NEP QA web site.
- Conducting a series of training sessions on quality systems and how to prepare a QAPP.
- Conducting more field audits (prioritizing those that are complex, receive more substantial funding, and/or have a potentially high impact).

- Prioritizing and streamlining the QAPP review and approval process.
- Reviewing and commenting on draft project reports.
- Facilitating completion and EPA-approval of QMPs drafted by State LOs.

## Relevant excerpts

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### 1. From EPA, 2001a:

“All organizations conducting environmental programs funded by EPA are required to establish and implement a quality system. EPA also requires that all environmental data used in decision making be supported by an approved Quality Assurance Project Plan (QA Project Plan).”...

“Non-EPA organizations funded by EPA are required to develop a QA Project Plan through:

- 48 CFR 46, for contractors;
- 40 CFR 30, 31, and 35 for assistance agreement recipients; and
- Other mechanisms, such as consent agreements in enforcement actions.”

### 2. From EPA 2001b:

“EPA Order 5360.1 A2 and the applicable Federal regulations (defined above) establish a mandatory Quality System that applies to all EPA organizations and organizations funded by EPA ... The ANSI/ASQC E4-1994 standard describes the necessary management and technical elements for developing and implementing a quality system. This standard recommends using a tiered approach to a quality system. This standard recommends first documenting each organization-wide quality system in a Quality Management Plan or Quality Manual (to address requirements of *Part A: Management Systems* of the standard) and then documenting the applicability of the quality system to technical activity-specific efforts in a QA Project Plan or similar document (to address the requirements of *Part B: Collection and Evaluation of Environmental Data* of the standard).”

### 3. From EPA, 2001a:

“Recognizing that a ‘one size fits all’ approach to quality requirements will not work in organizations as diverse as EPA, implementation of the EPA Quality System is based on the principle of graded approach. Applying a graded approach means that quality systems for different organizations and programs will vary according to the specific objectives and needs of the organization. For example, the quality expectations of a fundamental research program are different from that of a regulatory compliance program because the purpose or intended use of the data is different.”

## Standard Operating Procedures (SOP) Project

The Ecology SOP project began in January 2006, when the “SOP for Field SOPs” was developed and introduced to the EAP HQ staff. At that time, a program policy was also prepared to document SOP development, revision, and archival processes. There are currently 83 approved

SOPs posted at the Ecology QA website ([www.ecy.wa.gov/programs/eap/quality.html](http://www.ecy.wa.gov/programs/eap/quality.html)), mostly developed by EAP, but also written by Spills and Water Quality.

## **Quality Assurance Website**

The Ecology QA website can be found at [www.ecy.wa.gov/programs/eap/quality.html](http://www.ecy.wa.gov/programs/eap/quality.html). This website was implemented in June 2006.

This website currently contains program and agency SOPs, QAPP guidance, QA policy, and other important quality information. Over 80 Ecology field, field analytical, stormwater, spills-related, and lab accreditation SOPs are posted here.

In 2011 NEP-related QAPP development templates, checklists and other documents were posted at this website, in support of Ecology's role of providing QA oversight for Puget Sound NEP grants.

## **Quality Assurance Glossary**

The Ecology Quality Assurance glossary was completed by Bill Kammin in 2010, in conjunction with the completion of a new Ecology QAPP template. The glossary provides technically accurate definitions for a variety of QA-related terms.

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# QA Issues, Recommendations, and Resolutions

## 2012 EPA Audit Recommendations

EPA performed a Quality System Review of Ecology's operations in March, 2012. Although the audit resulted in no findings, EPA provided several recommendations and observations.

EPA's recommendations included:

- Agency-wide SOPs (when appropriate).
- Implementation of field audits.
- Audit need for MEL.
- QMPs needed for NEP Lead Organizations (WDOH, WDFW, and PSP).
- Need Program for SOP review and recertification.

EPA's observations included:

- Cost savings at MEL through instrument automation and solvent-use reduction.
- SOP production – many SOPs produced over the audit period.
- QAPP utilization – Ecology staff very aware of QAPP requirements for projects.
- Cost savings in Air Program through instrument automation.
- QA in Air Program is in “great shape.”

The recommendations are being currently being addressed. Here are some examples:

- Field audits have been implemented for NEP projects.
- MEL audit is scheduled for fall 2012.
- WDOH has produced a QMP that is in EPA review.
- SOP recertification program has actually been implemented since 2009.

The full audit report from EPA is included as Appendix F.

## Completion of QAPPs Before Project Field Work Begins

This continues to be a problem for Ecology. Complex EPA-funded projects with multiple stakeholders are commonly the projects that miss the final QAPP completion deadlines. It is very difficult to incorporate multiple sets of comments, complete and approve these complex QAPPs, and also meet project sampling constraints. Additionally, two projects in the Eastern Operations Section (EOS) of EAP recently were completed before QAPP approval. Other projects required issuance (first ever) of a Stop Work Order, because QAPPs were not completed prior to commencement of sampling. It is hoped that a new manager for EOS will assist in more uniform implementation of agency QA policies and procedures.

## Reporting Arrangement for Ecology's QA Officer

The current reporting arrangement for the Ecology QA Officer is to the EA Program Manager, with a “dotted line” report to the Deputy Director. Because the EA Program Manager is in charge of all program operations, including sampling, field measurements, and laboratory measurements, it could be viewed by external auditors that there is a potential conflict of interest in this reporting arrangement. This is because the QA Officer often makes decisions that directly affect operations, causing work to be delayed because of QA deficiencies. This condition sets the natural and inherent tension between quality assurance and operations. Although this has never happened to me at Ecology, it is quite possible, with this current reporting arrangement, to envision a situation where the QA Officer is “leaned on” to approve a QAPP because of operational considerations. Many organizations have the QA Officer reporting directly to the top level of the organization to reduce the potential of this occurrence. My recommendation to upper management is to consider changing the reporting arrangement for the QA Officer to a direct report of the Deputy Director with a “dotted line” to the EAP Program Manager. This would provide for Ecology a more defensible degree of separation between operations and quality assurance.

## Semi-permeable Membrane Devices (SPMDs) – QA Issues

SPMDs are sampling devices that concentrate lipophilic organic pollutants (PCBs, PAH, PBDE) in aqueous environments. Ecology implemented the use of SPMDs several years ago (early 2000s), and the subject of EAP's first formal SOP, EAP001, was the field deployment of SPMDs.

The technique, however, is subject to low-level contamination at several points in the sampling and analytical process. This contamination has resulted in data that is often difficult to interpret, and sometimes unusable. It was also determined that the SPMD process required an SOP for data processing and reporting, because of inconsistencies in the use of blank correction, analyte summation, and other aspects of SPMD data workup.

A major effort was undertaken by Keith Seiders and Patty Sandvik to better understand these contamination issues, to re-develop the current SPMD field deployment SOP, and to write the SPMD data processing SOP. This has successfully resulted in two new SOPs that are currently in review. The SPMD data processing SOP, EAP079, was also evaluated using a “test-drive” approach, where several EAP staff independently processed the same data set and results were compared for reproducibility. This study was a recommendation of the QA Officer. Final assessment of the test-drive study and formal publication of the SOPs should be completed by January 2013.

SPMDs present difficult analytical and data interpretation problems. As environmental conditions improve, SPMDs become less useful because of inherent blank contamination issues. But for areas with high levels of lipophilic organic contaminants, they remain a very useful technique for the concentration and determination of these compounds.

## **Microbial Source Tracking (MST) – QA Criteria Development**

In 2011 Debby Sargeant, Bill Kammin, and Scott Collyard prepared a paper discussing MST and related quality assurance issues. This paper focused on the current status of MST methods and contained a lengthy discussion of the QA issues associated with these methods. The paper recommended a rigorous QA regime for MST studies consisting of 50% field duplicates and extensive blind positive controls (spiked blanks). These recommendations proved controversial, and a series of meetings and discussion with EPA ensued. The parties reached a compromise, settling on 25% field duplicates and an extensive blind positive control regime. These new QA requirements are currently (2012) being implemented in a study on the Samish basin funded by NEP. Ecology also developed a focus sheet on this topic to communicate the new requirements to interested parties. These outcomes are viewed as a significant QA achievement for Ecology.

## **Padilla Bay Accreditation**

Ecology's Padilla Bay Laboratory was finally accredited by Ecology in 2010. Efforts will re-commence to have the lab become accredited for membrane filter fecal coliform testing. This accreditation has been requested by local data users.

## **Quality System Implementation Across Ecology Programs**

The Ecology QA Program has improved over the past three years with regard to inter-program consistency and uniformity within the agency. The quality coordinators group was invigorated with several new and qualified members. Also, Spills, NWP, HWTR, and the Water Quality stormwater working group all developed new SOPs on various topics.

Ongoing work on these issues continues through the QA Coordinators group (see Appendix B).

## **EPA QAPP Guidance Revisions**

It is expected that in 2012 EPA will approve a major revision to their QAPP guidance. This will in turn require Ecology to revise several of its documents and processes. The new EPA guidance includes extensive information on QAPPs related to secondary data, which is data collected by someone other than the user. The new guidance also contains a section on modeling QAPPs.

## **“Supervisor Approval and First Sampling Date” Form Misuse**

This EAP form is designed to allow sampling when all QA issues with a QAPP have been resolved, and sampling must occur before the actual signatures have been gathered. However, in some cases, the form has been used, and either:

- All work on the QAPP ceased, and the project was completed without a completed QAPP.
- The QAPP still had QA issues that were not resolved.

This is an unacceptable situation, and it is currently being addressed. The QA Officer's signature is being added to the form. This will provide appropriate notification to the QA Officer and allow him/her to determine whether the project is ready for field work.

## **2010 Quality Management Plan (QMP) – Major Changes**

There were several substantial changes to the latest QMP, published in 2010 (Ecology, 2010). These include:

- Three-year publication cycle for QRM.
- Audit authority within Ecology for QA Officer.
- Stop work authority for projects or reports with QA deficiencies, anomalies and/or technical inaccuracies.

## **Water Quality QA Issues**

The Water Quality Program QA Coordinator was six weeks late in submittal of the WQP section of this report. It is hoped that, in the future, their QAC will be timely in report submissions and other required QA activities.

WQ Policy 1-11, "Ensuring Credible Data for Water Quality Management," was approved in 2006. In a recent review of the policy, the Ecology QAO determined that the policy needs a thorough update. Some of the issues with the current policy include:

- Broken links
- Obsolete policy references
- No mention of Ecology/EAP SOPs for water quality sampling
- Obsolete QMP references

This should be a priority for the WQ Program.

# Ecology Program Quality System Reports

# 1. Air Quality Program

## Current QA activities in program

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The Air Quality (AQ) Program continues to support the ambient monitoring data collection efforts focusing on the criteria air pollutants, which include particulate matter less than 10 microns (PM<sub>10</sub>), particulate matter less than 2.5 microns (PM<sub>2.5</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), oxides of nitrogen (NO<sub>x</sub>), and lead (Pb). In addition, the program and local air agencies operate Prevention of Significant Deterioration (PSD) quality meteorological stations, air toxics, and speciation monitors.

We continue to prepare Quarterly and Annual Data Quality Assessment Reports for management and EPA.

## Training

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There were no opportunities for QA-specific training during the last 2.5 years, due primarily to the economic downturn. However, in 2012 there has been much activity including:

- AQ hosted, participated in, and presented at the EPA Air Pollution Training Institute's Course #470, Quality Assurance for Air Pollution Measurement Systems, at Ecology headquarters in March 2012.
- Donovan Rafferty was the co-host and trainer at the National Air Monitoring Conference session on Quality Assurance.

## Current programmatic QAPPs.

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Our current Quality Assurance Plan, last revised in 2010, is located here:  
[www.ecy.wa.gov/programs/air/other/Air\\_Monitoring\\_Procedures.htm](http://www.ecy.wa.gov/programs/air/other/Air_Monitoring_Procedures.htm)

## SOP Status

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Staff have updated the following SOPs since the last *Quality Report to Management*:

- Meteorological Monitoring Procedure
- Automated Method Data Documentation, Review and Validation Procedure

A complete list of the AQP SOPs is located here:  
[www.ecy.wa.gov/programs/air/other/Air\\_Monitoring\\_Procedures.htm](http://www.ecy.wa.gov/programs/air/other/Air_Monitoring_Procedures.htm)

## Audits

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The AQ Program QA auditors conduct performance audits on air monitoring equipment located throughout Washington's air monitoring network whether it is Ecology operated, operated by a local air quality agency, or operated by a Tribal entity. These audits occur twice per year on manual method samplers and a minimum of annually on continuous instruments.

## QA anomalies and/or corrective actions

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All quality control (QC)/QA problems and corrective actions are identified in the Quarterly and Annual Data Quality Assessment Reports.

## Planned QA activities

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- Develop a SOP for the 8500 and 1405 FEM (Federal Equivalent Method) Continuous Monitors
- Perform audits on the new roadside NO<sub>x</sub> (nitrogen oxides) monitoring station(s) due to start 1/2013

## 2. Environmental Assessment Program – General

### Description of quality structure

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The quality structure in the Environmental Assessment (EA) Program is determined by its role in the overall quality structure of the agency, which is described in Ecology's 2010 *Quality Management Plan* (<https://fortress.wa.gov/ecy/publications/SummaryPages/1003056.html>). See Appendix C of the plan for an organization chart for the QA management structure. The plan also includes descriptions of QA/QC responsibilities.

The QA Officer is located in the EA Program; therefore, the EA Program plays a key role in implementing the agency's quality system. The agency Director is responsible for designating the QA Officer, and the QA Officer reports to both the EA Program Manager and the Deputy Director.

With respect to the quality structure, a key responsibility of the QA Officer is to inform management of QA/QC issues and problems. Other key responsibilities related to the quality structure include:

- Act as the liaison between Ecology and other agencies on QA/QC matters.
- Provide technical support to all Ecology programs by working with Ecology's QA Coordinators.

There are several QA Coordinators in the EA Program:

- QA Coordinator for Manchester Environmental Laboratory.
- QA Coordinator to handle Laboratory Accreditation issues.
- QA Coordinator to handle sampling and streamflow aspects of QA.
- Quality Coordinator for all aspects of NEP-related quality assurance.

The QA Officer acts as point of contact within the EA Program for data quality issues and is the final signature authority on EA Program QAPPs, SOPs, and QA policies.

The EA Program Manager is responsible for:

- Allocating the resources to implement the QA Policy and the *Quality Management Plan*
- Implementing Ecology's QA Policy (Executive Policy 22-01) and *Quality Management Plan*
- Delegating responsibilities for implementing a quality system at appropriate levels of the organization.

Other EA Program employees with QA/QC responsibilities described in the *Quality Management Plan* include project managers, project leads, field staff, laboratory director, laboratory staff, and laboratory accreditation staff.



## FTEs designated to quality

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The QA Officer and the Manchester Laboratory QA Coordinator are full-time positions, so two FTEs are designated to these key QA positions. There are six FTE staff positions in the Laboratory Accreditation Unit dedicated to QA/QC. Other EA Program managers and staff also have QA/QC responsibilities, although the total FTEs dedicated to quality in the program are difficult to quantify.

## Staff quality responsibilities

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The EA Program staff with quality responsibilities include project managers, project leads, field staff, laboratory staff, and laboratory accreditation staff. The specific responsibilities are given in Ecology's *Quality Management Plan*. For project managers and project leads, key responsibilities include preparing and implementing QAPPs as well as assessing and reporting the quality of data obtained. Field staff are responsible for ensuring that samples are properly collected according to the QAPP and the SOPs and that all field data are recorded.

Manchester Laboratory staff is responsible for analyzing environmental and QC samples according to the specifications in associated QAPPs and relevant SOPs.

The Laboratory Accreditation Unit staff is responsible for administering the Environmental Laboratory Accreditation Program (ELAP). This program assesses the capabilities of laboratories to accurately analyze environmental samples and determines if they should be granted accreditation.

## EPA triennial review of Ecology's quality system

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The Quality System Review conducted by EPA during March 5-7, 2012 resulted in no findings, recommendations, or negative observations regarding Ecology's quality system. This is a highly favorable outcome, and the agency is to be commended for its compliance with the EPA quality system. The EPA audit report is included as Appendix F to this document.

## Existing QAPPs and SOPs

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QAPPs: From July 1, 2009 to June 30, 2012, the EA Program/Ecology developed, approved, and implemented 62 QAPPs. A list of QAPPs generated by the EA Program since 1994 is available at

[fortress.wa.gov/ecy/publications/UIPages/PublicationList.aspx?IndexTypeName=Topic&NameValue=Quality Assurance Project Plans \(QAPPs\)&DocumentTypeName=Publication](http://fortress.wa.gov/ecy/publications/UIPages/PublicationList.aspx?IndexTypeName=Topic&NameValue=Quality Assurance Project Plans (QAPPs)&DocumentTypeName=Publication).

Since 1994, Ecology has generated over 293 QAPPs for internal projects.

SOPs: As of June 30, 2012, the EA Program headquarters has prepared 78 SOPs that are in final (approved), provisional, draft, or withdrawn status. Several pre-draft SOPs on various field activities are in preparation. Manchester Environmental Laboratory SOPs number 137. There

are three final SOPs for the Lab Accreditation Unit. This gives a total of 218 SOPs developed and approved by the EA Program.

## Other program-specific quality documentation

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A revised *Quality Management Plan*

(<https://fortress.wa.gov/ecy/publications/summarypages/0503031.html>) was published in October 2010. This is the agency plan to implement, document, and assess the effectiveness of the quality system supporting environmental data operations.

An addendum to the 2010 QMP was produced in 2011, documenting how Ecology is supporting NEP grant programs. Ecology is providing NEP QA oversight for several state agencies including WDNR, WDFW, WDOH, and PSP.

### 3. Environmental Assessment Program – Laboratory Accreditation Unit

Alan Rue is the QA Coordinator for the Lab Accreditation Unit (LAU).

#### Accredited Laboratories

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The LAU currently accredits 462 environmental laboratories.

- 373 of these are located in Washington State
- 89 are located outside of Washington
- 109 are certified for drinking water parameters
- 236 are municipal dischargers
- 58 are industrial dischargers
- 172 are commercial laboratories
- 39 are in other categories (academic, tribal, state, federal)

From July 1, 2009 to June 30, 2012, LAU staff conducted on-site audits of 140 accredited laboratories.

#### Accreditation of Manchester Environmental Laboratory

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The last audit of Manchester Laboratory conducted by LAU staff was in 2007. The next audit is planned for fall 2012.

Manchester Laboratory maintains accreditation for general chemistry, trace metals, organics, and microbiology procedures in non-potable water and solids. The lab routinely receives satisfactory ratings on semi-annual proficiency testing (PT) sample results required for accreditation.

#### EPA Audits of the ELAP Drinking Water Certification

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EPA Region 10 Drinking Water Certification Officers (DWCOs) observed LAU DWCOs auditing Pace Analytical Services, Inc., a commercial laboratory in Seattle, in October 2010. Reports of their observations were provided in April 2011. Each LAU DWCO was evaluated separately, and all received mostly favorable evaluations with some helpful suggestions for improvement.

The LAU completed EPA's Annual Drinking Water Certification Questionnaires in 2010, 2011, and 2012.

## Auditor training

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- September 2011 - Dennis Julvezan participated in a one-day ICP-MS and ICP-OES workshop presented by Perkin-Elmer.
- June 2011 - Aimee Bennett participated in a five-day Drinking Water Micro Lab Certification course and a four-day Cryptosporidium Lab Certification course at EPA in Cincinnati.
- June 2012 - Kamilee Ginder participated in the EPA Drinking Water Certification Officer five-day training at EPA in Cincinnati.

## Meetings with oversight agencies

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- April 2011  
LAU staff met with EPA Region 10 and Washington State Department of Health (DOH) staff on the Drinking Water Laboratory Certification Program. Topics included:
  - The program audit report and response
  - Discussion of the ATP process for Colilert
  - Principal laboratory designations for uncovered analytes
  - Tribal laboratories accreditations
- March 2012  
LAU staff met with Principal Labs and DOH staff on the Drinking Water Laboratory Certification Program. Topics included:
  - Principal lab for radiochemistry
  - Changes in lab accreditation
  - Information sharing and communication between the parties
  - Discussion on limiting the number of principal labs
  - Concerns about test panels
  - DOH liaison change
- April 2012  
LAU staff met with EPA Region 10 and DOH staff on the Drinking Water Laboratory Certification Program. Topics included:
  - DWCO training in Cincinnati
  - Certification for Method 1623 (Giardia/Cryptosporidium)
  - Identifying a microbiology primary lab other than DOH lab
  - Radiochemistry certification by Ecology
  - DOH/Ecology Memorandum of Agreement (MOU)

## Current LAU SOPs

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SOP#	Title
LAU001	Accreditation of Environmental Laboratories
LAU002	On-Site Audits of Environmental Laboratories
LAU003	Renewal Applications

## 4. Environmental Assessment Program – Manchester Laboratory

### Overview of the quality system

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The goal of the Ecology's Manchester Environmental Laboratory (MEL) is to support the agency by producing reliable, scientifically valid, and legally defensible data, so informed decisions can be made regarding the health and safety of our environment.

An effective QA program is essential for the credibility of any data-gathering effort from sample collection to data interpretation. Sample collection and data interpretation are functions organizationally separate from the laboratory and are, therefore, not covered by this report. Other quality management documents cover those functions.

It is MEL's policy that, for activities conducted at MEL, QA shall be maintained at a level that will ensure that all environmental data generated and processed are (1) scientifically valid, (2) legally defensible, and (3) of acceptable precision and bias, representativeness, completeness, and comparability. To that end, quality management steps and procedures are used throughout the entire analytical process from sample receipt to data reporting.

#### Accuracy

Data will meet quantitative measurement quality objectives (MQOs) for precision and minimization of bias described in the SOP for each analytical procedure. MQOs are defined in Ecology's *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies* (Lombard and Kirchmer, 2004).

#### Representativeness

The degree to which analytical data represent the environment from which the sample is taken depends on factors involved in sampling, transportation, and analysis. The laboratory may be responsible for all of these factors for some studies and for analysis only for others. MEL follows the following practices to assure data are representative:

- Supply clean sample containers of the appropriate type, with preservatives when required by the associated QAPPs.
- When necessary, homogenize samples prior to taking aliquots for analysis.
- Use appropriate digestion procedures.
- Control laboratory contamination.
- Assure that reported data are correctly associated with the corresponding sample received by the laboratory.

## **Completeness**

MEL endeavors to provide accurate, representative, and defensible data for 100% of the tests requested by the data user.

## **Comparability**

Comparability is a measure of the confidence with which one data set or method can be compared to another.

## **Legal defensibility**

To be able to defend data in a court of law, records are kept to demonstrate that samples were not tampered with after being received in the laboratory. Proper use of chain-of-custody procedures and proper security are followed while the samples are in the laboratory. The data are recorded, handled, and reported in such a way that prevents tampering. Observations are recorded in indelible ink. Good laboratory practices are followed by using the Laboratory Information Management System (LIMS) to record data and generate reports.

MEL's quality management program has the following requirements to ensure that an effective laboratory QA is maintained:

- All environmental data are of the right type and quantity for their intended use. Generation of data that does not meet data quality objectives is minimized. The data quality information acquired with all environmental data is kept on file at the laboratory, or in state archives, for 10 years.
- QA activities are carried out in the most cost-effective fashion possible without compromising data quality objectives.
- Facilities, equipment, and services that directly, or indirectly, affect data quality or integrity are routinely inspected and maintained, where appropriate. Each laboratory unit has a facilities plan identifying the responsible parties for conducting routine inspections and the methods of documenting these activities.
- Data processing is documented, reviewed, and revised as required by Ecology and EPA mandates and guidelines. Data are validated according to specific criteria, which follow EPA guidelines and regulations.
- QC limits for data-generation and evaluation processes are monitored by the analysts performing that process. If data fall outside acceptable QC limits, corrective action necessary to bring the process back into control is performed, or the data are qualified, as appropriate. If the analyst has a question about implementation of corrective action, that question is brought to the attention of the appropriate supervisor. If necessary, resolution of the QC problem may be sought from the laboratory QA Coordinator and/or laboratory management.
- QC is a part of every process involved in the generation of laboratory data. QC limits for a specific process of data generation are set by EPA guidelines or historical MEL data generated by the same or a similar process. These limits may originate from, but are not limited to, EPA regulations, EPA-approved methods, and method-performance data in support of laboratory SOPs.

## Performance-Based Measurement Systems (PBMS)

On October 6, 1997, EPA provided public notification (62 FR 52098) of a plan to implement PBMS for “*environmental monitoring in all of its media programs to the extent feasible.*” EPA defined PBMS as “*a set of processes wherein the data quality needs, mandates or limitations of a program or project are specified, and serve as criteria for selecting appropriate methods to meet those needs in a cost-effective manner.*” The notice indicated that the regulated community would be able to select any appropriate analytical test method for use in complying with EPA’s regulations. It further indicated that implementation of PBMS would improve data quality and encourage the advancement of analytical technologies.

Modifications to MEL methods are considered acceptable if they meet the criteria described below:

- Legal standing – Data generated in compliance with the PBMS framework must have the same legal standing as data generated using a promulgated EPA method.
- Scientifically sound and relevant validation process – Both the method validation and the PBMS documentation requirements should be based on principles that are widely accepted in the scientific community and on the intended use of the data.
- Clearly articulated and appropriate performance criteria – Performance criteria are the sensitivity, selectivity, and accuracy of the data.
- Documentation – Must be sufficient for independent verification (i.e., auditing) and reproduction by another laboratory skilled in the art.
- Careful implementation – Implementation of PBMS should consider how requirements of project officers will be affected.

Alternate determinative techniques or changes that degrade method performance are not allowed. If an analytical technique other than the techniques specified in the method is used, that technique must have a specificity equal to or better than the specificity of the techniques in the referenced method for the analytes of interest.

Each time a method is modified, the laboratory is required to repeat the procedures for Initial Demonstration of Capability (IDC). In addition, each analyst must demonstrate the ability to generate acceptable results by performing an IDC before analyzing samples for a parameter. Analysts must also perform annual demonstrations of capability by satisfactorily analyzing performance-evaluation samples.

A Method Detection Limit (MDL) determination is performed for each new method and periodically as required by the method for the analyte of interest.

## Quality-related training

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All new MEL staff receive a standard orientation that includes review of all quality documents and pertinent SOPs. In addition, all analysts must perform an IDC and perform satisfactorily (within specified QC limits) on an unknown sample for each parameter they work with. Certain



methods have the additional requirement that a MDL determination must be performed by each new analyst.

The MEL QA Coordinator attended the annual EPA Quality Conference in August 2011.

## QAPPs developed or approved

The MEL director has approval authority for all QAPPs that require laboratory services. Input is solicited from MEL's QA Coordinator and from the organic and inorganic chemistry supervisors.

## Methods audited at Manchester Laboratory (2009-2012)

- Chlorophyll
- Microbiology
- Polynuclear Aromatic Hydrocarbons (PAH), a subset of the Semivolatile Base/Neutral/Acid (BNA) Organic Compounds analysis (Sediment only)
- Total Phosphorus by Lachat for 2 different analysts
- Total Dissolved Solids (TDS) for 2 different analysts
- Ammonia
- Orthophosphate
- Suspended Sediment Concentration (SSC) and Total Suspended Solids (TSS)
- Semivolatile Analysis: Base/Neutrals & Acids (BNA), PAH Selective ion Monitoring (SIM), and PAH by isotopic dilution
- Pesticides by GC/MS
- BNA for the back-up analyst
- Carbamates
- Sample coordination (Sample check-in)
- Metals by Inductively Coupled Plasma/Mass Spectrometer ICP/MS

## New SOPs

The following new SOPs have been written by MEL since the 2009 *Quality Report to Management*:

<u>Number</u>	<u>Title</u>
710089	COLILERT®-18 IDEXX
720028	Solid Sample Preparation for Phosphorus, Method 200.2
720029	ICP: 715-EIS, EPA Method 200.7
720030	Metal Analysis of Air Filters, Federal Register, 40 CFR 50, Appendix G, Modified
730111	Analyzing Chlorinated, Organophosphorous, and Nitrogenous Pesticides by GC/MS/MS, Method 8270D

- 730112 Solid Phase Extraction (SPE) of Polynuclear Aromatic Hydrocarbons (PAH) in Water by EPA SW-846\* Method 3535A
- 730113 Polynuclear Aromatic Hydrocarbons (PAH) by Gas Chromatography/Selective Ion Monitoring Mass Spectrometry (GC/SIM-MS), Method 8270D
- 730114 Carbamate Analysis by LC/MS/MS Double Quadrupole, EPA Method 8321A Modified
- 730115 Carbamate Analysis by LC/MS/MS Triple Quadrupole, EPA Method 8321A Modified
- 730117 SPMD Spiking Instructions
- 730118 Herbicide Extraction in Soil
- 730119 Acid/Base Partitioning Cleanup for Herbicide Analysis; EPA SW-846 Method 3650B
- 770031 Calibration of Temperature Probes and Thermometers
- 770032 Personnel Training
- 770033 Personnel Training in Peer Review of Data
- 770034 Maintenance of Adjustable Pipettes
- 770035 Organics Analytical Standard Preparation
- 770036 Radiation Protection Plan

\*SW-846 = EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods:

## Major quality problems and corrective actions

Problems: Samples were analyzed over holding time.

Corrective actions: Analysts for short holding time parameters (turbidity, orthophosphate) have been trained in custom LIMS query. In addition, they will put analyses on their Outlook calendar, and the sample coordinator will page the analyst when samples that have short holding times arrive.

## Manchester Laboratory's accreditation status

Since February 2007, MEL has maintained accreditation for all parameters requested, as required by the *Quality Management Plan* and Ecology Executive Policy 22-02.

MEL has not been audited by LAU since February 2007; the audit was covered in the 2009 *Quality Report to Management*. LAU plans to audit MEL next in the fall of 2012.

## 5. Hazardous Waste and Toxics Reduction Program

In support of the goals of the Resource Conservation and Recovery Act (RCRA) Compliance Program, compliance monitoring is performed on an annual or on “as needed” basis on all facilities that generate dangerous waste. Gathering data for compliance monitoring is done through facility inspections. The primary type of inspections conducted by Ecology under the RCRA program is the compliance evaluation inspection (CEI). During a CEI, samples may be collected for analysis to characterize a chemical waste, to verify the constituents of a hazardous waste, and, generally, to gather data to support an enforcement action when significant RCRA violations are known, suspected, or revealed.

A Quality Assurance Project Plan (QAPP) is prepared to assist and provide field personnel and compliance inspectors with basic standard operating procedures (SOPs) for the collection of samples, proper sample documentation, and the use of correct sampling and analytical methodologies to verify and determine the compliance of a hazardous waste handler during facility inspections.

It is Ecology policy to have an approved QAPP for all agency-sponsored sampling events. The QAPP describes the objectives of the sampling and the procedures to be followed to achieve those objectives.

The Hazardous Waste and Toxics Reduction (HWTR) Program conducts few sampling events. Sampling within the program typically falls into two categories:

1. Samples of opportunity
2. Pre-planned sampling event

Compliance sampling happens only when a compliance inspector has concerns about a generator’s waste management activities. The inspector can take samples of opportunity immediately without any pre-planning, return to the office, and plan a sampling event for a later occasion, or do a combination of the two activities. Historically, few QA/QC documentations are generated for samplings of opportunity. Considerable success has occurred over recent years in familiarizing compliance inspectors with the benefits of pre-planning, including the creation of a generic QAPP boilerplate that can be modified for site-specific sampling events.

The HWTR Program occasionally conducts sampling to obtain data for programmatic activities and/or possible regulation changes. This sampling is done very infrequently.

As an indication of the amount of sampling done within our program, our yearly sampling budget is about \$95,000. This number reflects an increase in the program’s sampling budget for the 2012-13 biennium. However, as inspectors are being trained on better sampling techniques and are becoming more accustomed to the benefits of pre-planning and of what a QAPP can provide, we are experiencing an improvement in data quality obtained for use by the program. Additional subject-specific QAPPs were developed by our program for the Children’s Safe Product Act (CSPA), an analysis of products for specific chemicals of high concerns to children.

Thirty-six sampling events were conducted from June 2009 to June 2012. Table 1 lists the sampling events conducted by the Department of Ecology’s regional offices.

Table 1.

Regional Offices	Sampling Events (June 2009- June 2012)	QAPP
NWRO	1	Yes
CRO	0	No
ERO	11	Yes
SWRO	23	Yes

## Specific Responses

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### A. FTEs designated to quality in the HWTR Program

The HWTR Program has not allocated specific percentages of FTEs to QA/QC activities, other than work done by the Program’s QA/QC Coordinator. Ten percent of this individual’s FTE is dedicated to QA/QC activities, including training, QAPP review and preparation, providing QA/QC advice and recommendations to staff, and making the creation of QAPPs a routine and beneficial practice among compliance inspectors. In addition, the program has included in its Inspector’s Manual (the primary document outlining inspector requirements and training) a commitment to QA/QC activities and an expectation for staff to provide, where appropriate, QAPPs for their sampling events.

### B. Specific staff quality responsibilities in the HWTR Program

As indicated above, the only specific staff responsibilities in the HWTR Program are those assigned to the Program QA/QC Coordinator. Because of the limited amount of sampling done by the program, QA/QC responsibilities are included in staff’s job duties but are not assigned a specific value.

### C. QAPP and/or SOPs in the HWTR Program

The HWTR Program currently has no specific QA/QC SOPs. However, the program has developed a generic boilerplate QAPP that can be adopted for site-specific sampling for use by compliance inspectors during HWTR sampling events. The following specific SOPs are being considered for development:

- Documentation of field activities and field reports
- Parts-washer sampling
- Tank sampling
- Antifreeze sampling
- Soil and sediment sampling
- Field pH sampling

The program is in the process of updating its generic boilerplate QAPP. The current QAPP grew out of a major training event at which all of the HWTR compliance inspectors from across the state were pulled together for sampling training. The training included information on the different types of QA/QC samples and the importance and benefits of QAPPs. Pre-planning activities were streamlined to minimize impact to staff's workload while working to overcome staff resistance to perceived QA/QC complexity.

#### **D. Other program-specific quality documentation for the HWTR Program**

As noted earlier, the program conducts few sampling events, and no additional quality needs have been identified. Therefore, no additional quality documentation exists for the program.

#### **E. Staff training on quality in the HWTR Program**

The HWTR Program conducts QA and sampling trainings to improve staff familiarity with sampling and to improve the quality of data obtained during sampling events. The following training activities were taken by regulatory compliance staff:

- Western States Project Sampling and Science Awareness (April 25-26, 2011): This training was organized for HWTR Program staff. Program staff from across the state, along with other Ecology staff, attended the two-day training held at the Ecology's headquarters in Lacey, WA. The sampling training was not specific to hazardous waste sampling requirements. However, the importance of QA planning and sampling techniques was an integral part of this training. Trainees were introduced to different types of sampling methods and sampling Do's and Don'ts. Trainees were informed about the legal aspects of sampling, security, and on-site sampling considerations. Presentation on laboratory practices was given by Ecology Manchester Laboratory. The presentations given during this training are available upon request.
- Field pH Measurement Training (July 2010): The HWTR Program's Southwest Region offered the field pH sampling training in the summer of 2010. It was not possible for compliance staff from other regions to participate in the training through video-conferencing due to unforeseen technical problems with the video-conferencing system. The training was held at Ecology's headquarters in Lacey. The training provided hands-on demonstrations on using an Ion Sensitive Field Effect Transistor (ISFET) probe. Field pH sampling preparation, pH meter calibration, and field sample measurement were some of the topics covered in the training. The presentations given during this training are available on HWTR's intranet website.
- Refresher Training: As part of ongoing professional development, compliance staff attend outside agency training as required, such as:
  - EPA Basic Inspector Training, February 9-11, 2010
  - EPA Region 10 Inspector Workshop, February 15, 2011
  - EPA Chemistry for Environmental Professionals and fundamentals, March 29-30, 2011
  - EPA Chemistry for Environmental Professionals Applied, March 30-April 1, 2011

- University of Washington, Northwest Center for Occupational Health and Safety: Hazardous Material Evaluation, July 19, 2011
- National Environmental Management Academy, Environmental Enforcement and Inspector Training, September 28-30, 2011
- Other trainings included how to conduct a book designation as required by the Washington State Dangerous Waste Regulations (WAC 173-303). The training was part of an exercise to assist new compliance staff in determining if samples would book designate based upon information available both from the generator and from specific toxicity databases.

Sampling assistance: The QA/QC Coordinator worked closely with staff when discussing possible compliance sampling, and, by working with staff on a one-on-one basis, made them more comfortable with the QA/QC process. Most of the sampling events conducted within this reporting period had written QAPPs prior to conducting the sampling events. The compliance inspectors have shown increased reliance in the use of a QAPP as a standard sampling requirement.

#### **F. Current QA activities in the HWTR Program**

Apart from the EPA-Manchester Laboratory, the HWTR Program has contract agreements with eight certified private laboratories to conduct environmental analyses on samples received from Ecology compliance staff. QA generic draft boilerplate has been written for staff use, that can be modified for site-specific sampling. Program staff also assisted local and county government in conducting sampling events. State-wide compliance inspector training is scheduled for October 2012, and two days of hands-on sampling demonstrations are scheduled for the spring of 2013. No other QA/QC activities are planned within the program.

## 6. Nuclear Waste Program

### Overview of the Nuclear Waste (NW) Program's quality system

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The quality system is a chemistry team comprised of five chemists with years of applicable laboratory experience. Experience includes wastewater laboratory accreditation, QA management of one of the Hanford site labs, instrumental analyses at Hanford site labs dealing with radiochemical contaminated matrices, and certifications in EPA data validation. Prior experience includes preparing sampling and analysis plans for the purpose of Hanford waste site characterization and practical experience completing statistical analysis of data sets. The NW Program biennial plan contains the chemistry implementation plan where QA is discussed.

### NW Program QA Coordinator

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- Coordinator for EPA QA audit of Ecology.
- Serves as focal point to disseminate information from Ecology's QA Officer regarding new QA initiatives, applicable training opportunities, etc., to NW Program chemistry team.
- Represents NW Program at agency-wide QA Coordinators meetings.
- Performs other duties as spelled out in the agency *Quality Management Plan* and the *NWP Hanford Sitewide Chemistry Implementation Plan*.

### QAPPs developed or approved

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- Sampling and Analysis Plan for the Washington State Department of Ecology Comparison of Discrete and Multi-Increment Sampling for Site Characterization and Cleanup.
- Columbia River Irrigation Sampling Sites.
- Hanford Analytical Services QA Requirements.
- Central Waste Complex Inspection.
- Nuclear Waste Program Waste Analysis Plan Guidance/Checklist.

### New SOPs

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- Collecting Environmental Samples at the Hanford Nuclear Reservation
- Instructions for Conducting the Chemistry Review of Work Instructions for the Verification Sampling of Hanford Waste Sites

### Quality-related training

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Training included EPA 7-step data quality objectives process, EPA Quality Management Conference, Multi-Increment Sampling Course, Non-detects Data Analysis from Dennis Helsel, and Visual Sample Plan Computer Code.

## Current QA activities

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- Hanford Site-wide permit for the Waste Analysis Plan/Sampling and Analysis Plan (WAP/SAP) QA/QC.
- Sections 6.5 and 7.8 of the Hanford Federal Facility Agreement
- Hanford Analytical Services Quality Requirements Document update involvement.
- Quality Assurance Task Force for radiochemical laboratories under DOH and Ecology regulatory authority.

## Quality issues

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- Sampling and analysis of tank waste prior to transfer to waste treatment plant.
- Future audit of Hanford site laboratories.



## 7. Waste 2 Resources Program

The Waste 2 Resources (W2R) Program interacts with the quality system in several areas including:

- Industrial Section permitting, compliance monitoring, and enforcement activities.
- Reducing Toxic Threats Section compliance, enforcement, and product testing activities.
- Statewide Resources Section waste characterization activities.

### Quality activities of the Industrial Section

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The Industrial Section is focused on three major industries of Washington State: aluminum smelters, oil refineries, and pulp and paper mills. The section also works with several smaller facilities which support the primary industries and several large industries outside the primary industry groups. The section's staff is trained to handle the complexities of these industries and is responsible for environmental permitting, site inspections, and compliance issues. The section regulates air, water, hazardous waste, and cleanup management activities for these industries.

As part of its compliance assurance activities, the Industrial Section conducts Class II National Pollutant Discharge Elimination System (NPDES) water inspections with sampling and QAPPs for regulated facilities. Industrial Section staff prepares QAPPs for inspections of facilities they regulate.

The Industrial Section is also responsible for review and tracking of extensive self-monitoring data from permittees. The section receives monthly reports under both the Air Operating Permit program and the NPDES/State Waste Discharge program. The section is responsible for review, data entry, compliance evaluation, and reporting to EPA under Ecology's Performance Partnership Agreement. The section also receives reviews and tracks ad hoc studies that are required under these permits (e.g., receiving water studies, outfall modeling reports).

Over the past year, the Industrial Section has been developing standard operating procedures (SOPs) to clarify expectations for staff and ensure that our data review and tracking obligations to EPA and Ecology's programs are met in a timely and complete way. Through clear definition of roles, responsibilities, and expectations, these SOPs will increase the quality of the data that goes into our databases and improve our implementation of the State's delegated programs. Thus far, the section has created/updated SOPs for:

- Water Discharge Monitoring Report Review.
- Air Monthly Report Review/Compliance Monitoring Spreadsheet Tracking.
- Water Discharge Permitting Process from Application to Issuance.

The section will continue to create and update its SOPs. The next SOPs to be worked on include:

- Enforcement procedures.
- Air permitting from application to issuance.
- Review and tracking of ad hoc permit submittals.
- Inspections and reporting

## Quality activities of the Reducing Toxic Threats Section

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The Reducing Toxic Threats (RTT) Section is responsible for compliance and enforcement for a number of laws related to the chemical content of consumer products. These include:

- Children's Safe Product Act ([Ch. 70.240 RCW – Children's Safe Product Act](#))
- BPA Ban ([Ch. 70.280 RCW – Bisphenol a — restrictions on sale](#))
- PBDE Ban ([Ch.70.76 RCW – Polybrominated diphenyl ethers — flame retardants](#))

In addition, the RTT Section also coordinates with HWTR in enforcing the Toxics in Packaging Law ([Ch. 70.95G RCW – Packages containing metals](#)). The RTT Enforcement Coordinator and HWTR Safer Alternatives Chemist collaborate on enforcement projects under these laws.

RTT staff have written and published four QAPPs for work to analyze children's products and packaging for chemicals of concern. QA/QC review for these QAPPs was conducted by the Southwest Regional Office HWTR Program QA/QC Coordinator:

- [Quality Assurance Project Plan Parabens and Metals in Children's Cosmetic and Personal Care Products](#) 12-07-021 February 2012.
- [Quality Assurance Project Plan Phthalates and Metals in Packaging from Consumer and Children's Products](#) 12-07-022 February 2012.
- [Quality Assurance Project Plan Phthalates and Metals in Children's Products](#) 12-07-023 March 2012.
- [Quality Assurance Project Plan Formaldehyde, Volatile Organic Compounds and Metals in Children's Products](#) 12-07-024 May 2012.

RTT staff have also written and published a QAPP to sample products offered for sale to Washington consumers for banned PBDEs as well as possible alternative flame retardants in use. QA/QC review for this QAPP was conducted by the EA Program's National Estuary Program QA Coordinator:

- [Quality Assurance Project Plan: Flame Retardants in General Consumer and Children's Products](#). Publication No. 12-07-025. July 2012.

RTT staff are also coordinating with the EA Program on a project to test regulated products for the presence of bisphenol A.

## Quality activities of the Statewide Resources Section

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The Statewide Resources Section is responsible for policy, rulemaking, and data collection and analysis activities. Those responsibilities included preparation of the 2009 Washington Statewide Waste Characterization Study. The study involved field sampling of solid waste and subsequent data management in an office environment, followed by statistical analysis and reporting. Key QA/QC areas of focus were:

- Developing appropriate sample logging and tracking systems to assure proper sample identification and data handling.

- Reviewing data using electronic database tools and manual methods to assure a complete and accurate data set.

Following each season of fieldwork, all field forms were taken to the contractor's office and entered into a database created specifically for the study. The contractor developed the data entry procedure to protect the integrity of the data at every step of the process, from collection in the field to final analysis.

After the sample tally sheets were checked by the Field Manager, the Data Manager verified that all required data was recorded properly. The Data Manager also supervised the data entry process. As an additional step in QC, randomly selected records were inspected in detail to monitor the accuracy of the data entry process.

The detailed methodology can be found in the report, *2009 Washington Statewide Waste Characterization Study*: <https://fortress.wa.gov/ecy/publications/SummaryPages/1007023.html>

## 8. Shorelands and Environmental Assistance (SEA) Program

### 1. Current QA activities in the Shorelands and Environmental Assistance Program

A draft QAPP for the EPA-funded channel migration, mapping, and evaluation project has been written. Tom Gries (EAP), the person responsible for evaluating QAPPs related to EPA National Estuary Program, has reviewed it. Tom has discussed with Bill Kammin, Ecology QA Officer, and recommended that it be signed.

### 2. QA training activities

SEA has had no QA training activities over the past three years.

### 3. Current Programmatic QAPPs

SEA has no programmatic QAPPs.

### 4. Updated list of SOPs, if needed

SEA uses the [Washington State Wetlands Identification and Delineation Manual](#) as a Standard Operating Procedure.

### 5. Audits conducted

The 2012 triennial Quality Systems Review was completed by EPA.

### 6. QA anomalies and/or corrective actions

None noted.

### 7. Planned QA activities

SEA may do a QAPP for the Watershed Characterization. We are awaiting a response from Tom Gries and Bill Kammin.

## 9. Spills Program

### Program Coordinator

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Dale Davis is the QA Coordinator of the Spill Prevention, Preparedness, and Response Program (Spills Program). He also acts as the program Sampling Specialist. The primary objective for both positions is improvement of sampling data quality. The person in this position is responsible for developing all Spills Program specific sampling policies, procedures, guidelines, forms, and other related tools. This person also develops and conducts sampling training for program staff, ensures that sampling related tools are made available to staff, and acts as the lead Sampling Specialist during spill responses.

### QA Section included in biennial program plan

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A program QA Plan is included as part of the program's biennial planning and is posted on the Spills Program intranet site (Section VIII).

### Present status of plan implementation

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Spills are emergencies, and advanced planning is necessarily limited. In light of this, the Spills Program has developed policies and procedures, in cooperation with NOAA, the U.S. Coast Guard, and EPA, that ensure that high quality samples and data are collected in a manner that is legally defensible.

Program staff use a *Sampling Plan Template* to develop a plan for any sampling associated with an incident. The template prompts the user to define the sampling objective(s), sketch out the area impacted by the spill, and to identify sampling sites, the number and type of samples to be collected, and the appropriate containers. The template also refers the user to *Sampling Guidelines* that have been developed specifically for collection of samples associated with spills, primarily oil spills. A *Sampling Documentation Form* is available to record sampling related information.

Once samples have been collected, Program staff are encouraged to use an *Oil Spill Chain-of-Custody/Request for Analysis Form* developed specifically for oil spill related samples. Guidelines on the back of the form help the user select the appropriate analyses and provide associated information such as sample size and container.

For larger spills, a Sampling Specialist develops a *Comprehensive Sampling Plan* that coordinates all sampling activities associated with the incident. Again, a template is used, but the information included in the template is much more detailed and includes quality assurance guidelines.

Comprehensive sampling plans, called *Ephemeral Data Collection Plans*, are being developed for large oil facilities located near water bodies. These plans are similar to a QAPP and are designed to direct sampling in the early hours of an oil spill in a specific location until another

plan can be developed that is specific to the incident. The plans are developed in association with representatives from the facilities and identify sampling sites, types and numbers of samples to collect, sampling procedures, analytical methods, and the laboratory that will analyze the samples. The plans are designed to satisfy Natural Resource Damage Assessment (NRDA) needs.

State, federal, and oil corporation NRDA representatives meet regularly as an informal group called the *Joint Assessment Team (JAT)*. This group developed a comprehensive guidance document for cooperative NRDA's that includes guidelines for developing a sampling plan with similar components of the Ephemeral Data Collection Plans. If there is an oil spill, the document identifies nationally recognized and accepted procedures that would be used by Spills Program staff and others to develop and implement a NRDA.

All forms, guidelines, and procedures are available to Spills Program staff at X:\Spills\_Program\TRAP or on SharePoint at <http://teams/sites/SPPR/response/trap/default.aspx>

A Sampling QA\QC chapter for the Spills Program Policy and Procedure Manual has been prepared and added to the program policy manual as Chapter 15.

## SOPs

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The following seven SOPs were developed for most sampling that would be associated with spill responses:

1. SPL001-Collecting oil spill source samples
2. SPL002-Collecting oil spill HCID samples
3. SPL003-Collecting oil spill water samples
4. SPL004-Collecting oil spill intertidal sediment samples
5. SPL005-Collecting oil spill shellfish tissue samples
6. SPL006-Collecting soil or sediment samples for gasoline spills
7. SPL007-Collecting samples from fish kills

## QA/QC training

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### **Received by Spills Program staff**

All program staff are required to complete DrillTrac training associated with various positions within the Incident Command System (ICS). Sampling training is one of the required elements of DrillTrac. All program staff are required to take basic sampling training, that includes information necessary to collect qualitative samples associated with oil spills. All full-time spill responders are required to take intermediate sampling training that adds to the basic training by providing information necessary to collect quantitative samples. All full-time and after-hours spill responders attend a Spill Response Training Workshop annually that includes four hours of classroom and hands-on field sampling training.

A select group of people are required to take advanced sampling training. Staff at the advanced level fill the Sampling Specialist position within the ICS and develop comprehensive sampling plans, direct sampling teams, and coordinate laboratory analyses. Training and refreshers are

conducted on an as-needed basis, typically every two to three years or as required when new staff are added to the program.

### **Provided by Spills Program staff**

The basic and intermediate sampling training described above is provided by program staff. Advanced sampling training is obtained through workshops where participants are specialists within the oil spill industry/community and discussions result in consensus on various sampling issues.

### Technical assistance and QA/QC support provided to Spills Program staff

The sampling training described above includes sections on developing sampling plans and specific QA/QC requirements. Program staff are instructed to contact either Dale Davis (Program QA Coordinator) or Dan Doty (WDFW oil spill NRDA Sampling Specialist) with *any* questions regarding sampling (one is always available 24/7 by pager). Staff are also encouraged to contact MEL with questions related to oil spill sampling and analysis.

### Significant QA/QC problems encountered, along with corrective actions taken or recommended

After significant spills, program staff involved in the response attend a debriefing to discuss lessons learned, where sampling related issues are reviewed. Any problems identified are immediately corrected. In addition, debriefs often result in procedural improvements, such as the Early Assessment Team concept, that help to ensure that data collected are of the highest quality possible. No significant problems have been encountered.

### QA/QC tasks planned or needed for the Spills Program

None

## 10. Toxics Cleanup Program

### Description of FTEs designated to Quality Structure

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Fu-Shin Lee is the Toxics Cleanup Program (TCP) QA Coordinator and a staff member of the Aquatic Lands Cleanup Unit in Headquarters (HQ). She heads a TCP QA team consisting of:

- HQ Land Cleanup Unit – Chung Ki Yee
- Central Regional Office (CRO) – Valerie Bound
- Eastern Regional Office (ERO) – Phil Leinart
- Northwest Regional Office (NWRO) – Joe Hickey
- Southwest Regional Office (SWRO) – Joyce Mercuri

### Existing QA Guidance

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- Sediment Sampling and Analysis Plan Appendix (SAPA), February 2008.
- Puget Sound Dredged Disposal Analysis Guidance Manual – Data Quality Evaluation for Proposed Dredged Material Disposal Projects (QA-1), June 1989.
- Data Validation Guidance Manual for Selected Sediment Variables (QA-2), June 1989 Draft.
- Guidance for Remediation of Petroleum Contaminated Sites, September 2011.
- Guidance for Site Checks and Site Assessments for Underground Storage Tanks, May 2003.
- Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, October 2009.
- Analytical Methods for Petroleum Hydrocarbons, June 1997.
- Guidance on Remediation of Petroleum Contaminated Groundwater by Natural Attenuation.
- Tools for Calculating Cleanup Levels.
- Natural Background – Soil Metals Concentrations in Washington State, October 1994.
- Guidance on Sampling and Data Analysis Methods, January 1995.
- Statistical Guidance for Ecology Site Managers, August 1992.
- Site Hazard Assessment Guidance and Procedures for Washington Ranking Method, April 1992.
- Brownfields Resource Guide, September 2009.
- Guidelines for Property Cleanups under the Voluntary Cleanup Program, July 2008.
- Integrated Site Information System User Manual Voluntary Cleanup Program Module Draft 3.0, June 2010.
- TCP Safety Plan, January 2005.
- EIM Checklist for TCP Project Managers, 2012.



## Staff Training

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- Integrated Site Information System (ISIS) training is offered on an as-needed basis. Both individual and group training sessions are offered.
- MyEIM training was provided to Ecology and non-Ecology government employees within the 2009-2012 reporting period.
- Model Toxics Control Act (MTCA) Site Management 101: TCP provides training to new and experienced site managers. The training provides an overview of MTCA and how to calculate cleanup levels under MTCA.

## QA Accomplishments and Current QA Activities

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- We review and approve contractor-prepared Sampling Analysis Plans (SAPs) or QA Project Plans (QAPPs).
- We drafted, updated, and finalized the EIM data submittal QA/QC process for the TCP data coordinator, site managers, and technical support specialists to ensure that data quality meets the SAP/QAPP and QA requirements specified in the applicable TCP guidance.
- We participated in the EIM data template revision. This effort refined field name and valid value definition to improve data consistency and accuracy.
- We are working on revision of the Sediment Management Standards (SMS) rules to harmonize the SMS rules and MTCA rules. The goal is to better define cleanup objectives and maximum allowable cleanup levels for bioaccumulative chemicals of concern. This will be done by considering risk-based concentrations for protection of all receptors, practical quantitation limits and background concentrations, and developing freshwater criteria.
- We are developing Human Health Risk Assessment (HHRA) Guidance to help ensure that HHRA is performed consistently across the state.
- We are rewriting the Integrated Site Information System (ISIS) to ensure that data and information related to cleanup sites are accurate and up-to-date. The TCP is committed to taking steps to improve data quality and business practices by updating databases and the program's information systems.
- We regularly update MyEIM, Generated Site Page (GSP), and the Data Storage and Retrieval System (DSARS). The TCP IT Team conducts periodic user acceptance test workshops and beta testing sessions whenever these tools are updated.
- EIM data entry training is regularly provided to internal staff and external data submitters by the TCP funded data coordinators.
- We are redeveloping the Underground Storage Tank (UST) Information and Department of Revenue Information Exchange. This began in 2011 and will be completed in the fall of 2012.
- Washington Tank Operator Training (WATOT) began in 2011 and will be completed in 2012. The program will allow the UST owner/operators to develop an Operations and Maintenance Plan for their facility.

- We redeveloped and expanded the Soil Safety Tracking System (SSTS) into a new system that includes EPA data from nearly 4,000 properties in the Tacoma Smelter Plume (TSP). The new system includes a new publicly accessible portal that allows residents to access information and documents related to their property.
- TCP upgraded the Source Control Management (SCM) system to better facilitate data management related to source-control activities on the Lower Duwamish Superfund site.
- TCP created the new Management Information Center (MIC) to allow managers and interested staff easy access to summary and detail information related to cleanup sites.

## Quality Issues

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The EIM data coordinator, project manager, and site-specific technical support specialist perform data quality checks to ensure that the sampling date, analytical method, sample source, appropriate unit, measurement basis, locations, the number of samples and result parameters, and all variables used to calculate derived variables (e.g., dioxin TEQ, cPAH TEQ, PCB as sum of Aroclors) were submitted as/per QAPP. When data errors or data anomalies are found, the EIM data coordinator informs the data submitter and the project manager. The data submitter then corrects and resubmits the data. If there are minor errors, the data coordinator corrects them upon agreement with the EIM data quality coordinator.

TCP reviewed the SAPs for the underground storage tank cleanup sites and verified that the data were validated according to the EPA Functional Guidelines by external contractors. It is common practice that TCP cleanup data are validated by external experts according to the EPA functional guidelines.

The U.S. Army Corps of Engineers also plan to have all their sediment data migrated into EIM by 2013. Their data used the EPA data QA verification/validation level: Stage 1-4.

For the SMS rule revision purpose, not all the data in the same study/project were validated at the same QA level. Therefore, TCP recommended the following changes in EIM data template:

- Change Result Validation Method to result QA Level.
- Add bioassay QA level at the Bioassay template.
- Add EPA data verification and validation level, Stage 1-4, to the data dictionary of Result QA Level field for the TCP non-sediment data.

## Planned QA/QC Activities

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During the March 7, 2012 EPA QA audit, EPA auditors recommended the implementation of field audit checklists and field audits for contractor field sampling.

TCP plans to:

- Work with the Ecology QA Officer to prepare field audit check lists, and implement the field audits for TCP cleanup projects.

- Improve MyEIM bioassay and chemistry analytical tools as
  - issues are discovered, or
  - new enhancements are needed or requested.
- Work with QA Officer and EIM data quality coordinators to resolve EIM data quality issues encountered during data submittal.
- Update program QA guidance, as needed, from the SMS rule revision effort.

## 11. Water Quality Program

### Description of Quality Structure in Program, Current QA Activities in Program, and Staff Quality Responsibilities in Program

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The use and promotion of quality data and information is built into the procedures that accompany program functions. In addition to the routine inclusion of quality principles in staff operations, certain staff are assigned to quality control review and quality assurance development functions.

- A. The Water Quality Program (WQP) has a Quality Coordinator tracking the quality activities within the program with the assistance of designated quality representatives from each of seven sections. The main goal of the Quality Coordinator and the sectional representatives is to implement the Credible Data Policy in all pertinent program activities.
- B. All draft wastewater discharge permits are reviewed for policy conformance and technical accuracy by the Permit Quality Coordinator. The Permit Quality Coordinator provides comments to the permit author and feedback to program management regarding policy and process issues. As the representative of permit business with information systems, the coordinator is in a pivotal position to facilitate the flow of permit information to the data systems.
- C. Every monitoring project must be described in a Quality Assurance Project Plan (QAPP), usually developed by the project lead. The QAPPs follow the same format and address the same QA principles as those QAPPs developed by staff in the Environmental Assessment Program (EAP). Internal QAPPs are reviewed for approval by designated QAPP reviewers. All WQP developed projects that include collection of environmental data are conducted according to a QAPP.
- D. QAPPs developed by municipal stormwater permittees for permit compliance are reviewed for approval by designated Stormwater QA staff. A guidance document for preparation of QAPPs by stormwater permittees was issued in 2008 to narrow the scope of the QAPPs and improve the efficiency of QAPP review and approval. Unlike normal discharge monitoring, the municipal stormwater permits rely on site-specific monitoring projects.
- E. The Financial Assistance Section awards grants and low-interest loans for projects intended to improve water quality. Monitoring of water quality is usually required to gauge the effectiveness of the project. QAPPs developed by recipients because of grant and loan requirements are reviewed for approval by EAP staff through the joint EAP/WQP Procedure 2-03.
- F. Water quality data are stored in the agency Environmental Information Management (EIM) database, and the data from grant and loan recipients and data submitted to Ecology for the biennial Water Quality Assessment are managed by the WQP EIM Coordinator. The coordinator works with regional permit managers and data submitters and screens data for

validity and intended use. Monitoring must be in accordance with an approved QA Project Plan or equivalent. The monitoring data is then entered into the EIM database.

- G. The Water Quality Assessment Coordinator sees that information used in the biennial report to EPA on the status of the state's waters is suitable for its intended use. The station sample locations and water-segment boundaries are verified through the use of geographic system coordinates. The environmental data are entered into EIM by the WQP EIM Coordinator using the same data acceptance protocols as Ecology collected data, and resulting decisions are verified through internal quality control checks and public review.

## Description of standardized business practices in place and under development

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Standardized business practices are the equivalent of Standard Operating Procedures for a program business function and form the basis on which process improvements can be applied across the organization. Information systems are designed and maintained by the Information Systems Unit at headquarters, providing a structure for many standardized business practices.

- A. The Water Quality Atlas is a web map tool that includes many WQ regulatory spatial and tabular datasets. This is a simple tool that allows users to view WQ assessment data, Total Maximum Daily Load (TMDL) study boundaries, stormwater permit areas, NPDES permitted facilities, and the state's surface water quality standards all in one map. Refinements and additions to its capabilities continue to be developed. This tool enhances Ecology's ability to review many Clean Water Act (CWA) programs within one tool and, therefore, increases the quality of regulatory decisions which often rely on the nexus of these programs. <https://fortress.wa.gov/ecy/wqamapviewer/default.aspx>
- B. A Water Quality Assessment is conducted biennially for submittal to EPA under sections 303(d) and 305(b) of the CWA. This assessment is also developed in accordance with the state's *Water Quality Data Act*. The assessment brings all the elements of our QA system together as it uses the Watershed Assessment Tracking System (WATS) database as the means to communicate and document the decisions made using data with the highest quality assurances from the EIM database. All data used in the water quality assessment report and TMDLs are required to meet specific quality assurance requirements.
- C. The Permitting and Reporting Information System (PARIS) database was created in 2011 to replace the original Water Quality Permit Life Cycle System (WPLCS) database for permit information. PARIS contains a large amount of information on a wide variety of aspects of permit management, including permit lists and facility information, discharge monitoring reports (DMRs), water quality permit limits, enforcement actions, and other information. This information and data are publicly accessible, so its accuracy is important for evaluating compliance status and potential liability of permittees. Business practices are geared to promoting data accuracy and timeliness in reports.
- D. Regional office permitting units standardized the process of identifying, documenting, and issuing *responses to wastewater discharge permit violations*. Ecology and some permitted facilities enter discharge monitoring report (DMR) data into WQWebDMR, (Water Quality

Program's web-based submittal tool) which generates and passes the violations into the Water Quality Program Permit and Reporting Information System (PARIS). After verification from permit managers and the enforcement specialist, the regional office staff determine how to address each violation for each individual permit. Ecology bases its action on the severity and the reoccurrence of the violation. Ecology responds with informal actions such as letters, emails, and phone calls as well as formal actions such as administrative orders and penalties. PARIS tracks Ecology enforcement actions in response to permit violations. These measures have improved the quality of the implementation and tracking of the WQP permits.

- E. The WQ program initiated the use of the integrated WQWebDMR/PARIS applications in April 2010. Since the initial applications were introduced, Ecology has added validation steps to WQWebDMR to increase the quality of the data. Some facilities enter their own data within WQWebDMR, and, during the submittal process, the system validates the data and provides the facilities an opportunity to correct data entry errors. Some facilities submit paper discharge monitoring reports (DMRs) that Ecology enters into WQWebDMR. Ecology permit managers and enforcement officers continue to review the DMRs for individual permits on a routine basis and look for data entry and calculation errors. If the DMR has an incorrect calculation, Ecology sends it back to the discharger with a request for correction. These automated improvements to permit data entry have increased the quality and efficiency of Ecology's permit management.
- F. Our WQP management team meets regularly to share information and discuss program direction. Decisions on a course of action are the product of our program management team. The team revised the team charter decision-making process in 2011 to provide more clarity to the process. Consideration is given to alternative means of decision-making, including delegation of responsibility closer to the action level.

## FTEs Designated to Quality in Program

Approximately four FTEs are dedicated to quality functions, including EIM work, WET testing, Quality Assurance Coordinator, Permit Quality Coordinator, permit writers group, IT support, and regional QA Project Plan work. The increase is due to expanded use of QA Project Plans by permittees and draft permit quality review.

## 12. Water Resources Program

The only formal programmatic QA work that has occurred between July 2009 and June 2012 was in relation to the metering QAPP the Water Resources Program (WRP) initiated. Discussions between WRP managers and staff resulted in a decision that a programmatic metering QAPP was not needed, because Ecology does not collect the data. It is sent to us by water right users. We do some measurement of water levels in wells using a variety of methods and follow standard procedures for each type. Some of the regions have developed standard operating procedures for the measurement methods they use, but, although most of these are several years old, they are still useful for the data we collect.

When WRP requires data collection by a water right applicant through a preliminary permit, we typically require the applicant to prepare a QAPP as part of their workplan and scope of work that technical staff review and approve. This is also the case if we provide grant money for an investigation that includes data collection.

The WRP has been significantly impacted through budget cuts and legislative directives. Although formally updating standard operating procedures and quality assurance project plans for the limited data the WRP does collect may be preferable, the current situation meets our current needs, and, given our current staffing limitations, spending time on this activity is not one of the program priorities and the WRP has no new planned QA activities.

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## References

APHA, 2005. Standard Methods for the Analysis of Water and Wastewater, 21<sup>st</sup> Edition. Joint publication of the American Public Health Association, American Water Works Association, and Water Environment Federation. [www.standardmethods.org](http://www.standardmethods.org)

Ecology, 2004. Quality Management Plan. Washington State Department of Ecology. Olympia, WA. Publication No. 05-03-031.  
<https://fortress.wa.gov/ecy/publications/summarypages/0503031.html>

Ecology, 2006. Policy 22-01, Establishing Quality Assurance. Washington State Department of Ecology, Olympia, WA. <http://www.ecy.wa.gov/programs/eap/qa/docs/pol22-01.pdf>

Ecology, 2007b. Standard Operating Procedure for Accreditation of Environmental Laboratories. Washington State Department of Ecology, Olympia, WA.  
[www.ecy.wa.gov/programs/eap/qa/docs/ECY\\_EAP\\_SOP\\_LAU001LabAccreditation.pdf](http://www.ecy.wa.gov/programs/eap/qa/docs/ECY_EAP_SOP_LAU001LabAccreditation.pdf)

Ecology, 2007c. Standard Operating Procedure for On-site Audits of Environmental Laboratories. Washington State Department of Ecology, Olympia, WA.  
[www.ecy.wa.gov/programs/eap/qa/docs/ECY\\_EAP\\_SOP\\_LAU002OnSiteAudits.pdf](http://www.ecy.wa.gov/programs/eap/qa/docs/ECY_EAP_SOP_LAU002OnSiteAudits.pdf)

Ecology, 2008a. Policy 22-02, Requiring Use of Accredited Environmental Laboratories. Washington State Department of Ecology, Olympia, WA.  
[www.ecy.wa.gov/programs/eap/qa/docs/pol22-02.pdf](http://www.ecy.wa.gov/programs/eap/qa/docs/pol22-02.pdf)

Ecology, 2008b. Standard Operating Procedure for Renewal of Accreditation. Washington State Department of Ecology, Olympia, WA.  
[www.ecy.wa.gov/programs/eap/qa/docs/ECY\\_EAP\\_SOP\\_LAU003LabAccredRenewals.pdf](http://www.ecy.wa.gov/programs/eap/qa/docs/ECY_EAP_SOP_LAU003LabAccredRenewals.pdf)

Ecology, 2010. Quality Management Plan. Washington State Department of Ecology, Olympia, WA. Publication No. 10-03-056.  
<https://fortress.wa.gov/ecy/publications/publications/1003056.pdf>

Ecology, 2010a. Laboratory Accreditation Procedural Manual. Washington State Department of Ecology, Olympia, WA. Publication No. 10-03-048.  
<https://fortress.wa.gov/ecy/publications/summarypages/1003048.html>

Ecology, 2011. Quality Management Plan. Washington State Department of Ecology, Olympia, WA. Addendum for: National Estuary Program – Grant Processes and Quality Assurance Oversight. Publication No. 10-03-056 (with Addendum added).  
<https://fortress.wa.gov/ecy/publications/publications/1003056.pdf>

Ecology, 2012. Manchester Environmental Laboratory Quality Assurance Manual. Washington State Department of Ecology, Olympia, WA.

EPA, 2001a. EPA Requirements for Quality Assurance Plans (EPA QA/R-5).  
U.S. Environmental Protection Agency. Publication EPA/240/B-01/003.

EPA, 2001b. EPA Requirements for Quality Management Plans (EPA QA/R-2).  
U.S. Environmental Protection Agency. Publication EPA/240/B-01/002.

EPA, 2006a. Agency-wide Quality System Documents. U.S. Environmental Protection Agency.  
[www.epa.gov/quality/qa\\_docs.html](http://www.epa.gov/quality/qa_docs.html)

EPA, 2006b. Data Quality Assessment: Statistical Tools for Practitioners. U.S. Environmental  
Protection Agency. [www.epa.gov/quality/qs-docs/g9s-final.pdf](http://www.epa.gov/quality/qs-docs/g9s-final.pdf)

Lombard, S. and C. Kirchmer, 2004. Guidelines for Preparing Quality Assurance Project Plans  
for Environmental Studies. Washington State Department of Ecology, Olympia, WA.  
Publication No. 04-03-030.  
<https://fortress.wa.gov/ecy/publications/summarypages/0403030.html>

Sargeant, D., W. Kammin, W. and S. Collyard, 2011. Review and Critique of Current Microbial  
Source Tracking (MST) Techniques. Washington State Department of Ecology, Olympia, WA.  
Publication No. 11-03-038.  
<https://fortress.wa.gov/ecy/publications/SummaryPages/1103038.html>

# Appendices

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## Appendix A. Acronyms and Abbreviations

Following are definitions of acronyms and abbreviations used frequently in this report.

### Programs of the Department of Ecology

AQ	Air Quality
EA	Environmental Assessment (also, EAP)
EA-MEL	Manchester Environmental Laboratory (part of EA Program)
HWTR	Hazardous Waste and Toxics Reduction
NW	Nuclear Waste
SEA	Shorelands and Environmental Assistance
Spills	Spill Prevention, Preparedness, and Response
TCP	Toxics Cleanup
WQ	Water Quality
WR	Water Resources

### Regional Offices of the Department of Ecology

HQ	Headquarters, Olympia/Lacey
CRO	Central Regional Office, Yakima
ERO	Eastern Regional Office, Spokane
NWRO	Northwest Regional Office, Bellevue
SWRO	Southwest Regional Office, Olympia /Lacey

### Other Acronyms and Abbreviations

ADS	Applications and Data Services (Administrative Services)
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
DOH	Washington State Department of Health
DWCO	Drinking Water Certification Officers
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management system
ELAP	Environmental Laboratory Accreditation Program (for LAU)
EPA	U.S. Environmental Protection Agency
FTE	Full Time Equivalent
FY	Fiscal Year
GIS	Geographic Information System
IDC	Initial Demonstration of Capability

ISIS	Integrated Site Information System (TCP)
LAU	Lab Accreditation Unit (part of EA Program)
LIMS	Laboratory Information Management System (for MEL)
LO	Lead Organization
MDL	Method Detection Limit
MEL	Manchester Environmental Laboratory (part of EA Program)
NEP	National Estuary Program
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resource Damage Assessment
PBMS	Performance-Based Measurement Systems
PT	Proficiency Testing
QA	Quality Assurance
QA	Quality Assurance Project Plan
QC	Quality Control
RCW	Revised Code of Washington
SAP	Sampling Analysis Plan
SOP	Standard Operating Procedure
SOW	Scope of Work
TMDL	Total Maximum Daily Load (water cleanup plan)
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WET	Whole Effluent Toxicity

## Appendix B. Agency Quality Staff

	Program/ Program Manager	QA Coordinator	Location	Coordinator Phone	Coordinator E-mail
	Ecology QA Officer	Bill Kammin	HQ	(360) 407-6964	wkam461@ecy.wa.gov
	National Estuary Program (NEP) Quality Coordinator	Tom Gries	HQ	(360) 407-6327	tgri461@ecy.wa.gov
1	Air Quality/ Stu Clark	Stan Rauh	NWRO	(425) 649-7115	srau461@ecy.wa.gov
2	EA – General/ Rob Duff	Brad Hopkins	HQ	(360) 407-6964	bhop461@ecy.wa.gov
3	EA – LAU/ Rob Duff	Alan Rue	Manchester	(360) 895-6148	arue461@ecy.wa.gov
4	EA – MEL/ Rob Duff	Karin Feddersen	Manchester	(360) 871-8829	kfed461@ecy.wa.gov
5	HWTR/ K Seiler	Samuel Iwenofu	SWRO	(360) 407-6346	siwe461@ecy.wa.gov
6	Nuclear Waste/ Jane Hedges	Jerry Yokel	Kennewick	(509) 736-3009	jyok461@ecy.wa.gov
7	SEA/ Gordon White	Wendy Bolender	HQ	(360) 407-7274	wbol461@ecy.wa.gov
8	SWFA/ Laurie Davies	Marc Heffner	HQ	(360) 407-6773	mhef461@ecy.wa.gov
9	Spills/ Dale Jensen	Dale Davis	HQ	(360) 407-6972	dald461@ecy.wa.gov
10	Toxics Cleanup/ Jim Pendowski	Fu Shin Lee	HQ	(360) 407-7146	flee461@ecy.wa.gov
11	Water Quality/ Kelly Susewind	Mike Herold	HQ	(360) 407-6434	mher461@ecy.wa.gov
12	Water Resources / Maia Bellon	Dave Nazi	CRO	(509) 454-4263	dnaz461@ecy.wa.gov

## Appendix C. Current Ecology SOPs

### 1. Air Quality Program

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SOP Title	Status
Aethalometer Operations	Final
Automated Method Data Documentation and Validation	Final
Carbon Dioxide Monitoring	Final
Nephelometer Operations	Final
Nitrogen Dioxide Monitoring	Final
Ozone Monitoring	Final
PM 10 Tapered Element Oscillation Microbalance	Final
PM 2.5 Single Channel Sampler Operations	Final
PM 2.5 Tapered Element Oscillation Microbalance	Final

### 2. Environmental Assessment Program - General

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Index Number	SOP Title	Status	Author	Due date
EAP001	Use of Semi-Permeable Membrane Devices	Final	Johnson	NA
EAP002	Determination of Total Dissolved Gas	Final	Pickett	NA
EAP003	Pesticide Sampling in Fresh Water	Final	Burke	NA
EAP004	Weekly/Monthly Procedures - EAP Operations Center	Withdrawn	Strong	NA
EAP005	New Employee Orientation - EAP Operations Center	Withdrawn	Strong	NA
EAP006	Daily and Emergency Procedures - EAP Operations Center	Withdrawn	Strong	NA
EAP007	Resecting Finfish Whole Body, Body Parts or Tissue Samples	Final	Sandvik	NA
EAP008	Resecting DNA Samples and Aging for Finfish	Final	Sandvik	NA
EAP009	Collection, Processing and Preservation of Finfish Samples	Final	Sandvik	NA
EAP010	Field Measurement of Conductivity/Salinity	Withdrawn	Ahmed	NA
EAP011	Instantaneous Measurement of Temperature in Water	Final	Nipp	NA
EAP012	Sampling Bacteria in Water	Withdrawn	Mathieu	NA
EAP013	Determining Global Positioning System Coordinates	Final	Janisch	NA
EAP014	Surveying Morphology and Surface Flow of Headwaters Channels	Final	Janisch	NA
EAP015	Grab Sampling – Fresh Water	Final	Joy	NA
EAP016	Freshwater Drift Collection, Processing and Analysis	Final	Estrella	NA
EAP017	Litterfall Collection, Processing, and Analysis	Final	Estrella	NA
EAP018	Turbidity Threshold Sampling	Final	Estrella	NA
EAP019	Estimating Stream Flows Using a Flume	Final	Estrella	NA
EAP020	Bedload Collection, Processing and Analysis	Final	Estrella	NA
EAP021	Estimating Large Woody Debris Loads Intersecting	Final	Janisch	NA



Index Number	SOP Title	Status	Author	Due date
	Headwaters			
EAP022	Estimating and Delineation of Headwaters Wetlands	Final	Janisch	NA
EAP023	Winkler Determination of Dissolved Oxygen	Final	Ward	NA
EAP024	Estimating Streamflow	Final	Sullivan	NA
EAP025	Seawater Sampling	Final	Stutes/Bos	NA
EAP026	Analysis of Chlorophyll a	Final	Stutes/Bos	NA
EAP027	Seawater Dissolved Oxygen Analysis (Dosimat)	Final	Stutes/Bos	NA
EAP028	Reagent Preparation	Final	Stutes/Bos	NA
EAP029	Metals Sampling	Final	Ward	NA
EAP030	Fecal Coliform Sampling	Final	Ward	NA
EAP031	Collection and Analysis of pH Samples	Final	Ward	NA
EAP032	Collection and Analysis of Conductivity Samples	Final	Ward	NA
EAP033	Hydrolab DataSonde and MiniSonde Multiprobes	Final	Swanson	NA
EAP034	Collection, Processing, and Analysis of Stream Samples	Final	Ward	NA
EAP035	Measurement of Dissolved Oxygen in Surface Water	Withdrawn	Mathieu	NA
EAP036	Benthic Flux Chambers	Final	Roberts	NA
EAP037	Time of Travel Dye Studies	Final	Carroll	NA
EAP038	Collection of Fresh Water Sediment Cores	Final	Furl	NA
EAP039	Sampling Marine Sediment	Final	Aasen	NA
EAP040	Obtaining Fresh Water Sediment Samples	Final	Blakley	NA
EAP041	Collecting Freshwater Suspended Particulate Matter Samples Using In-Line Filtration	Final	Meredith	NA
EAP042	Stream Stage Height Determination	Final	Shedd	NA
EAP043	Benthic Infaunal Rescreening, Tracking, Sorting and Taxonomic Identification	Final	Aasen	NA
EAP044	Continuous temperature monitoring of fresh water rivers and streams conducted in a TMDL study	Final	Stohr	NA
EAP045	Hemispherical digital photography conducted for a temperature TMDL study	Final	Stohr	NA
EAP046	Analysis of hemispherical digital photography conducted for a temperature TMDL study	Final	Stohr	NA
EAP047	Channel geometry studies conducted for a temperature TMDL study	Needed	Stohr	NA
EAP048	Riparian vegetation surveys conducted for a temperature TMDL study	Needed	Stohr	NA
EAP049	Maintaining EAP's internet and intranet web sites	Final	Lord	NA
EAP050	Marine Currents using ADCPs (Acoustic Doppler Current Profilers)	Final	Albertson	NA
EAP051	Field Service and Maintenance of Sea-Bird Electronics © (SBE) 16 and 16+ Mooring Stations	Final	Holt/Jaeger	NA
EAP052	Manual Depth-to-Water Level Measurements	Final	Marti	NA
EAP053	Groundwater Sampling	Cancelled	Marti	NA
EAP054	Collecting Gaging Data from Campbell Scientific Instruments	Final	Watt	NA
EAP055	Use of StreamPro Acoustic Doppler Current Profiler	Final	Shedd	NA
EAP056	Measuring and Calculating Stream Discharge	Final	Shedd	xx

Index Number	SOP Title	Status	Author	Due date
EAP057	Conducting Stream Hydrology Site Visits	Final	Myers	NA
EAP058	Operation of SonTek® FlowTracker® Handheld ADV®	Final	Burks	NA
EAP059	Operation of Mechanical Velocity Indicators	Final	Holt	NA
EAP061	Operation of In-stream Piezometers	Final	Sinclair	NA
EAP062	Determining Channel Dimensions in Streams and Rivers for the Extensive Riparian Status and Trends Monitoring Program	Final	Werner	NA
EAP063	Measuring Sediment Size and Channel Dimensions: 11-Count Method	Final	Clinton	NA
EAP064	Determining Canopy Closure using a Concave Spherical Densimeter – Model C	Final	Werner	NA
EAP065	Counting Large Woody Debris for the Extensive Riparian Status and Trends Monitoring Program	Final	Kennedy	NA
EAP066	Establishing Reach Length for the Extensive Riparian Status and Trends Monitoring Program	Final	Werner	NA
EAP067	Visual Characterization of Riparian Vegetation	Final	Roberts	NA
EAP068	Assessing Storm Damage at a Riparian Status and Trends Monitoring Site	Final	Roberts	NA
EAP069	Not Assigned			NA
EAP070	Minimizing The Spread of Aquatic Invasive Species	Final	Hallock et al	NA
EAP071	Withdrawn	Withdrawn		
EAP072	Basic Use and Maintenance of Data Loggers and Peripheral Equipment	Final	Fisher	NA
EAP073	Collecting Freshwater Benthic Macroinvertebrate Data in Wadeable Streams and Rivers	Final	Adams	NA
EAP074	Use of Submersible Pressure Transducers During Groundwater Studies	Final	Sinclair	NA
EAP075	Measuring Vertically Averaged Salinity	Draft	Mathieu	2012
EAP076	Operation of Laser Diffraction Instrument	Needed	TBD	2012
EAP077	Purging and Sampling Water Supply Wells	Final	Marti	NA
EAP078	Purging and Sampling Monitoring Wells	Final	Marti	NA
EAP079	SPMD Data Reduction	Draft	Seiders et al	2012
EAP080	Continuous Temperature Monitoring of Freshwater Rivers and Streams	Final	Ward	NA
EAP081	Procedures for Tagging Wells	Final	Pitz	NA

### 3. Environmental Assessment Program – Lab Accreditation Unit

Index Number	SOP Title	Status	Author	Due date
LAU001	Assessment (Audit) of Environmental Laboratories	Final	Lombard	NA
LAU002	Accreditation of Environmental Laboratories	Final	Lombard	NA
LAU003	Renewal Applications	Final		NA

#### 4. Environmental Assessment Program – Manchester Laboratory

Index Number	SOP Title
<b>Microbiology</b>	
710001	%KES Membrane Filter Technique, G. Jay Vasconcelos, EPA Region 10 Microbiologist, "The Detection and Significance of <u>Klebsiella</u> in Water", Modified
710005	Autoclave
710013	Microbiology Dishwasher
710014	<u>Escherichia coli</u> Detection by Most Probable Number, EPA 1104
710015	<u>Escherichia coli</u> Detection Membrane Filter Technique, EPA 1105
710017	Enterococcus in Water by Most Probable Number, Standard Method 9230 B
710018	Fecal Coliforms Membrane Filter Technique, Standard Method 9222 D, Modified
710019	Fecal Coliforms by Most Probable Number, Standard Method 9221 E
710021	Fecal Coliforms in Water by Most Probable Number, Standard Method 9221 E
710022	Fecal Streptococcus Membrane Filter Technique, Standard Method 9230 C
710039	Total Coliforms Membrane Filter Technique, Standard Method 9222 B, Modified
710042	Total Coliforms in Water by Most Probable Number, Standard Method 9221 B, Modified
710073	Fecal Coliforms in Water by Most Probable Number Using A-1 Media, Standard Methods 9221 E-2
710075	Heterotrophic Plate Count & Nuisance Organisms Iron & Sulfate
710076	EPA Method 1600: Membrane Filter Test Method for Enterococci in Water
710079	Total Nonvolatile Solids (Fixed) and Volatile Solids ignited at 550°C, Standard Method 2540 E
710081	pH for Microbiology section
710083	Membrane Filter Test Method for Escherichia coli in Water (mTEC2), EPA Method 1103.1
710084	Microbiology Quality Assurance Procedures
710089	COLILERT®-18 IDEXX
<b>General &amp; Physical Chemistry</b>	
710002	Alkalinity, SM 2320B
710004	Ash Free Weight, SM 10300 C, Modified
710007	Biochemical Oxygen Demand Using the Dissolved Oxygen Probe EPA Method 415.1
710008	Fluoride/Chloride/Sulfate by Ion Chromatography, EPA Method 300.0
710009	Conductivity, SM 2510B
710012	Fluorometric Determination of Chlorophyll <i>a</i> in Saltwater and Freshwater Samples, Standard Method 10200 H, Modified
710028	Total Organic Carbon and Dissolved Organic Carbon EPA Method 415.1 (Combustion and NDIR Detection)
710029	Ammonia (phenolate) Method by Colorimetric Flow Injection Analysis, Standard Methods 4500-NH3 H

Index Number	SOP Title
710030	Nitrogen, Nitrate-Nitrite, SM 4500-NO <sub>3</sub> I, Modified (Colorimetric, Automated, Cadmium Reduction)
710031	Nitrogen, Nitrite, SM 4500-NO <sub>3</sub> I, Modified (Colorimetric, Automated)
710032	Oil and Grease EPA Method 1664: N-Hexane Extractable Material (HEM; Oil and Grease), by extraction and Gravimetry, Modified
710033	Orthophosphate in Waters by Colorimetric Flow Injection Analysis, SM 4500 P G
710034	pH (Electrometric), EPA Method 150.1
710038	Settleable Solids (Settleable Matter), SM 2540 F
710043	Total Dissolved Solids (Residue, Filterable), SM 2540 C
710045	Percent Total Solids, Percent Volatile Solids and Percent Nonvolatile (fixed) Solids in Solid and Semisolid Samples, SM 2540 G, Modified
710046	Total Non-Volatile Suspended Solids (Residue, Volatile), SM 2540 E, Modified
710047	Total Solids, SM 2540 B
710048	Total Nitrogen in Waters by Colorimetric Flow Injection Analysis, Standard Method 4500-N B.
710052	Total Suspended Solids (Residue, Non-Filterable), SM 2540 D, Modified
710054	Turbidity, SM 2130 B, Modified
710055	Ultimate Biochemical Oxygen Demand (UBOD)
710056	Analysis of Bulk Asbestos, <u>Federal Register</u> , 40 CFR 763, Appendix A to Subpart F, Modified
710057	Asbestos Fiber Counting by the NIOSH 7400 Method, Modified
710058	Gravimetric Analysis of High Volume Air Filters, <u>Federal Register</u> , 40 CFR 50, Appendix J, Modified
710068	Soil and Waste pH Electrometric SW846 Method 9045C
710070	Total Organic Carbon in Soil/Sediment, PSEP-TOC
710074	Low level Total Phosphorus by Manual Digestion and Lachat
710078	Gravimetric Analysis of PM <sub>2.5</sub> Fine Particulate Air Filters, Federal Register, 40 CFR 50, Appendix L, Modified
710079	Total volatile and non volatile solids, SM2540E
710080	Percent Total Solids for TOC PSEP samples at 70 °C and 104 °C
710085	Suspended Sediment Concentration; ASTM Method D3977-97 (re-approved 2002), Test Method B - Filtration
710086	Alkalinity in Seawater; Fisheries Research Board of Canada; Bulletin 167, Second Edition, I.4.I.2
710087	Ash Free Dry Weight in Macrophyton, SM 10300 C, Modified
710088	Conductivity in Seawater
<b>Metals</b>	
720002	Metals Water Sample Preparation, EPA Method 200.2
720009	Determination of Mercury in Water by Cold Vapor Atomic Absorbance, U.S. EPA Methods 245.1, Modified and SW846 7470, Modified
720011	Metals Low Level Cold Vapor Mercury Analysis of Water Samples Using Bromine Oxidation, U.S. EPA Method 245.7, Modified

Index Number	SOP Title
720012	Metals Sediment Sample Preparation by Hotblock Digestion, SW846 Method 3050B, Modified
720013	Metals Water Sample Preparation, EPA Method 3010A
720015	Sediment Preparation by Microwave Digestion, SW846 Method 3051
720016	Toxicity Characteristic Leaching Procedure for Metals SW846 Method 1311
720018	ICP Mass Spectrometer VG PQ ExCell, EPA Method 200.8
720021	Determination of Mercury by Cold Vapor Atomic Absorbance in Sediment, SW846 7471 Modified, and EPA Method 245.5, Modified
720022	Solid Preparation by Microwave Digestion, SW846 Method 3052
720024	Low Level Phosphorus by ICP-MS, EPA Method 200.8
720025	Metals Water Sample Preparation, EPA Method 3010A
720026	Metals Water and Aqueous Waste Sample Preparation for Analysis by ICP/MS, EPA SW-846 Method 3020
720027	Determination of Mercury by Cold Vapor Atomic Absorbance in Tissues by EPA SW-846 Method 7471B, Modified, and EPA Method 245.6, Modified
720028	Solid Sample Preparation for Phosphorus, Method 200.2
720029	ICP: 715-EIS, EPA Method 200.7
720030	Metal Analysis of Air Filters, <u>Federal Register</u> , 40 CFR 50, Appendix G, Modified
<b>Organics</b>	
730002	Analysis of Water/Soil/Sediment/Fish Tissue Samples for Organochlorine Pesticides and Polychlorinated Biphenyls by GC/ECD SW846, Methods 8081 and 8082
730005	Butyltin Analysis
730009	Determination of Percent Lipids in Tissue
730013	Analysis of Chlorinated Acid Herbicides from Soils and Sediments (EPA Method 8151B)
730021	Semivolatile Base/Neutral/Acid (BNA) Organic Compounds by Gas Chromatograph Mass Spectrometer (GC/MS): Capillary Column
730022	GC/MS Data Final Review
730028	Hydrocarbon Identification
730061	Volatile Organic Analysis - Method 8260A
730066	Analysis of WTPH-D <sub>x</sub> Semivolatile Petroleum Products in Environmental Soil, Sediment and Water Extracts
730067	Analysis of NWTPH-G <sub>x</sub> and BTEX Analysis Methods for Soil and Water
730070	Polynuclear Aromatic Hydrocarbons (PAH) by Gas Chromatography/Selective Ion Monitoring Mass Spectroscopy (GC/SIM-MS)
730072	Extraction of Fish Tissue for Semi-Volatile Analytes, including Pesticides, PCBs and BNAs by GC/ECD and/or GC/MS
730073	Fish Tissue Florisil Column and Acetonitrile Back Extraction Cleanup (Macro)
730080	Extraction and GC/MS Analysis of 1-Naphthol and Carbaryl in Soil/Sediment
730081	Accelerated Solvent Extraction of Solid Samples
730082	Determining Flash Point by Pensky – Martens Closed Cup Tester

Index Number	SOP Title
730083	Isotopic Dilution Polynuclear Aromatic Hydrocarbons (PAH) by Gas Chromatography/Selective Ion Monitoring Mass Spectrometry (GC/ID-SIM-MS)
730085	Extraction of PAH only, Pesticides and/or PCBs in Water
730087	Butyltin in Tissue Analysis
730088	Sulfur Removal by SW-846 Method 3660B
730091	Micro-Florisil® Column Cleanup
730092	Micro-Florisil® Cleanup for Phthalate Esters, by Method 3620B
730093	Acid-Base Partition Cleanup, by Method 3650B
730095	Herbicide Analysis by Gas Chromatography/Mass Spectrometry (GC/MS)
730096	PBDE Tissue Analysis by GC/MS/MS
730097	Analyzing Chlorinated, Organophosphorus, and Nitrogenous Pesticides by GC/MS, Method 8270
730098	Methoprene by GC/MS, USGS Method O-2134-01
730099	Solid Phase Extraction (SPE) of Semi-Volatile Petroleum Products (NWTPH-Dx) in Water by EPA SW-846 Method 3535
730100	Solid Phase Extraction (SPE) of Herbicides in Water by EPA SW-846 Method 3535
730101	Extraction of BNA's/Pesticides/PCB's/Op-Pesticides in Soils, Sediments and Sludges by Soxtherm, SW 846 Method 3541
730103	Micro-acetonitrile back extraction cleanup
730104	PBDE Analysis by GC/MS Selective ion Monitoring (SIM)
730105	Fish Tissue Florisil Column and Acetonitrile Back Extraction Cleanup (Micro)
730107	Solid Phase Extraction (SPE) of Pesticides in Water by EPA SW-846 Method 3535
730108	Solid Phase Extraction (SPE) of PBDEs in Water by EPA SW-846 Method 3535
730109	Alcohol Analysis, EPA SW-846 Method 8015C
730110	Soxtherm semivolatile tissue extraction
730111	Analyzing Chlorinated, Organophosphorous, and Nitrogenous Pesticides by GC/MS/MS, Method 8270D
730112	Solid Phase Extraction (SPE) of Polynuclear Aromatic Hydrocarbons (PAH) in Water by EPA SW-846 Method 3535A
730113	Polynuclear Aromatic Hydrocarbons (PAH) by Gas Chromatography/Selective Ion Monitoring Mass Spectrometry (GC/SIM-MS), Method 8270D
730114	Carbamate Analysis by LC/MS/MS Double Quadrupole, EPA Method 8321A Modified
730115	Carbamate Analysis by LC/MS/MS Triple Quadrupole, EPA Method 8321A Modified
730117	SPMD Spiking Instructions
730118	Herbicide extraction in soil
730119	Acid/Base Partitioning Cleanup for Herbicide Analysis by EPA SW-846 Method 3650B
<b>Sample and Data Management</b>	
770001	Sample Check-In
770003	Purchasing Analytical Services

Index Number	SOP Title
770005	Reviewing Contract Laboratory Data
770009	Filling Sample Container Orders
770014	Processing Purchases for Payment
770016	Radiation Screening of Samples Entering the Manchester Laboratory
770017	Sample Data Filing System
770018	Documentation of Administrative Standard Operating Procedures
770019	Documentation of Analytical Standard Operating Procedures
770020	Use of the OHS Material Safety Data Sheets on CD-ROM Software
770023	Waste Collection, Storage and Pickup
770026	Sample Disposal
770029	Cleaning Sample Containers with a Laboratory-Grade Dishwasher
770030	Operation of Ecology Laboratory Balances
770031	Calibration of Temperature Probes and Thermometers
770032	Personnel Training
770033	Personnel Training in Peer Review of Data
770034	Maintenance of Adjustable Pipettes
770035	QA of Analytical Standards
770036	Radiation Protection Plan

SM = Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998.  
 Unless otherwise indicated, all lab SOPs are final.

## 5. Hazardous Waste and Toxics Reduction Program

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None

## 6. Nuclear Waste Program

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SOP Title
Shipping Samples to NWP Contracted Analytical Labs Draft

## 7. Shorelands and Environmental Assistance Program

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None

## 8. Solid Waste and Financial Assistance Program

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None

## 9. Spills Program

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Index Number	SOP Title
SPL001	Collecting oil spill source samples
SPL002	Collecting oil spill HCID samples
SPL003	Collecting oil spill water samples
SPL004	Collecting oil spill intertidal sediment samples
SPL005	Collecting oil spill shellfish tissue samples
SPL006	Collecting soil or sediment samples for gasoline spills
SPL007	Collecting samples from fish kills

## 10. Toxics Cleanup Program

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None

## 11. Water Quality Program

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None

## 12. Water Resources Program

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None

## 13. Stormwater SOPs

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SOP#	SOP Title	Status
ECY001	Collecting Grab Samples from Stormwater Discharges	Final
ECY002	Automatic Sampling for Stormwater Discharges	Final
ECY003	Collecting Stormwater Sediments Using In-line Sediment Traps	Final
ECY004	Calculating Pollutant Loads for Stormwater Discharges	Final



## Appendix D. Ecology Internal Laboratory Audits

### Methods audited at Manchester Environmental Laboratory (2009-2012)

- Chlorophyll
- Microbiology
- Polynuclear Aromatic Hydrocarbons (PAH), a subset of the Semivolatile Base/Neutral/Acid (BNA) Organic Compounds analysis (Sediment only)
- Total Phosphorus by Lachat for 2 different analysts
- Total Dissolved Solids (TDS) for 2 different analysts
- Ammonia
- Orthophosphate
- Suspended Sediment Concentration (SSC) and Total Suspended Solids (TSS)
- Semivolatile Analysis: Base/Neutrals & Acids (BNA), PAH Selective Ion Monitoring (SIM), and PAH by isotopic dilution
- Pesticides by GC/MS
- BNA for the back-up analyst
- Carbamates
- Sample Coordination (Sample Check-In)
- Metals by Inductively Coupled Plasma/Mass Spectrometer ICP/MS

## Appendix E. Ecology QA Timeline

### 1979

EPA makes their QA requirements mandatory for "all EPA grants, contracts, cooperative agreements and interagency agreements that involve environmental measurements."

### 1983

Ecology prepares first *Quality Management Plan*.

### 1987

Cliff Kirchmer hired as MEL Quality Assurance Officer.

### 1988

Legislature enacts RCW for Lab Accreditation at request of WQ Program.

#### 1988 - March

Quality Assurance Section formed with Cliff Kirchmer as section head

- Assigned to implement RCW.
- Moves to beautiful downtown Manchester.
- Hires Perry Brake.
- Writes WAC 173-50.

#### 1988 - October

Element L-4 of Puget Sound Water *Quality Management Plan* requires QA plan for Ecology data activities.

#### 1989 - February

Cliff Kirchmer hires Connie Schreiber for administrative support.

#### 1989 - March

Cliff Kirchmer hires Stew Lombard to help him meet requirements of Lab Accreditation.

#### 1989 – April

EPA informs Ecology they will not accept a project plan until it is approved by Ecology's QA Officer.

#### 1989 – April-July

Cliff Kirchmer and Stew Lombard hold 27 meetings with 93 Ecology staff to evaluate QA effort and assess future needs.

#### 1989 - August

Draft revision of 1983 *Quality Management Plan* sent to the Executive Management Team for review and approval.

### 1990

WAC 173-50 finalized and implemented.

- Designed to help labs achieve the capability to report accurate results.
- First lab accredited in January 1990.
- Ecology adopts Executive Policy 1-22, which requires use of accredited labs.

### **1991**

Cliff Kirchmer wrote QAPP guidance.

- Tailored to type and scale of Ecology projects.
- EPA's guidance was for bigger projects.

### **1992**

EPA Region X QA Manager requests updated *Quality Management Plan* from Ecology.

### **1993 - February**

*Quality Management Plan* still not approved by Ecology programs.

### **1993 - August**

Ecology adopts Executive Policy 1-21.

- Program managers designate QA Coordinators.
- QAPPs required for environmental studies.
- QAPPs approved per program manager before data collection.

### **1993 - December**

Revised *Quality Management Plan* finally approved more than four years after submission to the Executive Management Team.

### **1995 - April**

Submitted *Quality Report to Management*.

### **1997**

Submitted *Quality Report to Management*.

### **1998**

Cliff Kirchmer becomes full-time QA Officer and moves to HQ. Perry Brake replaces Cliff as Lab Accreditation section manager.

### **1999 - January**

*Quality Report to Management* prepared.

### **2000 - June**

Ecology revises *Quality Management Plan*.

### **2000 - August**

EPA Region X approves *Quality Management Plan*.

### **2001**

First revision of QAPP guidance, in response to EPA's revised guidance (QAIG5)

**2002 - November**

WAC 173-50 revised to include Drinking Water Certification.

**2003 - May**

Fourth *Quality Report to Management* issued.

**2003 - November**

EPA Region X conducts first Ecology Quality System Review.

- EPA found no major deficiencies.
- *Quality Report to Management* was an excellent assessment of Ecology's quality system.
- The recommendations in that report should be implemented.

**2004**

Cliff Kirchmer and Stew Lombard revised the QAPP guidance.

**2005**

- *Quality Management Plan* revised.
- Bill Kammin designated Ecology QA Officer.
- Fifth *Quality Report to Management* completed and issued to management.

**2006**

- EA Program SOP Policy established. Work on sampling and field analytical SOPs begins.
- Perry Brake retires, and Stew Lombard becomes Lab Accreditation Unit supervisor.
- State-wide QA training presented by Bill Kammin and friends.
- Sixth *Quality Report to Management* completed and issued to management.
- Quality System Review conducted by EPA; no findings noted by EPA.

**2007**

Cliff Kirchmer retires.

**2008**

- LAU now accredits 450 labs.
- EA Program and Application and Data Services give presentation on QA and Data Management at the EPA Quality Conference in Seattle, April 2008.
- EA Program HQ now has over 50 SOPs.

**2009**

- EPA conducts triennial Quality System Review in March 2009. No findings, observations, or recommendations noted by EPA.
- Seventh *Quality Report to Management* finalized and issued to management.

**2010**

- New QA glossary completed.
- EAP SOP policy revised.
- EAP QAPP policy revised.
- EAP method change policy revised.

- Ecology QMP approved by EPA (5-year cycle).

## **2011**

- NEP addendum developed for Ecology QMP.
- NEP Quality Coordinator hired.
- NEP field audits implemented.
- NEP quality website developed.

## **2012**

- Eighth *Quality Report to Management* (this document) finalized and issued to management.
- SOP policy revised.
- QAPP policies revised.

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## **Appendix F. EPA Audit of Ecology's Quality System - 2012**

**QUALITY SYSTEMS ASSESSMENT REPORT**

**For**

**Washington State Department of Ecology**

**By**

**Quality Staff**

**Office of Environmental Assessment**

**US EPA Region 10  
1200 Sixth Avenue  
Seattle, WA 98101**

**April 6, 2012**



## Table of Contents

I. Introduction .....	3
II. Objective .....	3
III. Approach.....	3
A. Participating Management & Staff .....	3
B. Documents Reviewed.....	4
IV. Assessment Results.....	5
V. Completion of the Assessment Process .....	7

## **I. Introduction**

Pursuant to U.S. EPA Region 10 responsibility to oversee and assess the implementation of Quality Systems required of EPA assistance agreement recipients through EPA Grant and Cooperative Agreement regulations (40 CFR Parts 31 and 35), the Office of Environmental Assessment (OEA) Quality Staff conducted a Quality System assessment of the Washington State Department of Ecology's (Ecology) quality system on March 5-7, 2012.

## **II. Objective**

The primary objectives of the Quality Systems assessment were to address:

- conformance of the Ecology quality system to their Quality Management Plan and Laboratory Quality Assurance Manual
- suitability and effectiveness of the practices implemented by the Ecology through their Quality Management Plan and Laboratory Quality Assurance Manual

## **III. Approach**

The assessment was conducted to review the Quality Assurance (QA) policies and procedures utilized to ensure that data of known and documented quality are being generated. The QA policies and requirements set forth in the Quality Management Plan (QMP), Laboratory Quality Assurance Manual (QAM) and other supporting QA documents were used as the basis for the assessment. Interviews with managers and staff were used to evaluate the implementation and conformance to the QMP.

The assessment team consisted of Raymond Wu (lead) and Donald Brown from the USEPA Region 10 Office of Environmental Assessment. Interviews focused on the National Estuary, Air Quality, Water Quality, Toxics Cleanup, Nuclear Waste, Hazardous Waste & Toxics Reduction, Shorelands & Assistance, and Environmental Assessment Programs, including both the Manchester Environmental Laboratory and the Laboratory Accreditation Unit.

### **A. Participating Management & Staff**

#### **Ecology Main Office**

Bill Kammin – Ecology Quality Assurance Officer  
Rob Duff – Program Manager, Environmental Assessment Program  
Will Kendra – Section Manager, Environmental Assessment Program  
Bob Cusimano – Section Manager, Environmental Assessment Program  
Tom Gries – QA Coordinator, National Estuary Program  
Stan Rauh – Air Quality Operations Unit Manager, Air Quality Program  
Mike Herold – QA Coordinator, Water Quality Program  
Fu Shin Lee – QA Coordinator, Toxics Cleanup Program  
Jerry Yokel – QA Coordinator, Nuclear Waste Program  
Samuel Iwenofu – QA Coordinator, Hazardous Waste Toxics Reduction Program  
Lauren Driscoll – Wetland Manager, Shorelands & Environmental Assistance  
Wendy Bolender – QA Coordinator, Shorelands & Environmental Assistance

## **Ecology Manchester Environmental Laboratory and Lab Accreditation Unit**

Bill Kammin – Ecology Quality Assurance Officer

Dean Momohara – Interim Director, Manchester Environmental Laboratory

Karin Feddersen – QA Coordinator

Alan Rue – Unit Supervisor, Lab Accreditation Unit

### **B. Documents Reviewed**

#### **Pre-site visit**

- *Ecology Quality Management Plan, October 2010*
- *Ecology Manchester Laboratory Quality Assurance Manual, February, 2012*
- *Lab User Manual for Manchester Environmental Lab (9<sup>th</sup> Edition), September, 2008*
- *Addendum to Ecology Quality Management Plan for National Estuary Program Grant Processes Quality Assurance Oversight, October 2010*
- *Ecology Report to Management (November through June 2009), December 2009*
- *Ecology River & Stream Water Quality Monitoring Report, July 2011*
- *Most recent Environmental Assessment Program Organization Chart*
- *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies, July 2004*
- *National Estuary Program (NEP) Project Field Audit Checklist*
- *NEP Field Audit Report on Mussel Watch, December 2011*
- *Ecology Field Equipment Inventory*
- *Water Quality Policy (1-11), September 2006*
- *Environmental Assessment Program (EAP) – Water Quality Program (WQP) joint procedure, June 2007*
- *Quality Assurance Project Plan (QAPP) Review Router & Checklist, June 2007*
- *Environmental Laboratories Accreditation Program Accredited Laboratory List November 2011*
- *Ecology EAP Lab Accreditation Unit Audit Report, December 2011*
- *Ecology EAP Lab Accreditation Unit Audit Report, April 2007*
- *Ecology Record Retention Schedule, December 2011*
- *Aquatic Research, Inc. Certificate & Report, December 2011*
- *Training files from Bill Kammin*

#### **On-site visit**

- *EAP Policy 4-01 on Peer Review Requirements for Program Publications, July 2009*
- *EAP Procedure 2-03 on Coordinating the Review of QAPP prepared by Water Quality Grant and Loan Recipients*
- *Gas Chromatography / Mass Spectrometry (GC/MS) data review checklist*
- *Inorganic Section Cross Training Guidelines Check Sheet*
- *Lab Corrective Actions on Lab Accreditation Unit Findings, 2007*

- *QA Audit Corrective Action Report on Alternative Bacteria Source Identification, 2007*
- *Organization Charts for Air Quality, Water Quality, Toxic Cleanup, Nuclear Waste, Hazardous Waste & Toxic Reduction and Shorelands and Environmental Assistance Programs*
- *Training files from Tom Gries*
- *Waiver, Template, Guidelines & Checklists for Preparing NEP QAPPs*
- *Will Kendra's Summary on QA/QC changes since EPA 2009 audit*
- *Bob Cusimano's Summary on QA/QC changes since EPA 2009 audit*
- *Ecology Ozone Performance Evaluation Results*
- *Ecology Air Quality Program Automated Method Data Documentation, Review and Validation Procedure, October 2009*
- *Ecology Air Quality Program Nephelometer Operating Procedures, December 2008*
- *Ecology Air Quality Program Third Quarter 2011 Air Monitoring Data Quality Assessment Report*
- *Ecology Air Quality Program Air Monitoring Quality Assurance Plan, 2010*
- *Guidance for Remediation of Petroleum Contaminated Site, Toxic Cleanup Program, September 2011*
- *Ecology Ch 173-50 WAC on Accreditation of Environmental Labs*
- *Ecology RCW 43.21A.230 on Certification of Environmental Labs authorized – Fees – Use of Certified Labs by Persons Submitting Data or Results to Department*
- *QAPP for Wetlands Change Analysis – Tracking No Net Loss of Wetlands (EPA Grant #: PC-00J283-01)*
- *Spent Antifreeze Sampling Guidance*
- *Spent Parts Washer Sampling Guidance*
- *Sampling Event Summary by Hazardous Waste Program, May 2009 – October 2011*
- *QAPP for A&B Radiator, Vancouver, Washington, May 2009*
- *Summary of WSCF (Waste Sampling and Characterization Facility) Lab Performance Evaluation Study*
- *Field Sampling & Analysis Plan for Groundwater Treatability Test Monitoring Wells in the 100-D Area, Hanford Site, Washington, March 2009*
- *Nuclear & Mixed Waste Management Program Contract Request Documentation, December 2008*

#### **IV. Assessment Results**

This report contains the findings of fact on the implementation and effectiveness of the Ecology Quality System.

This report focuses on those areas in Ecology operations that in the opinion of the review team merit attention to ensure that Ecology continue to generate environmental data of known and documented quality. We would also like to acknowledge the cooperation and assistance of

the managers and staff who took time from their busy schedules to participate in the assessment.

For the purposes of this report, assessment results are classified as follows:

- **Findings** – *An assessment conclusion that identifies deficiencies in implementing the Quality Systems.*
- **Observations** – *An opportunity for operational improvement (a non-critical discrepancy where no corrective action is required) or a noteworthy practice of benefit to the organization.*
- **Recommendations** – *An opinion expressed by the review team that is considered to be a best practice. It is usually offered to help the organization address a corrective action and develop a plan for that action.*

### **Findings**

- There were no findings from this audit.

### **Observations & Recommendations**

- (1) *Frequency of Ecology Manchester Environmental Laboratory (MEL) by Ecology Laboratory Accreditation Unit (LAU)*  
Need to decide on audit frequency and make it consistent with MEL Laboratory QAPP
- (2) *QMP missing for most lead agencies in the National Estuary Program*  
NEP QAC should require all lead agencies to submit their organizational QMPs as soon as possible before going too far with their respective activities in order to maintain program effectiveness & accountability
- (3) *Standardization of Standard Operations Procedures (SOPs) & Equipment*  
It would be beneficial for the different Ecology Programs to use the same SOPs and equipment to cut down inconsistencies, ambiguity and redundancies
- (4) *Timely audits on field contractors*  
Programs rely heavily on contractor field support should assign their QACs to conduct audits on their contractors to avoid costly errors and to maintain integrity in sampling
- (5) *Cost savings at MEL*  
Good cross-training, automatic data uploads and routine instrument maintenance by analysts helps save capital for the lab
- (6) *SOP and QAPP utilization*  
Many more SOPs have been generated since EPA's last audit. Ecology personnel have a keen awareness of having an approved QAPP prior to the start of sampling
- (7) *SOP revision*  
Program should have a schedule in place to revisit current SOPs & make necessary changes

- (8) Cost savings in the Air Program  
The Air Problem is able to remotely collect data as well as fix instrument problems. Its QA is in great shape.

## **V. Completion of the Assessment Process**

Ecology was found to be in general conformance with the quality practices detailed in the QMP. As there are no findings, this assessment does not require a formal response by Ecology.

## Appendix G. 2011 Quality Management Plan Addendum

### Washington State Department of Ecology -- Quality Management Plan -- Addendum for: National Estuary Program – Grant Processes and Quality Assurance Oversight Approval Signatures

William R Kammin, Washington State Department of Ecology	Date
Margen Carlson, Washington State Department of Fish and Wildlife	Date
Mary Knackstedt, Washington State Department of Health	Date
Michael Cox, US Environmental Protection Agency	Date
Ginna Grepo-Grove, US Environmental Protection Agency	Date
Ken Currens, Puget Sound Partnership	Date
Will Kendra, Washington State Department of Ecology	Date

## **Addendum to Washington State Department of Ecology (Ecology) – Quality Management Plan (QMP)**

### **Regarding: National Estuary Program (NEP) – Quality Assurance (QA) and Grant Processes**

Over the past 20+ years, Ecology has developed a quality system that has been documented by EPA to be fully compliant with EPA regulatory requirements. EPA has periodically assessed the Ecology quality system, and in the most recent two audits has determined no findings or corrective actions. EPA approved the most recent Ecology *Quality Management Plan* (QMP) in October 2010; it will remain in place until 2015. This current Ecology QMP is incorporated into this document by reference, and can be found at the following web address:

[www.ecy.wa.gov/programs/eap/quality.html](http://www.ecy.wa.gov/programs/eap/quality.html)

However, concurrent with the influx of National Estuary Program (NEP) grant money to Washington State, EPA identified concerns with quality assurance planning, especially in relationship to the Lead Organizations (LOs) who will be awarding NEP grants and tracking grant progress and completion. EPA identified Ecology QA oversight of the grants as the most efficient use of limited state agency QA resources.

Ecology has agreed to provide oversight over several QA processes for the NEP grants. To facilitate this process, the LOs listed below are jointly funding a position housed in Ecology and designated as the NEP Quality Coordinator (NEPQC):

- Washington State Department of Health (WDOH), Mary Knackstedt, QA contact.
- Washington State Department of Fish and Wildlife (WDFW), Margen Carlson, QA contact.
- Washington State Department of Ecology (Ecology), Bill Kammin, QA contact.
- Puget Sound Partnership (PSP), Ken Currens, QA contact.

This position will conduct reviews of Quality Assurance Project Plans (QAPPs) submitted to the LOs and PSP for compliance with EPA quality system requirements. The position will also provide technical support to LOs, PSP and grant recipients to facilitate QAPP development and review. This technical support includes:

- Technical assistance and development of QAPP templates and checklists to facilitate documentation.
- Recommendation of QAPP approval, rejection, or intermediate status.
- Periodic audits and assessment of project compliance with QAPP objectives.
- Development of a waiver process and alternative documentation where traditional QAPPs are not appropriate.
- Assessment of all submitted projects for clear project objectives and assessment of attainment of those objectives at project end.
- Review and recommendation for approval of QAPPs and reports prepared by NEP sub-contractors.
- Coordination with LOs and PSP when specialized program expertise is needed for assistance in reviewing QAPPs and reports.
- Training of LOs, PSP, and sub-contractors in quality assurance principles and practices.
- Data review, verification, and validation as necessary and appropriate.



As grants are awarded, the LOs and PSP will submit the award documentation to the NEPQC for a determination of the type and scope of the quality documentation that will be required for the project. The NEPQC will communicate this decision to the LOs and PSP, who will advise the grant recipients on the scope of the documentation. The scope of documentation will include requirements for QAPP review and approval prior to data collection or assessment, and also for technical report review and approval prior to project completion. For projects that do not require a QAPP, a waiver process will be implemented that will document this decision and also provide documentation of the adequacy of project objectives and whether or not they were met.

The NEPQC will be responsible for providing quality assurance review of QAPPs, technical reports, and waiver documentation, and will make recommendations to LOs and PSP regarding final approval of these documents. LOs will be responsible for individual agency QA systems, including development of a QMP, as required by EPA, and designation of a QA manager to implement the QMP and coordinate with the NEPQC. The NEPQC position description is attached to this document and is part of this addendum

As the LOs develop their individual QMPs, they each will designate a Quality Manager who will be the single point of contact for NEP quality-related issues and the interface with the Ecology quality management system.

The Ecology QA Officer will retain approval authority of submitted QAPPs until the LOs demonstrate 'mature' quality systems, as evidenced by an EPA approved QMP, a functioning as-built quality system, the designation of an agency quality manager with appropriate experience in quality assurance, and the concurrence of the EPA Region 10 Quality Manager.

An organization chart reflecting these new relationships is under development and will be finalized after the LOs QMPs are approved by EPA. A draft organization chart is presented in this document, with the understanding that the NEPQC practical reporting functionality is to the Ecology Quality Assurance Officer, Bill Kammin.

### **NEP grant processes**

The LOs have developed a grant process and documentation for NEP that has been approved by EPA. The table below represents Ecology's grants management process flow for toxics/nutrients and watersheds.

## Lead Organization Grants Management Process Flow

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
RFP Development	Project Officer, administrative staff, Central Contracts office	RFP development, even in a noncompetitive solicitation, requires identifying eligible applicant types; identifying eligible types of projects; developing proposal evaluation criteria; identifying the range of possible award sizes; developing instructions to potential applicants regarding the required content of the application; and establishing schedules for the complete solicitation	<p>See attached organizational description for the duties of the NEP Project Leads (NEPPL)-2 (Project Officer), and the Puget Sound Grant Coordinator (PSGC),- 1 (Grant Specialist).</p> <p>These personnel use Washington State's procurement best management practices to implement a process for both direct and competitive NEP sub-awards, assisted by the Core Teams and Ecology's Contracts Office. For sub-awards made to governmental entities the primary vehicle will be an Inter Agency Agreement (IAA). Competitive sub-awards will be initiated by a RFP.</p> <ul style="list-style-type: none"> <li>• RFP content will be determined by the Core Teams who will refine areas of investment, draft evaluation criteria and a points system, and identify expected outputs and outcomes, and schedules.</li> <li>• RFPs will be developed and posted on the Single Application website now under construction by RCO and PSP, as well as WEBS (Washington's Electronic Bids Solution), Washington State's central bid posting site.</li> <li>• Ecology RFPs will be guided by the administrative and programmatic conditions in EPA's Cooperative Agreement and by the <i>State Administrative &amp; Accounting Manual</i> (SAAM). For example:  <a href="http://www.ofm.wa.gov/contracts/resources/RFP_gen.doc">www.ofm.wa.gov/contracts/resources/RFP_gen.doc</a>  <a href="http://www.ofm.wa.gov/contracts/resources/rfp_personal_services.pdf">www.ofm.wa.gov/contracts/resources/rfp_personal_services.pdf</a></li> </ul> <p>Ecology's Contracts Officer is modifying the RFP and IAA templates (link provided above) to incorporate the General Terms and Conditions outlined in the cooperative agreement that will be passed on to sub-awardees.</p> <p>Additional guidance is provided by SAAM 15.20.30:  <a href="http://www.ofm.wa.gov/policy/15.20.htm">www.ofm.wa.gov/policy/15.20.htm</a></p> <p>RFPs will be developed and designed to fit the specific solicitation.</p> <p>Although the above guides do not directly mention the new NEP sub-awards, Ecology intends to manage Puget Sound NEP funding in accordance with internal procedures, the guidance referenced above and Washington State procurement laws and best management practices. Documentation will be developed and refined as this new program evolves.</p>

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
Application Forms Development	Project Officer, Grants Specialist or Contracts Specialist, administrative staff	Forms must be designed or adopted that can be used by applicants to submit the required information. For subawards to be made under an EPA assistance agreement, one would need the equivalent of an SF424, SF424A, SF424B, SF LLL and Form 4700-4. Also needed would be a recommended format for applicants to use for detailed budgets and a format for the Project Officer and Grants Specialist to use to document the cost reviews that each would perform of the application.	<p>Forms and/or templates will be developed and posted on the Single Application Point website hosted by the Puget Sound Partnership (PSP).</p> <p>Application forms are now under development by RCO and PSP. Their design is being completed by the Lead Organization (LO) coordinating group which includes EPA. The objective is to design a single application form similar to one currently in use by Ecology.</p> <p>Where an application “form” is not pertinent, RFPs will contain specific instructions on the format for responses/proposals.</p> <p>Upon selection of a recipient, the provisions of Ecology’s Yellow Book and other program guidelines will be used as guides to further develop applications or proposals and to assist in preparation of Inter Agency Agreements (IAAs) as discussed later.</p> <ul style="list-style-type: none"> <li>IAAs will be used for sub-awards to governmental entities. They include the detail of a SOW, QA, special terms and conditions, and detailed budgets. Guidance on detailed budget formats would be checked to ensure equivalency with the federal forms listed at the left.</li> </ul>
RFP Issuance	Administrative staff, perhaps the Project Officer	The solicitation must be announced and made available to all potential applicants. A person on staff, identified in the RFP, should be made available to answer questions from potential applicants. In a competitive solicitation, this person must be someone who will not be involved in evaluating proposals received under the solicitation.	<p>Solicitations will be prepared specifically for each sub-award and announced by the NEPPL and PSGC on the Single Application Point website and WEBS (Washington’s Electronic Bids Solution). Ecology will abide by the general rules jointly developed for the uses of the single portal site. The PSGC will provide technical assistance to potential applicants and perform administrative functions of RFP issuance. Applicants will complete and submit the forms/templates developed as discussed above. The PSGC will not be part of the formal evaluation process.</p> <p>SAAM 15.20.30 and the Yellow Book will be used as guides.</p> <p><a href="http://www.ofm.wa.gov/policy/15.20.htm">www.ofm.wa.gov/policy/15.20.htm</a></p>
Application Receipt	Administrative staff, Project Officer	Applications should be logged in. Applications should be screened to verify that they meet the threshold criteria specified in the RFP. They should also be screened to verify that they are complete (that they contain all of the required content).	<p>The PSGC will follow a checklist to initially screen all proposals and applications to ensure they are complete and responsive to the RFP and forward them to the NEPPL for the evaluation process. If responses come through the single application website, the PSGC will additionally ensure the application was properly routed.</p> <p>Due to the variety of potential projects, the NEPPL and PSGC will collaborate with EPA to complete a screening form specific to each solicitation guided by SAAM 15.20.30(f).</p> <p><a href="http://www.ofm.wa.gov/policy/15.20.htm">www.ofm.wa.gov/policy/15.20.htm</a></p> <p>Template for screening for RFP responsiveness is on OFM website:</p>

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
			<a href="http://www.ofm.wa.gov/contracts/resources/documents.asp">www.ofm.wa.gov/contracts/resources/documents.asp</a>
Application Evaluation	Project Officer, additional professional staff, Management	A team evaluates and scores the applications in light of the published criteria. The team recommends a subset of proposals for funding. Management selects proposals for funding based on the recommendations from the evaluation team. Project Officer documents the evaluation process and results of the evaluation. (Even in a noncompetitive solicitation, one evaluates the proposals received against a set of criteria. If a proposal fails to meet or exceed one or more of the criteria, one either works with the applicant to correct the proposal's deficiencies or rejects the proposal.)	<p>Application evaluation, criteria, points, etc. will be in place at the time of the RFP. The PSGC will recommend a ranking/rating process, and the NEPPL will select the method. The NEPPL will form the evaluation team and process to score proposals and make final selections.</p> <p>The variety of potential projects dictates that each solicitation will require a separate evaluation process based on the criteria and points developed for that solicitation.</p> <p>The NEPPL and PSGC will be guided by the provisions of administrative and programmatic conditions within the cooperative agreement and Washington's SAAM 15.20.30(k-q):  <a href="http://www.ofm.wa.gov/policy/15.20.htm">www.ofm.wa.gov/policy/15.20.htm</a>  and SAAM 16.10.30:  <a href="http://www.ofm.wa.gov/policy/16.10.htm">www.ofm.wa.gov/policy/16.10.htm</a></p> <p>Additional consultation by LO Coordinating Team and engagement with strategic advisory committee and broader Management Conference may be required before final awards are made. (This step is TBD by LO Team).</p>
Cost review	Project Officer, Grants Specialist, Contract Specialist	Review detailed budget to verify applicant costs and confirm that all proposed costs are reasonable, allowable and allocable. Obtain supplemental cost information from applicants. Verify that final detailed budget matches information in the SF424 and SF424A (or equivalent forms created by Lead Organization)	<p>The NEPPL and PSGC will team to select eligible proposals/applications and accomplish the essential step of a detailed budget review and verification of cost data. To confirm that proposed costs are eligible, they will be guided by the cooperative agreement terms and conditions, the provisions of Part III of the Yellow Book, and generally supported by Washington's Ch 10 SAAM :  <a href="http://www.ofm.wa.gov/policy/10.htm">www.ofm.wa.gov/policy/10.htm</a>  Also, Part III- Eligible Costs- Yellow Book, pages 21-38</p> <p>In addition, Ecology's internal fiscal policies and guidelines for other grants/loans, and Ecology's broad experience in managing grants and loans will help to perform cost review. Applicants will be asked how costs were derived and negotiations with applicants will produce the final approved budget.</p>
Work Plan negotiation	Project Officer	Negotiate any work plan revisions to ensure that project meets the objectives of the solicitation, has a reasonable schedule, has clear deliverables, and is severable in the event that reduced funding from Congress prevents full funding of	<p>The NEPPL and PSGC will work with the applicant/recipient to develop a detailed work plan. This process will be guided by the cooperative agreement strategies, work plan, linkages to the Action Agenda, general terms and conditions, and logic models. At times, collaboration with EPA and/or PSP may be required to solidify the final deliverables. An OFM guide is located at:  <a href="http://www.ofm.wa.gov/contracts/resources/contract_award.pdf">www.ofm.wa.gov/contracts/resources/contract_award.pdf</a></p>

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
		the project.	
Award document development	Project Officer, Grants Specialist, Contract Specialist, Legal Counsel	Develop a grant award document with the full set of legally required terms and conditions. These requirements include, but are not limited to, 40 C.F.R. Part 31, 40 C.F.R. Part 34, 2 C.F.R. Part 225, restrictions on international travel, restrictions on conferences, quality assurance, geospatial data requirements, entry of data into STORET, entry of data into equivalent Tribal and State data systems, FEATS progress reporting. (Note for States that the award document would also need to incorporate any requirements that are specified in applicable state law and regulation).	<p>The NEPPL is responsible for coordinating and developing the final award document, with assistance from the PSGC. This effort will be guided by the administrative and programmatic provisions of the cooperative agreement and Washington's SAAM:</p> <p><a href="http://www.ofm.wa.gov/contracts/resources/iaa_long_gen.doc">www.ofm.wa.gov/contracts/resources/iaa_long_gen.doc</a>  <a href="http://www.ofm.wa.gov/contracts/resources/contract_award.pdf">www.ofm.wa.gov/contracts/resources/contract_award.pdf</a>  <a href="http://www.ofm.wa.gov/contracts/resources/documents.asp">www.ofm.wa.gov/contracts/resources/documents.asp</a></p> <p>Also, Ecology's Yellow Book outlines general guidance about developing agreements (see pages 12-13). Boilerplates are currently available that remind about special conditions and regulatory requirements to include federal requirements:</p> <ul style="list-style-type: none"> <li>• That the recipients must comply with applicable federal law and regulation as well as applicable state and local laws and regulation.</li> <li>• That sub-recipients fully meet their obligations under the State Environmental Policy Act and the State Growth Management Act.</li> </ul> <p>The PSGC will work with Ecology's Contracts Manager to ensure the above is implemented and processed through management. Key Considerations for State Grants may be reviewed at: <a href="http://www.ofm.wa.gov/contracts/icct/stategrantguidance.pdf">www.ofm.wa.gov/contracts/icct/stategrantguidance.pdf</a>  Also see Yellow Book page 12.</p> <p>Ecology's Contracts Officer is developing a new interagency agreement and contract template that will incorporate all the general terms and conditions that apply to sub-awardees.</p>
Dispute resolution process	Project Officer, Grants Specialist, Grants Compliance specialist, agency administrators	Agency should have a process to resolve any disputed competitive decisions.	<p><u>Disputes</u> - Ecology will follow OFM guidance:</p> <p>"In the event that a dispute arises under this Agreement, it shall be determined by a Dispute Board in the following manner: Each party to this Agreement shall appoint one member to the Dispute Board. The members so appointed shall jointly appoint an additional member to the Dispute Board. The Dispute Board shall review the facts, agreement terms and applicable statutes and rules and make a determination of the dispute. The determination of the Dispute Board shall be final and binding on the parties hereto. As an alternative to this process, either of the parties may request intervention by the Governor, as provided by RCW 43.17.330, in which event the Governor's process will control."</p>

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
Execute award to recipient	Grants Specialist, Contract Specialist	Send signed award to recipient, receive signed award back, and log into grants management system records.	Ecology's FMS and Fiscal offices have internal procedures in place for routing, distributing, and entering grant information into the Contracts, Grants, and Loans payables system. The Yellow Book is a base guide. The Ecology router ensures that final agreements are checked through the Contracts Office, the Fiscal Office, and appropriate managerial layers. IAAs are signed by the recipients and returned for Ecology signatures thus completing the agreement.  <a href="http://www.ofm.wa.gov/contracts/resources/contract_award.pdf">www.ofm.wa.gov/contracts/resources/contract_award.pdf</a> (see Contract Execution)
"Kick off" meeting with recipients	Project Officer, Grants Specialist, Contract Specialist, Management Representative, NEPQC	Meet with recipients, either individually and in groups, to brief them on the contents of the award, walk them through the provisions (terms and conditions) of the award, the provisions of applicable regulations, FEATS reporting requirements, financial accounting requirements, recordkeeping requirements, billing procedures, and any other requirements of which they need to be aware.	The purpose of the Single Application Point website hosted by Puget Sound Partnership is to provide continuously updated information. Also, Ecology's Financial Management Section (FMS) provides general information every year. FMS can incorporate special requirements for this Puget Sound program into its recipient training to include presentations by the NEPPL/PSGC.  Post award, the NEPPL and the PSGC will meet individually with each recipient of a sub-award to ensure a mutual understanding of the contents of the award, terms and special conditions, the SOW, QA, applicable regulations, and the applicability of FEATS reporting and financial tracking. If applicable, this may be a collective meeting of recipients.  NEPQC will, at that point, determine the project quality requirements, if a QAPP is necessary, and if project objectives and deliverables are adequate. A time frame for QAPP submittal and approval will be established, and grantee QA point-of-contact will be determined. If a QAPP is not necessary, the NEP QAPP Waiver form will be completed.
Initiate Post-Award Monitoring	Project Officer  NEPQC	Call recipients to discuss how their projects are going and affirm that they are aware that you are available to answer questions. Confirm that they are aware of requirements for prior written approval by Project Officer of any changes in statement of work/work plan or cumulative transfers among cost categories equal to more than 10% of the total budget.	Post award monitoring is a continuous communication process with award recipients. The NEPPL and PSGC will team to make these contacts and review progress for deliverables and financial expenditures. This process will be guided by the agreement and Ecology's Yellow Book that includes steps for "Monitoring Project Progress" (page 18) and "Amendments" to agreements (pages 13-14). Routine reports to include FEATS will be required and reviewed. There is considerable expertise within Ecology's FMS group to properly monitor projects in progress.  <a href="http://www.ofm.wa.gov/contracts/resources/managing_monitoring.pdf">www.ofm.wa.gov/contracts/resources/managing_monitoring.pdf</a>  NEPQC will conduct as-needed assessments of project status and progress and compliance with QAPP requirements.

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
Baseline Post-Award Monitoring	Project Officer, Grants Specialist, Contract Specialist, administrative and financial staff, NEPQC/Ecology Quality Assurance Officer	Ensure Quality Assurance requirements are met; process invoices from assistance recipients, monitor disbursements to recipients; review periodic FEATS progress reports and transmit them to the EPA; work with recipients on any corrective actions indicated by review of progress reports. Conduct site visits, when appropriate. Process amendment requests (changes in scope, budget and performance period), as necessary.	The NEPPL and PSGC will team to accomplish tracking of fiscal and deliverable performance (see attachment 1). Ecology's Yellow Book provides detailed procedures for financial management (pages 39-52), project management (pages 18-19), and contracts, property, and records management (pages 55-69). Invoices will be authenticated by the NEPPL prior to payment by Ecology's fiscal office, and financial data will be tracked. The NEPPL will review routine reports to include FEATS, make site visits, and negotiate necessary adjustments /amendments in the workplan or budget. There is considerable expertise within Ecology's FMS group to properly monitor projects in progress.  <a href="http://www.ofm.wa.gov/policy/15.40.htm">www.ofm.wa.gov/policy/15.40.htm</a> (see Managing and Monitoring section).  Also see new addendum to Ecology's <i>Quality Management Plan (QMP)</i> , October 2010. Ecology Publication No. 10-03-056.
Advanced Post-Award Monitoring	Project Officer, Grants Specialist, Grants Compliance specialist	Review recipient files, verify compliance with grant requirements onsite, verify that any contracts were awarded in compliance with applicable law and regulations, perform transaction tracking to verify appropriate use of funds and that funds are being used for eligible costs.	The NEPPL and PSGC will team to accomplish tracking of fiscal and deliverable performance (see attachment 1). Based on the procedures outlined in the Yellow Book, Ecology financial and project managers and Fiscal staff review and approve transactions for all grants (see pages 21-38 and 55-63). The PSGC will be primarily responsible for maintaining tracking spreadsheets to track disbursement. The NEPPL will be primarily responsible for tracking the sub-award performance, including deliverables, site visits, and appropriate use of funds.
Dispute resolution process	Project Officer, Grants Specialist, Grants Compliance specialist, agency administrators	Agency should have a process to resolve any contested issues identified through post award monitoring.	See Dispute Resolution Process above. The NEPPL will implement any post award contested issues using the process described above. Appeal processes will be governed by the contract terms and any additional general terms and conditions if added. General guidance may be found in the Yellow Book, including an "Appeals Process" section to help resolve issues (page 20).  <a href="http://www.ofm.wa.gov/policy/15.40.htm">www.ofm.wa.gov/policy/15.40.htm</a> (see Contract Dispute section)
Close-out	Project Officer, Grants Specialist, NEPQC	Verify acceptable completion of all deliverables; verify compliance with STORET data entry requirements; verify compliance with Tribal and State data entry requirements; review final FEATS report from recipient for any problems and	The NEPPL and PSGC will team to accomplish close-outs guided by the Yellow Book that includes a "Close-Out" Section VI that addresses both Final Performance, reports, and Final Financial Adjustments (pages 71-72).  All documents created in conjunction with a sub-award will be managed in accordance with state records retention guidelines (available only on Ecology's intranet:

Management Step	Involved Personnel	Remarks	Description of Ecology's LO Process(es)
		discrepancies; verify that grant file is complete, and store in appropriate place.	<p data-bbox="1037 237 1835 266"><a href="http://aww.ecology.ecy.wa.gov/services/records/records_management.htm">http://aww.ecology.ecy.wa.gov/services/records/records_management.htm</a></p> <p data-bbox="1037 293 1419 323"><a href="http://www.ofm.wa.gov/policy/15.40.htm">www.ofm.wa.gov/policy/15.40.htm</a></p> <p data-bbox="1037 326 1906 355">(see sections on Review Final Product, Evaluate Performance, and Documenting)</p> <p data-bbox="1037 378 1818 407">NEPQC will assess project for completion of QA close-out requirements.</p>



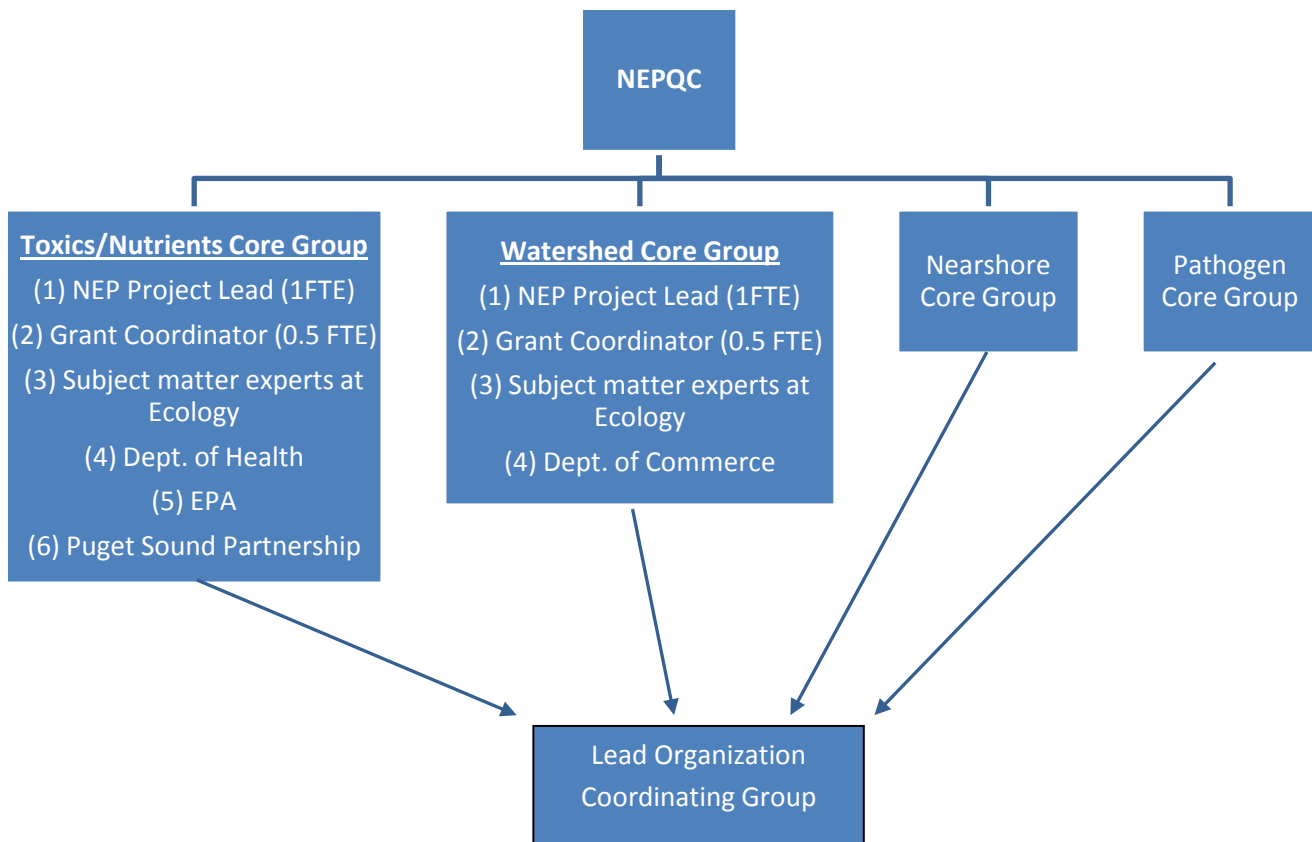
## Organizational Description of Ecology’s LO Sub-Award procedures

<b>Ecology’s Competitive Contracts and Inter Agency Agreements (IAA) Procedures</b>	
Initial Development	Reviews and Issuance
Define a project with management	Management review
Develop a Scope of Work (SOW) and QA	Budget Analyst review
Determine a recipient (competitive or direct)	Contracts Office review
Refine the SOW and coordinated detailed budget	Fiscal Office review
Insert requirements into an OFM format	Authentication by Ecology (x3)
Review by Contracts Office and Fiscal Office	Distribution: One copy to recipient; one copy to Project Manager; and, one copy to Fiscal-payables
Obtain authentication from recipient (x 3)	
Return 3 IAA originals to Ecology, affix router	
<b>Guides and Authorities</b>	
OFM SAAM: <a href="http://www.ofm.wa.gov/contracts/resources/iaa_long_gen.doc">www.ofm.wa.gov/contracts/resources/iaa_long_gen.doc</a> EPA Cooperative Agreement: Administrative/ Programmatic Conditions	RCWs: RCW 39.34 Payment: RCW 39.34.130

Ecology will hire two NEP Project Leads (NEPPLs), one project manager each for Toxics/Nutrients and Watersheds. In addition, Ecology will hire one Puget Sound Grant Coordinator (PSGC) to support the two leads.

The NEPPLs will have overall responsibility for the grant (under cooperative agreement with EPA) and will, in coordination with the Executive Lead and the management conference, design and develop all the policy and coordination required to make investments as sub-awards. This includes financial management and decision-making on sub-awards, tracking expenditures, scheduling, production, and signing invoices for payment. The NEPPLs will implement the grant by developing RFPs for competitive awards, designating direct awards, and initiating Inter Agency Agreements (IAA) and contracts. This will require developing the statement of work, the schedule, outputs and outcomes, special terms and conditions, and allocation amounts. The NEPPLs will be responsible for the sub-award selection process.

The NEPPLs will be assisted by the PSGC. This individual will facilitate the work of the NEPPLs by preparing formats for RFPs, IAAs, contracts, and tracking systems for each award through to completion. The NEPQC will provide quality assurance for these items as well as technical assistance to applicants. Appropriate items will be posted on the Single Application Point website hosted by the Puget Sound Partnership for use by all Lead Organizations. Potential applicants will also be provided a Common Application Form for use in proposing sub-award projects. The PSGC will post RFPs and solicitations, gather proposals and recommend to the PSGC methods of rating and ranking for inclusion in the RFP. After the selection process, a recipient will be designated. The PSGC will then post the results, notify the recipient, develop a contract or IAA to make the award, number and coordinate IAA/contracts with Fiscal, and design a financial and reports tracking system. Both the NEPPLs and PSGC will work together to track the fiscal and deliverable performance of all sub-awards.



**Figure 1. QA organization chart for National Estuary Program**