New Hampshire Department of Environmental Services

Encouraging Superior Environmental Performance Though Management Systems, Recognition and Rewards

Quality Assurance Project Plan

New Hampshire Department of Environmental Services
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Abstract: This document details a quality assurance plan to guide the successful implementation of NHDES's project "Encouraging Superior Environmental Performance Though Management Systems, Recognition and Rewards" which is intended to encourage systematic environmental management for better environmental performance, within and outside of those areas traditionally regulated, and specifically addresses NHDES's intentions to establish a New Hampshire-based Environmental Leadership Program.

A PROJECT MANAGEMENT

A1. Approval Sheet

_____ _____

Robert P. Minicucci II, PE
NH Department of Environmental Services
Project Manager

Date

_____ _____

Vincent R. Perelli
NH Department of Environmental Services
Quality Assurance Manager/Chief of Planning & Policy

Date

_____ _____

Nora J. Conlon PhD
US EPA Region 1
Quality Assurance Officer

Date

_____ _____

Jean Holbrook
US EPA Region 1
Project Officer

Date

A2. Table of Contents

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A3. Distribution List

The following individuals will receive a copy of this Quality Assurance Project Plan (QAPP) and any subsequent revisions:

Name	Project Title or Position	Organizational Affiliation	PT/O	Contact Information
Robert Minicucci	Project Manager	NHDES[1]	PT	rminicucci@des.state.nh.us
Vincent Perelli	NHDES QA Manager	NHDES	PT	vperelli@des.state.nh.us
Jean Holbrook	EPA Project Officer	US EPA Reg 1[2]	PT	Holbrook.Jean@epa.gov
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PT = Project team member, O = Observer

Additional copies of the QAPP may be requested from the NHDES QA Manager. As additional parties, such as the stakeholder group described below, become involved with the project, they will be added to Table 1 and given copies of the QAPP. It is anticipated that a read-only version of this QAPP will be posted at www.des.nh.gov.

A4. Project/Task Organization

Personnel involved in project implementation are listed in Table 2. Following the table, the responsibilities of key personnel are enumerated. Lines of authority and communication are shown in the organization chart in Figure 1.

[1] New Hampshire Department of Environmental Services
[2] United States Environmental Protection, Region 1 (located in Boston, Massachusetts)

Table 1: Project Implementation Personnel

Name	Role in Project, Title, Organizational Affiliation	Contact Information
Robert Minicucci	NHDES Project Manager,	603-271-2941; RMINICUCCI@DES.STATE.NH.US
Vincent Perelli	NHDES QA Manager (Chief of Planning & Policy)	603-271-8989; VPERELLI@DES.STATE.NH.US
Michael Walls	Project Oversight (NHDES Assistant Commissioner)	603-271-4979; MWALLS@DES.STATE.NH.US
Jean Holbrook	EPA Project Officer	617-918-1816 HOLBROOK.JEAN@EPA.GOV

The Project Manager will be responsible for the following activities:

- Assure completion of all tasks in the work plan
- Conduct outreach with potential participants and stakeholders
- Oversee participant enrollment, data collection, and data analysis tasks
- Issue quarterly and annual reports to the United States Environmental Protection (EPA)

The QA Manager will be responsible for the following activities:

- Maintain QAPP and amend as needed
- Distribute QAPP and maintain distribution list
- Conduct readiness reviews

A contractor, to be determined, will be responsible for the following planned activities:

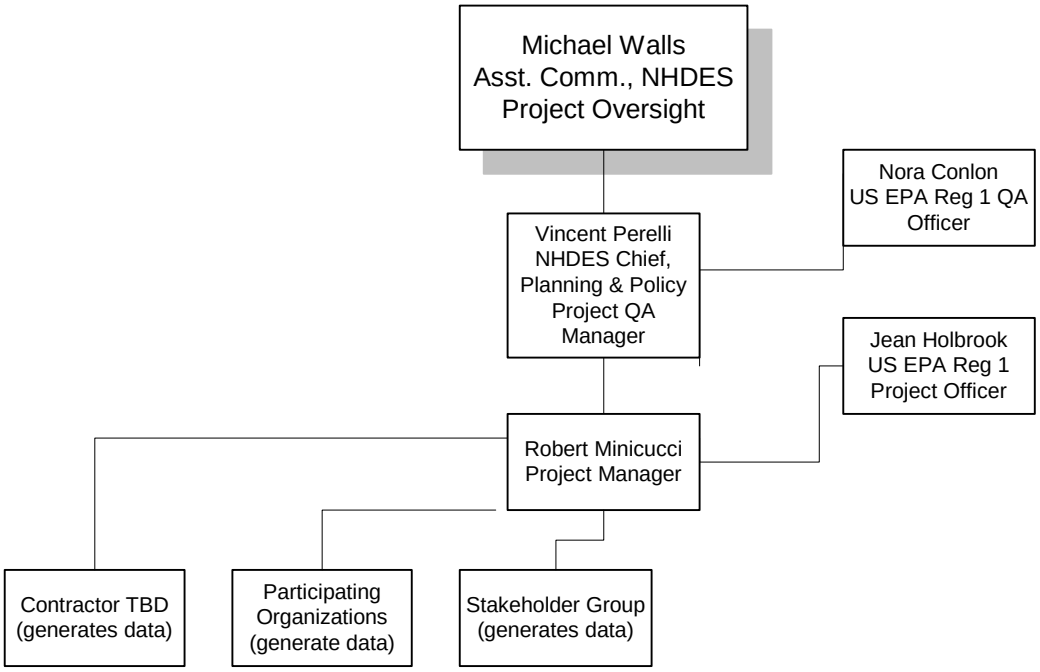
- Provide training to several different audience sets
- Assist in developing a strategy, or possibly carry out this strategy, to improve management skills in the SME sector.
- Possible meeting facilitation and./or coordination services.

Project partners are to be determined, but are considered herein to be members of the stakeholder group to be established and participants in the NH-based environmental leadership program (working title: NH Sagamore). These partners are presumed to be responsible for the following activities:

- Stakeholder Group: Provide expertise and advice to NHDES related to establishment of a NH-based environmental leadership program.
- Participants: Provide information about their environmental performance and other organizational matters over time.

At the time of program initiation, NHDES anticipates that all data used in this project will be considered “secondary” as defined in EPA’s Quality Assurance System.

Figure 1: Project Organizational Chart



A5. Problem Definition/Background

Rationale for initiating the project

Concerns about persistent and emerging environmental problems have sparked debate about the efficacy of traditional environmental policy tools. Today, many instruments are available – from traditional performance- and technology-based regulatory approaches, to innovative government programs, to new private sector initiatives such as environmental performance reporting and environmental management systems. The subject project is for NHDES to develop several programs that use these new instruments, especially including a performance-based reward and recognition approach mirroring US EPA's National Environmental Performance Track (Ptrack).

Objectives of the project

The project is designed to deliver the measurable short-term, intermediate, and long-term outcomes shown below, and enables NHDES to make the decisions listed below the anticipated outcomes. It should be noted that NHDES, in coordination with the EPA Project Officer, has explicitly chosen not to measure every outcome associated with the work; rather, a choice has been made as to the most important outcomes to track and measure (See Sec. B1).

Anticipated shorter-term outcomes:

- Increased awareness of the usefulness of systematic management tools, their effectiveness in achieving improved environmental and economic performance, and of the government's attitude toward these methods.
- Increase in NHDES staff understanding of these tools.
- Changes in college curriculums.
- Understanding of the utility and need for "second generation" environmental tools that go beyond the current regulatory system as practiced in the United States.

Anticipated intermediate-term outcomes:

- Changes in behavior related to improved environmental performance.
- Outside requests to NHDES for information and/or training.
- Organizations throughout the state use systematic environmental management tools more often, and incorporate them into their culture.
- Organizations show greater understanding of how environmental issues can be used to create value for their organizations.
- Colleges and universities in the state begin to add environmental issues to their business/management curricula.
- More SMEs use the tools of management science in their operations.
- Regulators and the public begin to develop relationships with organizations that include more trust.
- A "second generation" environmental program (current working title: "NH Sagamore"), based on environmental performance, recognition and rewards, is designed for New Hampshire.

Anticipated longer-term outcomes:

- Better environmental performance by organizations throughout the state.
- The implementation of a "second generation" environmental program, based on environmental performance, recognition and rewards.
- Possible re-prioritization of NHDES resources.

Anticipated decisions, to be based on data collected

- Will NH Sagamore be implemented?
- What rewards and recognition can and/or should be implemented and/or expanded to help organizations achieve the highest possible environmental performance?
- Based on the experience of this project, how should NHDES plan to modify NH Sagamore? (e.g., what incentives are most effective?)
- Should NHDES further modify its traditional regulatory approach? How far should NHDES modify regulatory oversight of facilities that achieve similar benchmarks?

Project activities, the relationships between them, and the outcomes and decisions anticipated are described in the project work plan dated January 30, 2006.

Regulatory information, applicable criteria and action limits

Only facilities with a satisfactory history of regulatory compliance will be allowed to participate in the NH Sagamore program. At this time, NHDES anticipates that "satisfactory regulatory compliance" will be defined in the same way EPA's Ptrack does, as will criteria for exiting the program. See http://www.epa.gov/performancetrack/program/sustain.htm.

A6. Project/Task Description

Project overview

NHDES proposes to do the following tasks to achieve the goals below:

- Update NHDES's policies
- Upgrade NHDES's website services by increasing presence of EMS and environmental leadership information.
- Establish and maintain a stakeholder advisory group
- Offer training to various target audiences in systematic environmental management
- Increase consideration of environmental concerns in college/university business/management curricula.
- Take actions to improve management skills in the SME sector
- Encourage larger organizations to mentor smaller ones
- Design and establish a multi-tier reward & recognition program to encourage better environmental performance.

NHDES believes that achieving these tasks will help it to reach the following goals:

- Increase internal and external awareness and acceptance of the value of a systematic approach to managing environmental responsibilities;
- Promote and achieve better environmental performance in regulated areas (*e.g.*, air emissions, water quality, hazardous waste generation, etc);
- Promote and achieve better environmental performance in areas not traditionally regulated (*e.g.*, energy use, water consumption, habitat protection, etc); and
- Re-allocate limited NHDES resources based on need and risk by building a system of differentiating organizations on a performance basis.

Two classes of data will be used to measure how well these goals are achieved: surveys and facility reports.

Project summary and work schedule

This project's major tasks and timetable are outlined in the table below.

Note that **bolded** dates indicate a project milestone.

Table 2: Schedule of Major Project Tasks

	Task Name	Task Description	Start Date	End Date
0	QAPP	Complete project planning by submission (and approval) of QAPP.	July 1, 2006	**Aug. 15, 2006**
1	Policy	Update and publicize NHDES' policy on encouraging systematic environmental management.	Aug. 1, 2006	**Sept. 30, 2006**
2	Website	Establish enhanced NHDES website resources for EMS-related information.	Oct. 1, 2006	**Nov. 1, 2006**
3.1	Stakeholder Group established	Establish and maintain an Advisory/ Stakeholder group. Re-establishes previous group that was active in 1997–2000.	**Group established by Nov. 1, 2006**	Ongoing throughout grant period.
3.2	Stakeholder Group maintained	Maintain Advisory/ Stakeholder group. May morph into a NH Sustainable Business Roundtable. Meetings anticipated to be quarterly or tri-annual through grant period.	**First meeting anticipated by Dec. 1, 2006**	Ongoing throughout grant period.
4.1	Strategy & procurement for EMS Training	With advisory group, establish strategy and procure contractor(s) for EMS training.	**Strategy chosen by Jan. 1, 2007**	**Contractor procured by July 1, 2007**
4.2	Deliver EMS Training	Offer training in EMS implementation, separately for public and private sectors.	**First training delivered by Sept. 1, 2007**	**Training seminars completed by July 1, 2008**
5	Increase Environmental Content of NH College/University Management School Curricula	Meet with NH colleges and universities, with an aim of achieving curriculum changes.	Initial meetings by August 1, 2007	Check for curriculum changes by January 1, 2009
6.1	SME Management	With advisory group, develop strategy to improve management skills in the SME sector.	**Strategy established by July 1, 2007**	See 6.2, below
6.2	SME Management	Take actions, per strategy established in 5.1, to improve management skills in the SME sector.	**Aug. 1, 2007.**	Anticipated to be end of grant period

Table 2: Schedule of Major Project Tasks

	Task Name	Task Description	Start Date	End Date
7.1	Mentoring strategy	With advisory group, establish strategy to encourage larger organizations to mentor smaller ones. May include "greening the supply chain" projects, but not necessarily limited to this area.	**Strategy in place by July 1, 2007**	See 7.2, below
7.2	Mentoring activities	Implement mentoring strategy established in 6.1	**Sept. 1, 2007**	Ongoing throughout grant period
8.1	NH Environmental Sagamore Design	With advisory group input/feedback, design a multi-tiered Reward and Recognition Program, one tier of which would be equivalent to the existing Ptrack. Current working title "NH Environmental Sagamore Program." (NH Sagamore). Design to include entry & exit criteria.	Start Oct. 1, 2006	**July 1, 2007**
8.2	Sagamore Support	a) Obtain final NHDES management approval to implement NH Sagamore. b) Write initial program "manual" c) Propose legislation	**a) Aug. 1, 2007** **b) Sept. 1, 2007** **c) Jan. 1, 2008**	**Legislation, possibly modeled on NH RSA 125:C-6a in 2008 session**
83	Sagamore implementation	a) Publicize program b) Recruit members c) Admit members d) Obtain members' performance reports on environmental performance in regulated and un-regulated areas.	a) Sept. 1, 2007 **b) April 1, 2008** **c) October 1, 2008** d) **May 1, 2009**	No end date anticipated. Grant will expire while program goes on.
9	Project Reports	Quarterly and final Project Reports.	**Sept. 30, 2006**	**Sept. 30, 2009**

Notes to Table 3:
a) This Table was intended to be consistent with Table 1 in the January 30, 2006 grant workplan, but the actual start date was not known when the workplan was prepared. This Table uses July 1, 2006 as a starting date, which complies with the date of formal acceptance of the grant by the NH Executive Council, which occurred June 21, 2006.
b) Some dates for tasks 8.2 & 8.3 were changed from those in the work plan to better reflect legislative timetables.

Geographic focus

Facilities from every part of the state are hoped to participate. The actual distribution of facilities will be described in reports that NHDES prepares on program results.

Resource and time constraints

Unknown at this time.

A7. Quality Objectives and Criteria

NHDES recognizes the importance of ensuring that data are of sufficient quality to meet the needs of the project. NHDES is committed to collecting and obtaining data of the highest quality possible within the constraints of project resources. Data quality can be characterized in terms of precision, bias, representativeness, completeness, comparability, and sensitivity. These characteristics are termed data quality indicators (DQIs). All data gathered in this project will be considered 'secondary' data in that the data will be gathered by parties other than DES, but the data will be gathered and otherwise processed, to the maximum extent possible, in accordance with this QAPP.

Two types of data are involved: the results of surveys to be prepared by NHDES and facility performance reports that would be submitted to NHDES by organizations participating in the proposed NH Sagamore program.

For the facility-reporting portion of the proposed NH Sagamore program, as a general rule, NHDES will gather and review the data in the same manner as EPA's Ptrack program. See http://www.epa.gov/performancetrack/program/report.htm.

Precision/Accuracy

As data used will be secondary data, there are few concerns with precision or accuracy, per se. For secondary data, NHDES will review for reasonableness and consistency, as is done by EPA's Ptrack program.

Participant facilities or other data providers will be required to document their anticipated, and actual, data collection methods. NHDES will reserve the right to review this documentation to ensure high-quality data, and to judge the quality of data already collected.

Bias

For survey-based data, the wording of data collection instruments like surveys and reporting forms will be reviewed by at least two NHDES staff (the minimum being the Project Manager & the NHDES QA Manager), and possibly members of the stakeholder advisory group and/or an NHDES contractor, as appropriate, to remove ambiguity and maximize usability.

For facility-reporting data, to reduce concerns about facility self-reporting bias, the NHDES will require facility-specific environmental performance goals, data collection procedures, and the choice of normalization factors to be agreed upon before the facility begins to collect data. In its initial review of the facility's performance goals, the NHDES will check for signs of potential cross-media transfers or double counting of environmental improvements. Although facility results will be self-reported, NHDES anticipates that a pre-entry interview and site visit or inspection will be conducted for facilities who want to participate in NH Sagamore, in part to minimize the impact of potential self-reporting bias.

To address possible concerns about bias in the NHDES's own reporting of project results, progress reports and the final project report will describe potential biases in the data and justify all conclusions reached on the basis of project data, and project data will be open to public EPA inspection for ten (10) years.

Representativeness

To ensure that facility data are representative of overall facility performance, facilities will be required to commit to and measure against facility-wide goals rather than process-specific goals.

The information collected under this project will not be considered to be representative of the overall universe of which any given facility is a member. NHDES is aware that facilities that participate in such programs are to a large extent self-selected members of one end of a range of performance characteristics. NHDES will characterize the information collected and reported during this project with this in mind.

Completeness

For survey-based data, completion or return rates will be reported and considered during analysis and presentation of any conclusions. When other types of data used for analysis are incomplete, the potential impact of their incompleteness on the analysis will be described in all relevant reports.

For facility-reporting data, NHDES intends to work with participating facilities to move toward a goal that information reported by the facilities represents a fair and complete picture of the facility's environmental impact and performance. For example, if a facility chooses to report on its water discharges, NHDES will work with the facility to ensure that the information reported for water discharges reflects a complete picture of the facility's discharges.

Comparability

The most important comparisons to be made in this project are between baseline data and follow-up data from individual facilities.

For survey-based data, NHDES anticipates using surveys in pairs – baseline and follow-up – to a large extent.

For facility-reporting data, NHDES anticipates that both absolute and normalized data will be used, as appropriate. NHDES will assist facilities to choose appropriate normalization factors. The normalization guidance set by EPA's Ptrack, which is available at http://www.epa.gov/performancetrack/PTNormalization_3_7_041.pdf, will be used to guide the choice and use of normalization factors.

Data from different sources will not be combined unless they were collected in a comparable manner.

Sensitivity

For environmental measurements in facility-reporting data (and not for survey responses), the NHDES will encourage or require (depending on existing legal authorities) facilities to meet the sensitivity standards achievable by the use of EPA-approved analytical methods with proper sample collection and handling protocol.

A8. Special Training/Certification

To the extent needed or requested, NHDES and, applicable contractors and other partners will develop and deliver training sessions regarding data-related issues to key parties if requested or if the QA Manager determines a need.

NHDES, contractors, mentor facilities, or non-profit partners will provide training as necessary or appropriate.

The Project Manager and the NHDES QA Manager are responsible for ensuring that all personnel involved with data generation (including NHDES personnel, contractors, and partners) have the necessary QA training to successfully complete their tasks and functions. The Project Manager and NHDES QA Manager will document attendance at all training sessions.

A9. Documents and Records

Project data reporting--format and content

Reports and forms include:

- Questionnaires and surveys
- Application form for facilities that apply to NH Sagamore
- Facility performance report
- Reports analyzing member characteristics, performance commitments, and results

Other documents/records

Other documents and records to be produced by the project include:

- Program web site
- Amended QAPP

- Readiness reviews
- Data handling reports
- Quarterly progress reports to EPA
- Project final report

Storage of project information

While the project is underway, project information will be stored in a filing cabinet at NHDES headquarters, and on NHDES's secure computer network, according to the State of New Hampshire data management plan and the NHDES QMP. Upon completion of the project, paper records, photographs, and audio-visual material will be retained for ten (10) years at NHDES headquarters. Electronic records will be stored indefinitely on the NHDES's main computer network.

Backup of electronic files

Existing State of New Hampshire and NHDES electronic back-up procedures will be followed.

QAPP (and other document) preparation and distribution

This QAPP has been written to conform to the format described in the United States Environmental Protection NHDES publication *EPA Requirements for Quality Assurance Project Plans* dated March 2001 (QA/R-5). The QAPP, with the work plan for the project, shall govern the operation of the project at all times. Each responsible party listed in Section A4 shall adhere to the procedural requirements of the QAPP and ensure that subordinate personnel do likewise.

This QAPP shall be reviewed at least annually to ensure that the project will achieve all intended purposes. All the responsible persons listed in Section A4 shall participate in the review of the QAPP. In addition, it is expected that from time to time ongoing and perhaps unexpected changes will need to be made to the project. The Project Manager shall authorize all changes or deviations in the operation of the project. Any significant changes will be noted in the next progress report to EPA (see Element C2), and shall be incorporated into an amended QAPP. Changes will be made only if permitted in the approved workplan and award documents. If it appears necessary to go beyond those limits the Project Manager will initiate discussions with EPA on how, or if, the changes desired can be achieved.

The Project Manager, under the direction of the NHDES Quality Assurance Manager, is responsible for updating the QAPP, documenting the effective date of all changes made in the QAPP, and distributing new revisions to all individuals listed in Table 1, Section A3, whenever a substantial change is made. The Project Manager will distribute the QAPP by email, or by other means if that is not possible, and attempt to retrieve outdated versions while distributing revised versions. Copies of each revision will be numbered, to make retrieval of outdated versions easier. The Quality Assurance Manager and the Project Manager, for NHDES; and the Project Officer and Region 1 QA Officer, for EPA, will review and approve all updates.

B DATA GENERATION AND ACQUISITION

B1. Experimental Design

Detailed performance measures

For each of the anticipated outcome listed below, we anticipate measuring results using the means shown in *underlined italic.* It should be noted that NHDES, in coordination with the EPA Project officer, has explicitly chosen not to measure every outcome associated with the work and/or listed on the workplan; rather, a choice has been made as to the most important outcomes to track and measure.

- Increased awareness of the usefulness of systematic management tools, their effectiveness in achieving improved environmental and economic performance, and of the government's attitude toward these methods. *Measure via survey of 'regulated parties' and NHDES staff.*
- Increase in NHDES staff understanding of these tools. *Measure via staff survey.*
- Changes in college curriculums. *Measure via survey of NH colleges.*
- Understanding of the utility and need for "second generation" environmental tools that go beyond the current regulatory system as practiced in the United States. *Information to be extracted out of advisory group meeting minutes and included in project reporting.*

Anticipated intermediate-term outcomes:

- Changes in behavior related to improved environmental performance.
- Outside requests to NHDES for information and/or training. *Measured/reported from mail/email records and telephone logs.*
- Organizations throughout the state use systematic environmental management tools more often, and incorporate them into their culture. *Measure via survey*
- Organizations show greater understanding of how environmental issues can be used to create value for their organizations.
- More SMEs use the tools of management science in their operations. *Measure/report via tracking ISO registrations and Baldridge Award participation.*
- Regulators and the public begin to develop relationships with organizations that include more trust. *Measure NHDES staff attitude via survey.*
- A "second generation" environmental program (current working title: "NH Sagamore"), based on environmental performance, recognition and rewards, is designed for New Hampshire. *Measure by reporting of decision to proceed with program.*

Anticipated longer-term outcomes:

- Better environmental performance by organizations throughout the state. *Measure via the performance reporting of organizations participating in NH Sagamore.*
- The implementation of a "second generation" environmental program, based on environmental performance, recognition and rewards. *Measure by reporting of program implementation.*
- Possible re-prioritization of NHDES resources. *Measure via tracking of staff/budget allocations.*

The list above was extracted from the logic model included in the January 30, 2006 project work plan. NHDES does not anticipate using statistical analysis on this data, beyond simple reporting of totals and averages (means and medians, as appropriate, medians would be used where large 'scatter' or the existence of outliers in a data set would make means misleading. When in doubt, both medians and means will be reported.)

NHDES is not anticipating specfic outcomes, but intends to try various ideas and observe what happens. "Success" would be determined by acceptance by various audiences (again, Table 2, 1/30/06 project work plan), and by environmental performance. In the latter category, any quantity of (for example) waste eliminated or energy use reduced is a success. This QAPP will be revised as needed to reflect the implementation of NH Sagamore & membership/performance commitments of various organizations therein.

Regarding performance reporting from participants in the NH Sagamore, normalized baseline and follow-up results will be compared to determine performance improvements at each participating facility. In each medium, results from multiple facilities may be combined to provide annual program-wide results, if three or more facilities within a relevant geographical region or business sector participate. Some results, such as energy use, may be aggregated on a state-wide basis, depending on participation.

Implementation

NHDES has not projected an estimated of number of participants related to any of the work tasks. However, participation is expected to increase from year to year. For the NH Sagamore program, if implemented, NHDES will use the same recruitment/enrollment criteria as EPA's Ptrack program. NHDES will not limit participation to a single industry or sector, rather, wide representation is envisioned, especially beyond the manufacturing sector. In some cases, particularly for the EMS training, the product will be tailored to different customer groups, e.g., EMS training for the public sector will be different from that for the private sector. The number of participants will not be capped. NHDES does not anticipate that participants will be representative of the larger community of facilities NHDES seeks to influence, but rather representative of those who are already, or who already want to be, high environmental achievers. Provisions for facilities to withdraw or be dismissed from the program will be the same as EPA's Ptrack program.

The stakeholder group referenced in task 3 (ref: Table 3 in Sec. A6) will be recruited from as wide a range of parties as possible; for credibility NHDES believes that government, NGO, business, and academic interest will all have to be represented.

The demands made of, and the incentives offered to, facilities that may participate in NH Sagamore will be guided by principles, but these principles are yet to be determined, by the stakeholder group and NHDES. NHDES does anticipate however, meeting some base principals such as, "incentives are only given for *exceeding* legal requirements, not for meeting them."

Project data collection is described elsewhere in this QAPP. The Ptrack program performance reporting form, which NHDES intends to mimic to the extent possible, is available at http://www.epa.gov/performancetrack/program/2003APRrevised_0104.pdf.

Like all parts of this QAPP, this section will be amended as the project progresses, more specific information becomes available, and objectives and methods are refined.

B2. Sampling/Experimental Methods

No use of primary data is anticipated. Data used, apart from simple listing and reporting of administrative issues such as number of phone calls, numbers of applicants, etc. will be considered secondary.

Surveys will be heavily used in this project. Survey forms will be prepared in accordance with general professional standards. NHDES may procure contractor services as mentioned previously and/or work with the University of New Hampshire's Survey Center (http://www.unh.edu/survey-center/) for assistance, or will use the expertise of NHDES staff to produce surveys that will meet the desired goals. Criteria for survey questions and forms include such characteristics as: user-friendly; understandable; easy to complete; allow verification of information where possible; and neutral, in that leading questions will be avoided. Surveys will be tailored to the appropriate users.

B3. Sample Handling and Custody

N/A

B4. Analytical Methods

N/A

B5. Quality Control (QC)

Incoming secondary data will be self-certified by the party generating it, and checked by NHDES or its contractor for reasonableness and consistency. NHDES's Quality Management Plan (QMP), and procedures established by EPA's Ptrack program will be followed as applicable. Although this may not occur during the grant period, NHDES anticipates staff doing

follow-up site visits at a rate at least equaling that of EPA's Ptrack program (10%, as a goal), in part to verify the self-reported information.

Crosschecking data

Application forms and other incoming data will be examined by NHDES staff to identify potential problems or inadequacies in the facility's commitments or its monitoring strategies, such as potential cross-media transfers, intra-facility transfers (if a performance commitment is for a subset of operations, not the entire facility), and double-counting of environmental improvements. If possible, primary data collection forms (see Section A9) will be designed in such a way as to allow internal crosschecking of data by comparing answers of different questions to each other, and such crosschecking will be automated during electronic entry of data, if possible. Errors caught during crosschecking will be flagged and corrected, to the extent possible, in consultation with data collection staff and facility managers.

Data anomalies

NHDES staff or contractor, as appropriate, will check for data anomalies (e.g., missing data, data that fall outside the range of the expected or plausible based on industry averages or physical reality, non-standard environmental aspects/indicators, incorrect/non-standard units, incorrect reporting years, incorrect normalizing factors or bases of normalization, incorrect calculations or conversions, etc.). When possible, checking for data anomalies will be automated as part of electronic data entry processes. Data anomalies will be flagged and corrected, to the extent possible, in consultation with data collection staff and facility managers.

Quality control statistics

The Project Manager will prepare summary statistics of data quality problems at the close of the project (i.e., unresolved data anomalies as a percentage of the number of data points) and a narrative description of problems encountered and any potential bias in the data caused by data anomalies. The NHDES QA Manager will review this documentation, and the Project Manager will include this information in the data evaluation section of the final project report (see Section D3).

B6. Instrument/Equipment Testing, Inspection, and Maintenance

N/A

B7. Instrument/Equipment Calibration and Frequency

N/A

B8. Inspection/Acceptance for Supplies and Consumables

Apart from ordinary office supplies, no "supplies and consumables" are anticipated to be used.

B9. Non-Direct Measurements (i.e., Secondary Data)

Secondary data to be collected for this project, their intended uses, and their limitations are described in the table below.

Table 3: Secondary Data

Data	Source	Intended Use	Limitations / Acceptance Criteria
Information supplied in surveys and questionnaires.	The parties that fill out the surveys	Tracking of various behavior or knowledge changes – see Table 2, Logic model, in 1/30/06 project work plan.	Self-reporting bias, review by NHDES staff for consistency & reasonableness to be done.
State and federal environmental compliance records from the past three years	Various program-specific EPA, NHDES, & NH Department of Justice staff and databases	Compliance records will be used to determine the eligibility of facilities to participate in the project.	None, apart from a "straight-face" check.
Internal EMS documentation and third-party audits	Participating facilities, auditors	Verification that the facility has a properly functioning EMS	The reports will only be used to establish that the EMS is functioning as designed, not to make determinations about environmental compliance or performance
Results of EMS-regulatory initiatives in other jurisdictions	EPA, Other States	A basis for evaluating the success of project components (e.g., how did the results of our initiative, in which facility assistance was provided by non-profit partners, compare--in terms of environmental improvement, cost-effectiveness, and participant retention--with the results of initiatives in which facility assistance was provided by NHDES staff at seminars, or provided by "mentor" facilities?)	Only initiatives with similar approaches will be considered. The comparisons must be made with caution, since each initiative has its own idiosyncrasies and it is hard to isolate a single variable.

Table 3: Secondary Data

Data	Source	Intended Use	Limitations / Acceptance Criteria
Reports of environmental performance submitted by facilities participating in NH Sagamore	Participating facilities, using forms previously produced by EPA's Ptrack program.	Tracking of environmental performance by participating facilities.	Self-reporting bias to be addressed by NHDES staff review for consistency & reasonableness and by follow-up site visits, as per Ptrack.

Key resources/support facilities needed

The Project Manager has access to the data sources mentioned above. NHDES does not anticipate any obstacles to this approach.

Determining limits to validity and operating conditions

Data will be reviewed for reasonableness and consistency as has been described above. Where data for a facility from times prior to the grant is available, it will be accessed and used as a source to help determine what is reasonable and/or consistent.

B10. Data Management

At this time, a formal data management strategy has not been developed. NHDES anticipates keeping information in a file cabinet, clearly labeled and in directories on the NHDES networks, also clearly labeled. The Project Manager is responsible for ensuring that that these data management methods work, and for developing a strategy if it becomes necessary, and, in that case, that the QAPP is amended to reflect that strategy. This plan is consistent with the existing NHDES Quality Management Plan. If amended, it is anticipated that this QAPP section on data management will provide information, as appropriate, on the following:

- Data management scheme, from field to final use and storage (including flowcharts, if available)
- Standard recordkeeping and tracking practices, and document control system. Relevant NHDES documentation of standard practices will be cited in lieu of listing all practices in an amended QAPP whenever possible.
- Data handling equipment/procedures that will be used to process, compile, analyze, and transmit data reliably and accurately
- Individuals responsible for elements of the data management scheme
- Process for data archival and retrieval
- Procedures to demonstrate acceptability of hardware and software configurations

No checklists and forms have been developed yet, apart from the existing Ptrack forms referenced in this QAPP.

C ASSESSMENT/OVERSIGHT

C1. Assessment and Response Actions

The NHDES Quality Assurance Manager will conduct a Readiness Review prior to each major primary data collection step, anticipated to be limited to promulgation of surveys and questionnaires. (Other information will be gathered using pre-existing forms, such as existing Ptrack forms, although minor modifications may be made to reflect NH-specific conditions. However, the goal is to use Ptrack forms whenever possible.). The QA Manager will report findings to the Project Manager, who will take corrective action if any is necessary. The QA Manager will review and approve the results of such corrective action. Collection of data will not begin until the QA Manager certifies readiness. The Project Manager and QA Manager will meet regularly with any relevant parties within and outside of NHDES to identify emerging/unanticipated problems and take corrective action, if necessary.

C2. Reports to Management and EPA

QA reporting will be included in all regular project reports. Three kinds of reports will be prepared: readiness reviews (described above, to be kept internal to NHDES), regular quarterly progress reports, and project final report. Progress reports will note the status of project activities, including, but not limited, to identification of any QA problems encountered with an explanation of how they were handled. The project final report will include analysis and interpretation of data, observations and conclusions. The final report will include identification of data gaps and relevant limitations in the way the results should be interpreted.

All reporting requirements in the April 11, 2006 Grant Agreement transmitted by EPA will be complied with.

Table 4: Project Status Reports

Type of Report	Frequency	Date(s)	Preparer	Recipients
Readiness Review	Before each major data collection task	TBD	Vincent Perelli, NHDES QA Manager	Robert Minicucci, Project Manager
Progress Report	Quarterly	TBD	Robert Minicucci, Project Manager	Jean Holbrook, EPA Reg 1 Project Officer (Copying US EPA OPEI)
Final Project Report	Once	TBD	Robert Minicucci, Project Manager	Jean Holbrook, EPA Reg 1 Project Officer (Copying US EPA OPEI), stakeholders

D DATA REVIEW AND EVALUATION

D1. Data Review, Verification and Validation Criteria

During data review, verification, and validation, staff will be guided by the data quality criteria listed in Section A7, as well as any additional criteria discussed in Section B.

D2. Verification and Validation Methods

To confirm that QA/QC steps have been handled in accordance with the QAPP, the NHDES QA Manager will prepare a readiness review before key data collection steps (as described in Section C1). Also, the Project Manager will prepare data handling reports, to be emailed to and reviewed by the QA Manager, after each data collection step and each data analysis step. These reviews and reports will be guided by the quality criteria described in Section D1, above, and performed in accordance with NHDES's Quality Management Plan.

If at any point during verification and validation the Project Manager or the NHDES QA Manager identifies a problem (e.g., the use of substandard data when higher-quality data are available, a faulty algorithm, a mismatch between a data set and the question it is meant to answer), the Project Manager, QA Manager, and any other relevant staff will discuss corrective action. If necessary, the Project Manager will issue a stop-work order until a solution is agreed upon. The Project Manager will implement corrective action. If the solution involves changes in project design, the Project Manager will amend the QAPP as necessary and distribute the new revision.

D3. Evaluating Data in Terms of User Needs

The final project report will contain an evaluation of the uncertainty of project results, as well as an evaluation of the effectiveness of the surveys as a means of collecting data on behavior changes. The Project Manager will prepare this evaluation in consultation with the QA Manager. For each conclusion reached by the project, this evaluation will explain, in narrative form: the quality of data and the methodologies used to inform the conclusion, the subsequent confidence in the conclusion, and the validity of generalizing results beyond the project.