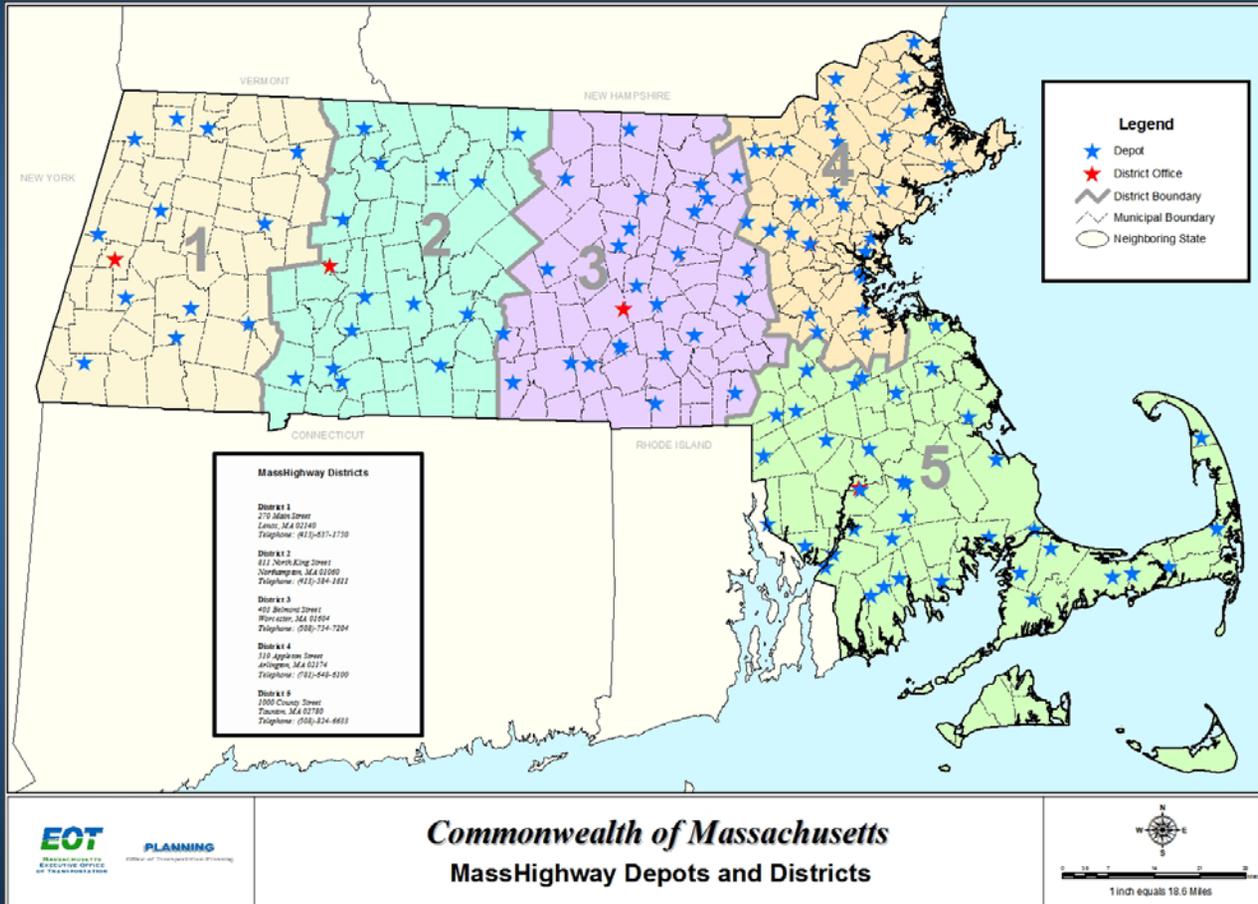
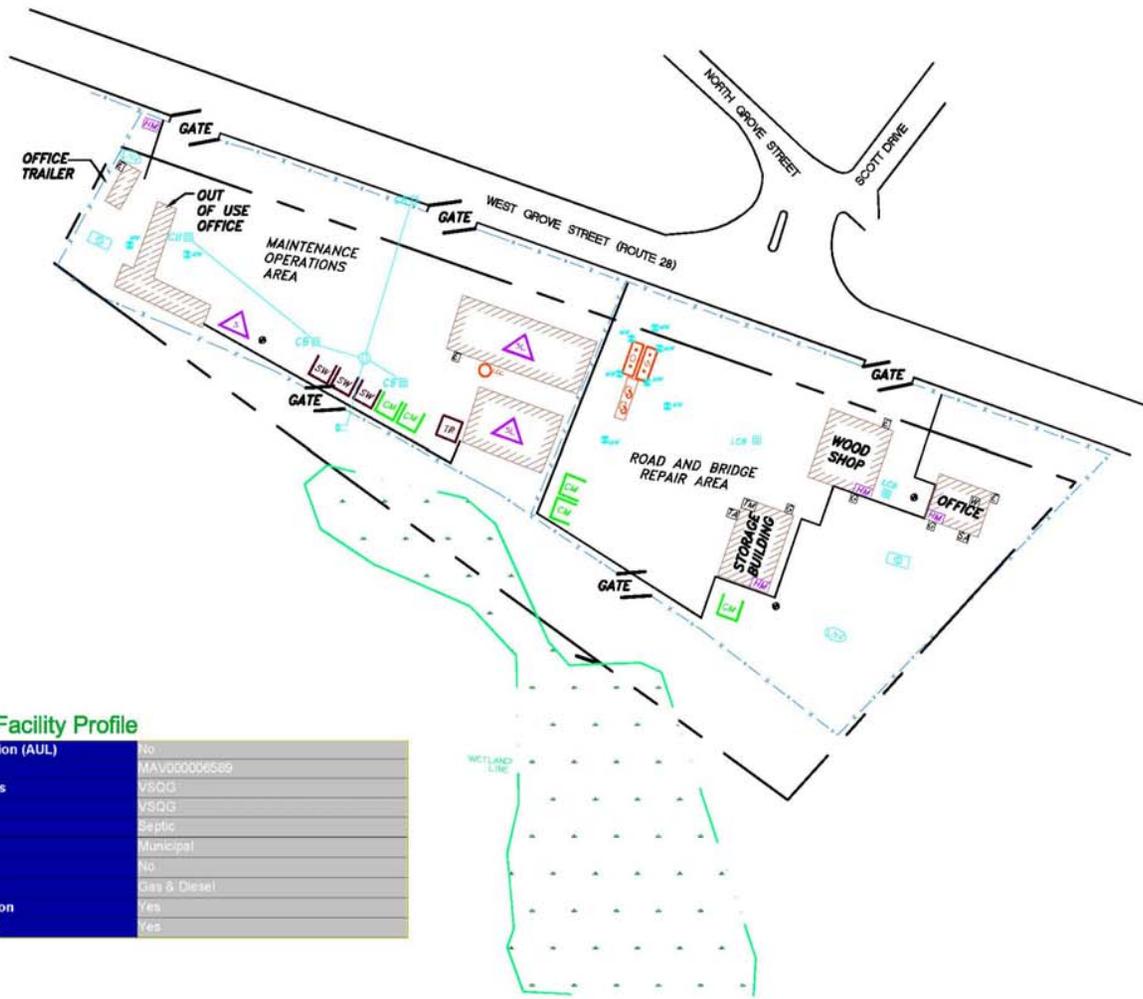


Lessons Learned During the Implementation of an Environmental Management System

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MassHighway Organization





Notes

NOT FOR CONSTRUCTION

THESE REFERENCE PLANS WERE PREPARED FOR THE PURPOSE OF PRESENTING ENVIRONMENTAL-RELATED DATA AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION DOCUMENTS.

THE INFORMATION PRESENTED ON THESE PLANS WAS COLLECTED FROM EXISTING SITE PLANS, FIELD OBSERVATIONS, AND INTERVIEWS WITH MAHSD SECURITY PERSONNEL FAMILIAR WITH THE FACILITY AND ITS OPERATIONS.

BOUNDARIES PRESENTED ON THE FACILITY PLANS ARE NOT TO SCALE AND DO NOT REPRESENT THE SIZE OF THE FIELD LOCATED FEATURE.

WETLAND LINE LOCATIONS ARE FROM MASS GIS. DEP WETLANDS UPDATED APRIL 2003. BOUNDARIES ARE SUBJECT TO CHANGE. BUFFER ZONE EXTENDS 100 FT FROM BOUNDARY.

PROPERTY LINES IN THIS PLAN ARE DERIVED FROM TOWN OF MIDDLEBOROUGH ASSESSORS MAP 037.

SCALE AND LOCATION OF PROPERTY BOUNDARIES AND FEATURES ARE BASED ON MAHSD 80-028-001-0240-2000 AND FIELD OBSERVATION. CATCHBASINS, OUTFALL, MANHOLES AND VISIBLE MONITORING WELLS WERE POSITIONED USING GPS.

Legend

- PROPERTY LINE
- EDGE OF PAVEMENT
- FENCE LINE
- WETLAND LINE
- SEPTIC TANK
- LEACHING CATCHBASIN
- LEACHING SYSTEM VENT
- STORM DRAIN LINE W/MANHOLE
- DRAIN OUTFALL
- MONITORING WELL (GPS)
- MONITORING WELL (APPROX)
- FUELING ISLAND
- LIQUID CALCIUM CHLORIDE AST
- GASOLINE UST
- DIESEL UST
- TRASH STORAGE/DUMPSTER
- MISCELLANEOUS SOLID WASTE
- MISCELLANEOUS CONSTRUCTION MATERIALS
- ELECTRIC METER
- GAS METER
- WATER METER
- SEPTIC ALARM
- TANK ALARM
- TANK MONITOR
- HAZARDOUS MATERIAL STORAGE
- SAND STORAGE
- SALT STORAGE

MassHighway Facility Profile

Activity and Use Limitation (AUL)	No
EPA ID #	MAV000006569
Hazardous Waste Status	VSQG
Waste Oil Status	VSQG
Sanitary Discharge	Septic
Drinking Water Source	Municipal
Vehicle Washing	No
Vehicle Fueling	Gas & Diesel
Solid Waste Accumulation	Yes
Stage II Vapor Recovery	Yes

N

Date: May 2006

Drawn By: JHT/ALH

1 inch = 80 ft.

District 5 Facility 102
Middleborough
West Grove Street
(Route 28)

“State, EPA Agree on \$20M Waste Cleanup”

Our EMS was
initiated by an
Enforcement
Action

The Boston Globe

September 11, 1994

“The Massachusetts Highway Department has agreed to spend tens of millions of dollars to clean up hazardous waste after federal inspectors discovered nearly 200 aging barrels of it outside maintenance facilities in....”

Consent Order Required an Audit

Over 6,000 compliance issues discovered and placed into compliance programs

Hazardous waste

Hazardous materials

Water Quality

Solid Waste

Tanks

Wetlands

Asbestos (added later)



Summary of Audit Findings

MassHighway's Environmental Management Issues at 136 Maintenance Facilities		Hazardous Materials						
		Hazardous Waste		Solid Waste		Water Quality		
Facility Activity	No. of Facilities Conducting Activity	Tanks		Wetlands				
		✓	✓	✓	✓	✓	✓	
Vehicle Washing	92			✓				
Vehicle Maintenance	58	✓	✓	✓	✓	✓		
Fuel Dispensing	66	✓	✓		✓	✓		
Salt and Sand Storage	122	✓			✓		✓	
Street Sweepings and Catchbasin Cleanings Storage	76		✓	✓	✓		✓	
Equipment and Material	108			✓			✓	
Roadside and Construction Debris Storage	118		✓	✓			✓	

The Audit Also Concluded:

no system in place to achieve or maintain compliance

- **No Training**
- **No Dedicated Budget**
- **No Clearly Defined Roles and Responsibilities**
- **Incomplete Knowledge of Regulatory Applicability**



MATPHMNT CHANGE 2 06/28/2006

MATPHMNT - CSI PROGRESS HISTORY DETAIL SCREEN

EOEA ID: 5455 Facility Name: ARLINGTON MAINTENANCE DEPOT
 Agency: MHD Location: 519 APPLETON STREET
 Type: DRQ Facility Town: ARLINGTON
 DEP Region: HE DEP Priority: N GIS Priority:
 DEP RTN: Delist Date: M.C.P. Compliance: A/B/C List:

Comments Approved: Delist Requested: Y 04/27/2004 Commentator: MHD
 Date Entered: 04/27/2004 Delist Approved:

MassHighway retained a plumber to install approved drinking water cross-connection prevention device

Comments Approved: Delist Requested: Commentator: MHD
 Date Entered: 03/01/2004 Delist Approved:

CORRECTIVE ACTION PLAN: MassHighway is arranging with the Arlington Water Department for inspecti

Comments Approved: Delist Requested: Commentator:
 Date Entered: Delist Approved:

Editor

MassHighway retained a plumber to install approved drinking water cross-connection prevention devices on the water supply lines to the boiler and fire suppression sprinler system. The intalitation work was completed on March 10, 2004. As MassHighway has achieved compliance in accordance with the Corrective Adcion Plan and within the Projected Corrective Action Completion Date, delisting of this matter is requested. (RFJ)

Search OK Cancel

Achieving Compliance Became Priority 1

- *Our Management System Improvement Plan presented our Strategy for the organizational, operational and system improvements necessary to achieve and maintain compliance*

The Implementation Plan

- *Identified the schedule and funding required to program the work over several budget cycles*
 - *\$50 Million over 6 fiscal years*
 - *Today, 55 issues remain open*
 - ◆ wetland restoration and solid waste capping projects due to previously buried debris

MassHighway's EMS Tools

COMPLETED J TREN 5 ON 5/22/06
MASSACHUSETTS HIGHWAY DEPARTMENT
FACILITY ENVIRONMENTAL COMPLIANCE INSPECTION REPORT

Routing of Completed Inspection Report: _____ **Date:** _____
 District EMS Compliance Coordinator _____
 District Maintenance Engineer _____
 Area Supervisor/Facility Foreman _____
 EMS Section Supervisor/Boston Environmental Room 4260 _____

INSPECTOR: Mike Giardo **DATE:** 5-22-06
FACILITY NAME & FACILITY NUMBER: Storings (Chucksett Rd) #43 **FACILITY FOREMAN IN CHARGE:** Pat Blanchard
HAZARDOUS WASTE GENERATOR ID. NUMBER: MAV000012192 See pages 4 + 8 + 9

PLEASE ESTIMATE THE QUANTITIES OF WASTE THAT HAVE ACCUMULATED AT THIS FACILITY.

HAZARDOUS WASTE:		SOLID WASTE:	
TYPE OF WASTE	ESTIMATED QUANTITY:	TYPE OF WASTE	ESTIMATED QUANTITY:
waste oil	155 gal (1/2 full)	ABC	15 CY
waste oil	155 gal (empty)	C&D (2 bins)	30 CY
waste gas	15 gal	Catchbasin Cleanings	— CY
oily rags	121 gal (1/4 full)	Street Sweepings	300 CY
		Scrap Metal	50 CY
		Tires	1 approx 50 each 08
		Wood Waste (tra)	5 CY
		White Goods ⁵¹² _{recycling}	1 air cond. CY
		Treated Timbers	— CY
		Bulky Waste	20 bin / 5 mattresses CY

UNIVERSAL WASTE:
 TYPE OF WASTE / ESTIMATED QUANTITY
 fluorescent light 14' x 1 each (4-12-05)
 fluorescent light 18' - none
 /
 /

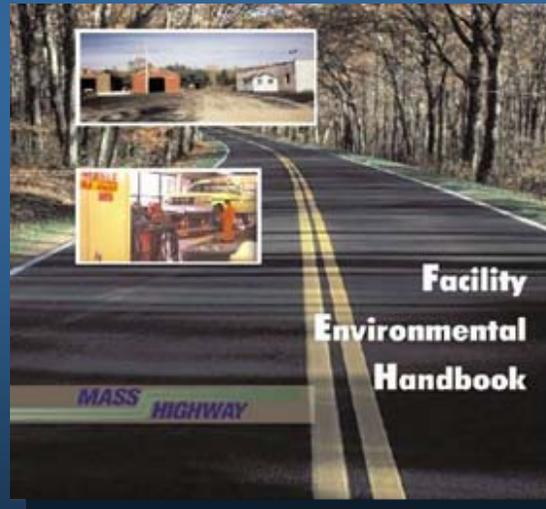
Revision Date: 2/24/2006 Page 1 of 7

- **Regular inspections are conducted by the EMS Compliance Coordinators to ensure a sustained level of compliance. This is currently the primary method for identification and correction of violations.**

MassHighway's EMS Tools

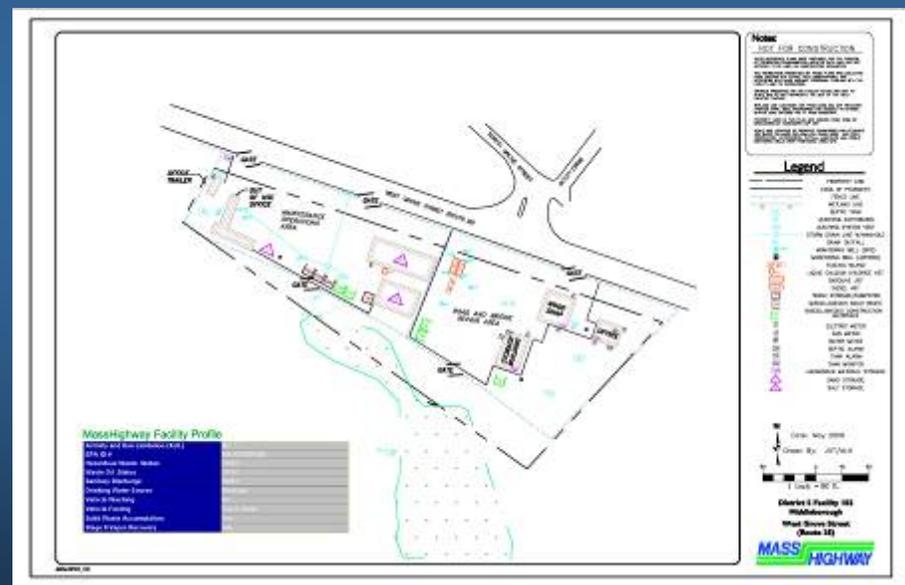
- Standard Operating Procedures – provide directives
- Handbook - provides simple instruction

COMMONWEALTH OF MASSACHUSETTS MASSHIGHWAY DEPARTMENT STANDARD OPERATING PROCEDURES		S.O.P. NO. EMV-01-11-1-000 Page 1 of 1
SUBJECT: Vehicle Washing at MassHighway Facilities		DISTRIBUTION A
EFFECTIVE APR 22 08	ISSUED MAY - 08	APPROVED <i>Michael J. Amorello</i>
<p>PURPOSE</p> <p>To ensure the proper method of washing vehicles and equipment at MassHighway Facilities that are consistent with environmental regulations.</p> <p>RESPONSIBILITY</p> <p>It is the responsibility of the Facility Foreman to ensure that vehicles and/or equipment are washed in accordance with the following procedures.</p> <p>POLICY</p> <p>Facility personnel will only rinse vehicles and/or equipment outside. ABSOLUTELY NO SOAP OR FORDERWASHING CAN BE USED! Some facilities have or are scheduled to have recycling washing units, sewer connections or holding tanks. Only sites with these may be used to wash vehicles indoors. If you are not sure of the facilities designation for vehicle washing, contact your District Maintenance Engineer (DME) or District Hazardous Materials Coordinator (DHC).</p>		

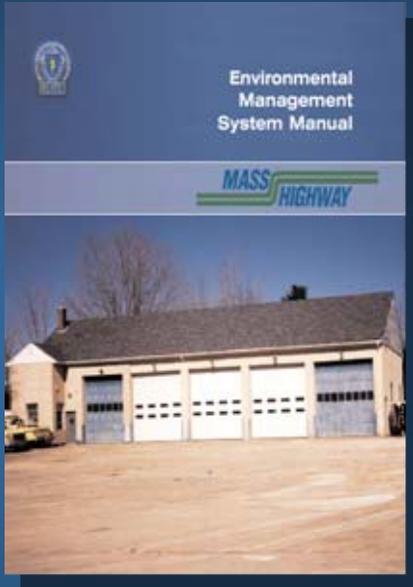


MassHighway's EMS Tools

- Facility Maps – identify general and permitted activities and, locate compliance points



MassHighway's EMS Tools



- **EMS Manual** – describes the elements of the EMS and how the system works and reinforces the Plan-Do-Check-Act cycle.

MassHighway EMS Elements

System is designed to Achieve and Maintain Environmental Compliance

- **Environmental Commitment**
- **Roles and Responsibilities**
- **Funding**
- **Environmental Requirements**
- **Emergency Preparedness**
- **Standard Operating Procedures**
- **Facility Handbooks and Maps**
- **Training**
- **Compliance Tracking**
- **Self-Auditing**
- **Pollution Prevention**
- **EMS Review and Evaluation**

Independent Audit Completed in 2004-2005



- **Conducted by independent consultant**
- **125 facilities audited**
- **First comprehensive system check**
- **Produced high anxiety**
- **Hopefully we won't find violations but what if we do?**
- **We found Violations**

Summary of Independent Audit Findings

	<i>Findings</i>	<i>Violations/ Findings</i>
1. Miscellaneous (not adhering to SOPs)	163	6.3%
2. Right-to-know (labeling of materials)	111	52%
3. Solid waste management	105	1%
4. Tank management	96	83%
5. Hazardous waste management	94	64%
6. Underground injection	62	45%
7. Asbestos	33	12%
8. Air management (stage II and air permits)	25	100%

Audit Results

The system worked by providing a means for identification and correction of violations

- *Resolved 68% of our regulatory findings within 14 days*
- *Bulk of the remaining regulatory issues are related to fuel reconciliation equipment upgrades*
- *61% of the total findings were good management practices*

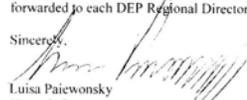
We Reported Findings to DEP



I am proud of the work that MassHighway has done in this area. I hope you and a valuable testimony to the hard work and dedication of MassHighway's continued environmental improvement. I hope that we can both use this as collaboration between our two agencies as we all strive to develop and sustain performance.

In accordance with the ACO, the report is being submitted to the DEP Office of Enforcement Policy and Assistance under a separate cover to the attention of Acting Director, Pamela Talbot. In addition a copy was forwarded to each DEP Regional Director and each Regional Clean State Coordinator.

Sincerely,


Luisa Paiewonsky
Commissioner

cc: John Cogliano, Secretary of Transportation
Robert N. Cohen, Deputy Commissioner
John Blundo, P.E., Chief Engineer
Gregory Prendergast, Director, Environmental Services
Scott Brown, Chief Engineer's Office



MassHighway Commissioner
Luisa Paiewonsky

“At MassHighway, we understand that an EMS requires a long-term commitment, focus, and support from all levels of the agency.”

Commissioner Luisa Paiewonsky

Trust the process

Lessons Learned

- **Commitment from the top must be established early**
- **Change occurs slowly**
- **As long as there is commitment at all levels of management, continuous improvement will happen**

Collaborate with Regulators

Lessons Learned

- Relationship required development of trust
- Understand the respective missions
- Educate the regulators - these changes require
 - *several budget cycles*
 - *time to train and integrate responsibilities into day to day operations*

Collaborate with Regulators

Lessons Learned

- Without proper coordination, the EMS risked being created to suit the regulators more than the agency
- Tailor the implementation plan to achieve compliance issues first.

Collaboration with State and Federal Regulators Proved Beneficial

Developed a Self-Disclosure Policy that works for state Agencies

- Requires that the agency has a system
- DEP exercises enforcement discretion

**POLICY ON INCENTIVES FOR SELF-POLICING:
ENVIRONMENTAL SELF-AUDIT POLICY
ADDENDUM FOR STATE AGENCIES**

Policy ENF-05-001
Effective date: January 1, 2005

I. BACKGROUND AND PURPOSE Since the issuance of the "Clean State" Executive Order (EO) #150 in 1993 state agencies and participating authorities have worked to identify, evaluate and correct matters of environmental noncompliance. On July 23, 2003, the Governor signed Executive Order #438 – creating the State Sustainability Program. That Order requires agencies to create written Sustainability Plans for managing ongoing environmental impacts, reaffirms the Governor's support of EO #350, and explicitly retains its tracking and reporting requirements as follows:

For compliance matters, agencies shall meet the same reporting requirements contained in Executive Order #350. This shall include the ongoing identification of any existing and future compliance matters and the reporting of such matters to the Clean State Database or other reporting systems that serve the same purpose. Such data shall be transparent and available for review by the Attorney General. (EO #438, emphasis added.)

This policy is intended to:

- coordinate the compliance reporting provisions of EO #438 (the Sustainability EO) with current Department policies on self-auditing;
- maintain consistent implementation of the reporting policies and protocols adopted under E.O. #350 and #438;
- encourage agencies to use the Clean State data base to its fullest potential as a compliance assurance tool as well as to support its sustainability implementation efforts; and
- acknowledge the particular circumstances of those agencies that may justify penalty forbearance, including agency limitations in committing to long range budgetary obligations and capital improvements, and the required procedural steps to publicly finance such projects

II. APPLICABILITY. This policy applies to agencies participating in the Clean State and State Sustainability Programs, and to matters of environmental noncompliance that meet the discovery, disclosure and correction requirements in the Eligibility section below. This addendum modifies the application of the Department's Policy on Incentives for Self-Policing: Environmental Audit Policy ("General Audit Policy") (ENF-07-004) for participating state agencies, and should be read together with that policy. Unless stated herein, the provisions of the General Audit Policy apply.

III. STATEMENT OF POLICY

Experience and Organization are Important

Lessons Learned

- **Need staff with strong working knowledge of regulations. This builds regulator's confidence that the agency is taking the EMS seriously**
- **Compliance Coordinators work in the Districts but report to Boston HQ. This allows inspections to be transparent within the Agency.**
- **Use consultants to help develop and update your EMS tools. While you'll need their support; to truly understand the system, you need to own it**

As our System Matured

Lessons Learned

- Compliance activities became part of everyone's job.
- Roles and responsibilities changed over time
- Funding needed to maintain compliance decreased substantially

Operations is Moving the Fence-line to Roadway Maintenance

- Build on our Experience
- Utilize AASHTO Tools
- For more information on AASHTO <http://environment.transportation.org>



Using an Environmental Management System to Meet Transportation Challenges and Opportunities

An Implementation Guide



Center for Environmental Excellence
American Association of State Highway and Transportation Officials

Shannon H. Eggleston

Director, AASHTO Center for Environmental Excellence

202-624-5800

<http://environment@aaashto.org>

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